A.J.S.

(WOLVERHAMPTON)

Patents Collection

1912 / 1930

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INDEX

N° 11,886 A.D. 1912

Date of Application, 20th May, 1912
Complete Specification Left, 16th Nov., 1912—Accepted, 15th May, 1913

PROVISIONAL SPECIFICATION.

Improvements in Operating Mechanism for a Dog Clutch or other Device which is Liable to be Blocked.

We, A. J. Stevens and Company, Limited, of Retreat Street, Wolverhampton, in the County of Stafford, Motor Cycle Manufacturers, and Jabez Wood, of the same address, Clerk, in the employment of the said Company, do hereby declare the nature of this invention to be as follows:—

This invention relates to operating mechanism for use in moving a device which is liable to be blocked by coming against an obstruction which prevents it being moved as required, such for instance as the movable member of a dog clutch of which the teeth are liable to foul the teeth of the other member, or the teeth of either of the other members, in the case in which the movable member is slidable between two dog-toothed clutch members with either of which, at will, it may be engaged; and consists in means whereby, in case the movable member should become blocked, by the other or another member, when an endeavour is made to move it, by the mechanism provided therefor, the mechanism will yield elastically and prevent mischief resulting, and will if the portion of the mechanism between the operating handle and the elastic medium is held or fixed in the position into which it has been moved, automatically ensure the engagement of the movable member with the member with which it is desired it shall engage, immediately the movable member and the other member are in relative positions which admit thereof.

Means, according to this invention, by which the above object may be accomplished comprise, a block or the like, conveniently of elongated shape, which is rigid with one of two parts of the operating mechanism through both of which force is transmitted for the purpose of moving the sliding member of a dog clutch or other device as aforesaid, two surfaces of the other of the said parts one preferably rigid therewith and the other movable in relation thereto, between which the said block fits in a manner which ensures that one of the said parts of the operating mechanism cannot turn in relation to the other without causing the said block to move further apart the said surfaces, and an elastic medium which prevents such surfaces from yielding apart unless the force tending to turn one of the said parts of the operating mechanism in relation to the other exceeds that which is required to move the said sliding member of a dog clutch or other device as aforesaid into the position required when its movement is not blocked.

Describing a convenient form of the invention, suitable for use in the case of a dog clutch, whether a single clutch or a clutch having two members with either of which, at will, a sliding clutch member may be engaged, an end of a spindle which carries an arm by means of which the sliding member of the clutch is operated, is formed with a head of elongated shape, having the opposite sides flat and the ends curved, and this head is within an opening which constitutes the eye of a lever by means of which the spindle is operated, the eye being formed with flat interior surfaces against which the flat sides of the head fit. One of these flat interior surfaces of the eye is formed at the

[*Price 8d.*]

inner face of a keep which closes the corresponding side of the eye. This keep is slidable along pins which are fixed to the eye, and is pressed up against the corresponding flat surface of the head by spiral springs which surround the pins and abut against nuts or heads thereof. When the lever is turned there is a tendency for it to turn in relation to the spindle, and, by bringing the opening through the eye skew-wise to the head therein, to move back the keep against the force of the springs. The springs, however, are of such strength and under such tension as to ensure that the lever cannot be turned in relation to the spindle so long as the sliding member of the clutch is capable of moving endways in the direction in which it is attempted to move it, but if an attempt is made to move the clutch when it is blocked, and excessive force is used in doing so, the lever will turn in relation to the spindle, thereby forcing back the keep against the force of the springs, and no mischief will result. If the operating mechanism is held or secured in position in which the elongated head has moved back the keep against the force of the springs, the re-action of the springs will ensure that the movable member will automatically engage with the member with which it is desired it shall engage, immediately the movable member and the other member are in relative positions which admit thereof.

Dated this 18th. day of May, 1912.

STEPHEN WATKINS, SON & GROVES,
Chartered Patent Agents,
Royal London Buildings, Wolverhampton, and
170, Strand, London, W.C.,
Agents for the Applicants.

COMPLETE SPECIFICATION.

Improvements in Operating Mechanism for a Dog Clutch or other Device which is Liable to be Blocked.

We, A. J. Stevens and Company, Limited, of Retreat Street, Wolverhampton, in the County of Stafford, Motor Cycle Manufacturers, and Jabez Wood, of the same address, Clerk, in the employment of the said Company, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to the type of operating mechanism for use in moving a device which is liable to be blocked by coming against an obstruction which prevents it being moved as required until relative movement between the device and the obstruction allows thereof (such for instance as in the case of the movable member of a dog clutch of which the teeth are liable to foul the teeth of the other member, or the teeth of either of the other members, in the case in which the movable member is slidable between two dog-toothed clutch members with either of which, at will, it may be engaged), in which should the movable device become blocked, when an endeavour is made to move it, by the mechanism provided therefor, the mechanism will yield elastically and prevent mischief resulting, and allow the operating handle to be moved into its extreme position in the direction in which it is being moved, and will, if a portion of the operating mechanism which transmits the force to the movable device through the elastic medium is then held or fixed in the position into which it has been moved, ensure the automatic engagement of the movable device with the member with which it is desired it shall engage, immediately

the movable device and such member are in relative positions which admit thereof; and the invention has for its object improved means for the purpose.

These improved means comprise, a block or the like, conveniently of elongated shape, which is rigid with one of two parts of the operating mechanism through both of which force is transmitted for the purpose of moving the sliding member of a dog clutch or other device as aforesaid, two surfaces of the other of the said parts one preferably rigid therewith and the other movable in relation thereto, between which the said block fits in a manner which ensures that one of the said parts of the operating mechanism cannot turn in relation to the other without causing the said block to move further apart the said surfaces, and an elastic medium which prevents such surfaces from yielding apart unless the force tending to turn one of the said parts of the operating mechanism in relation to the other exceeds that which is required to move the said sliding member of a dog clutch or other device as aforesaid when its movement is not blocked, but when such member or other device is blocked allows such surfaces to yield apart against the elastic force.

In order that the invention may be readily understood, we will describe a convenient application of the same to mechanism, for operating a dog clutch member, which is illustrated, by way of example, by the drawings herewith. In the particular application illustrated the dog clutch member is shewn as adapted to engage with one or other, at will, of two clutch members of the change-speed gear of a two-speed motor bicycle.

Of the drawings:—

Figure 1 is an end view of the gear-box, which is arranged transversely of the cycle frame.

Figure 2 is a view of the gear-box as seen looking in the direction of the arrow, Figure 1.

Figure 3 is a section through the gear-box taken on line *x x* of Figure 2, shewing the clutch mechanism in plan view; and,

Figure 4 is a detached view shewing the connection of the operating lever with the spindle which carries the fork by which the moving clutch member is directly operated.

A is the moving clutch member, and A^1 A^1 are the clutch members with either of which at will the clutch members A may be engaged accordingly as the high or low speed may be required. The clutch member A is moved through the medium of a spindle B, which is carried in a bearing B^1 of the gear-box C, by means of a fork *a* which is carried by the spindle. The operating lever D is connected at one end with the spindle B in a manner which embodies the principle of our invention, and is connected at its outer end with a rod *d* through the medium of which it is operated by the rider, and any well known or convenient means are used which ensure that, when the lever D has been moved into its extreme position either way, it may be retained in such position until purposely moved again. There is no novelty in the mechanism as thus far described with reference to the drawings, except in relation to the means of connection between the spindle B and the lever D, which we will now describe.

Rigid with the outer end of the spindle B is a head *b*, of elongated shape, having its sides parallel and its ends rounded to curves which are struck from the centre of the spindle. Within an enlarged end D^1 of the lever an opening *g* is formed of which the inner side d^1 is straight and the other side open. This opening is of a width, as seen in a side view of the lever, slightly less than the corresponding width of the head *b* of the spindle, and of a length to allow it to be passed as a turning fit over the ends of the head. Normally, one side of the head *b* comes against the inner side of the opening *g*, the outer side of the head standing out slightly beyond the end of the lever, and the lever is retained in such position in relation to the head by means of a keep E which is pressed flatly against the head by springs *f*, all as shewn by Figure 2. These

springs surround studs F which project from the enlarged end of the lever, and pass through holes of the keep, the springs abutting at their outer ends against nuts or collars of the studs and at their inner ends against the keep. The springs are under such tension that if the lever D is turned to move the clutch member A into engagement with either of the clutch members A^1, while the clutch member A is in such position in relation to the member A^1 with which it is to be engaged that the teeth of the clutch member A will readily enter between the teeth of such other clutch member, the side d^1 of the opening of the lever D will remain pressed by the force of the springs f flat against the corresponding side of the head b, and the keep E will remain pressed flat against the corresponding side of the head, the head and consequently the spindle B turning with the lever through the same angle through which the lever is turned; but if the teeth of the clutch member A are stopped against the teeth of the other clutch member, instead of entering between them, the increased force by which the lever is further turned in the same direction, and moved into its extreme position in such direction, will cause it to turn in relation to the head b, forcing the keep E back against the force of the springs f, as shewn by Figure 4, with the result that if the lever is held in the position into which it has been turned, the reaction of the springs f will turn the head b, and consequently the spindle B, and bring the clutch teeth of the member A between the clutch teeth of the other clutch member, immediately the teeth of these two members come into their relative positions which admit thereof, the head then assuming its normal position again in relation to the lever D.

The head b is made of a thickness from front to back greater than the thickness of the portion of the lever D within which it is fitted, and is provided with flanges b^1 which fit against opposite faces of such portion of the lever, thereby maintaining the lever and head in proper relative positions with one another sideways.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. Operating mechanism of the type set forth in the opening paragraph hereof, characterised by a block or the like, conveniently of elongated shape, which is rigid with one of two parts of the operating mechanism through both of which force is transmitted for the purpose of moving the sliding member of a dog clutch or other device, as aforesaid, two surfaces of the other of the said parts, one of which is movable in relation thereto, between which the said block fits in a manner which ensures that one of the said parts of the operating mechanism cannot turn in relation to the other without causing the said block to move the said surfaces further apart, and an elastic medium which prevents such surfaces from yielding apart unless the force tending to turn one of the said parts of the operating mechanism in relation to the other exceeds that which is required to move the said sliding member when its movement is not blocked, but when the sliding member is blocked allows such surfaces to yield apart against the elastic force.

2. The means by which a lever of clutch operating mechanism is connected with a spindle through which the motion of the lever is transmitted to a moving clutch member, substantially as described with reference to the drawings herewith.

Dated this 15th day of November, 1912.

STEPHEN WATKINS, SON & GROVES,
Chartered Patent Agents,
Royal London Buildings, Wolverhampton, and
170, Strand, London, W.C.,
Agents for the Applicants.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1913.

A.D. 1912. MAY 20 No. 11,886.
A. J. STEVENS & CO. & another's COMPLETE SPECIFICATION. (1 SHEET)

[This Drawing is a reproduction of the Original on a reduced scale.]

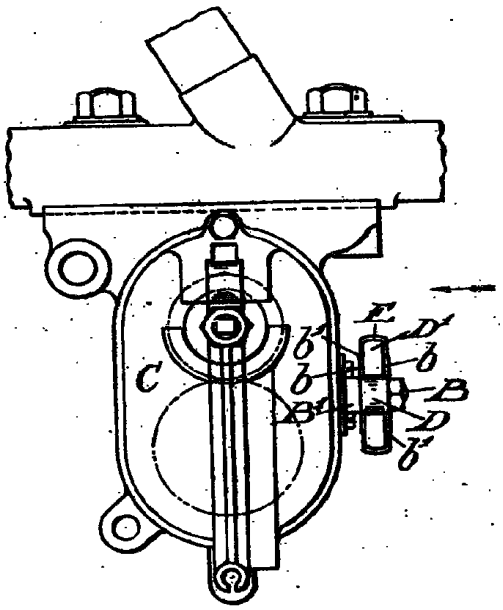

Fig. 1.

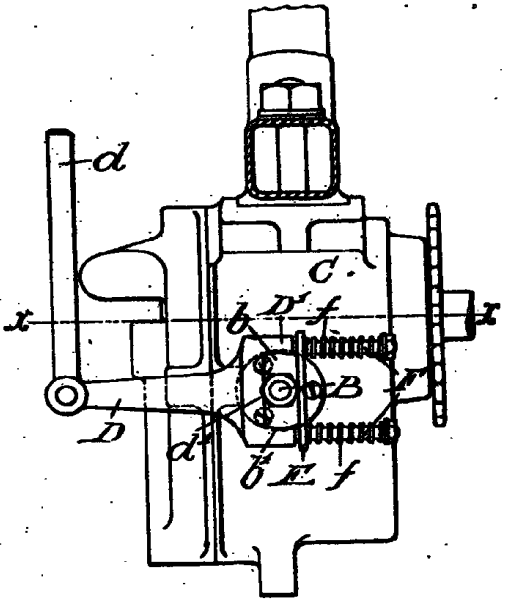

Fig. 2.

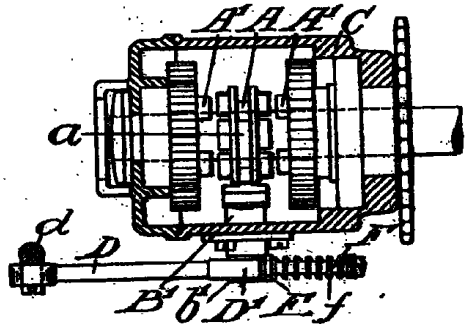

Fig. 3.

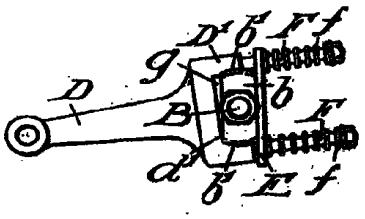

Fig. 4.

Malby & Sons, Photo-Litho.

N° 24,173 A.D. 1913

Date of Application, 25th Oct., 1913

Complete Specification Left, 27th Apr., 1914—Accepted, 1st Oct., 1914

PROVISIONAL SPECIFICATION.

Improvements in Lever-and-Quadrant Apparatus for use in Change-speed Mechanism, more particularly in Change-speed Mechanism for a Motor Cycle.

We, A. J. Stevens and Company, Limited, of Retreat Street, Wolverhampton, in the County of Stafford, Motor Cycle Manufacturers, and George Stevens, of the same address, Managing Director of the said Company, do hereby declare the nature of this invention to be as follows:—

This invention relates to lever-and-quadrant mechanism by means of which an operator effects changes of speed, and, while it has wider application, is particularly intended for application to a motor cycle.

According to the main feature of this invention, the quadrant is formed double-sided, leaving a space between the side bars which is of constant width, as is usual, and the lever passes through between such bars, as is also usual; but, the portion of the lever which extends from near its pivot axis up to about the top or outer periphery of the quadrant, is formed as a flat spring which allows it to be sprung sideways, or the lever is otherwise adapted to be sprung sideways in both directions, and the portion of the lever which passes between the quadrant bars is narrower than the width between them, and the lever is formed or provided with sideway projections which normally pass over both the quadrant bars, but may be either of them moved from across the corresponding bar by springing the lever sideways. The upper or outer edges of the side bars of the quadrant are formed with projections which leave gaps between them, those of one bar being so related to those of the other bar that, in certain positions of the lever, if it is left quite free, its opposite projections will be one of them in front of a projection of one of the bars and behind a projection of the other bar, thus preventing the lever from being moved until it has first been sprung sideways to disengage one of its projections from the projection of the corresponding bar. When the lever has thus been sprung sideways, it may be moved along between the bars with its projection which has been disengaged from the projection of the corresponding bar running along the inner side of the projection of the bar while its other projection runs along a gap of the other bar, until the projection of the lever which runs along the gap is stopped against a shoulder of the corresponding bar, and then the projection which has been running along the inside of the projection of the other bar will spring in across the opposite end of such projection of the bar and prevent the lever from returning until it has been first sprung out again to clear its projection from such projection of the bar. The lever will thus have been moved, from a position in which it has ensured that one of the speeds will be in gear, into a position which ensures that another speed will be in gear, and it is maintained in each of these positions until the bar is sprung sideways as described. If it is required to move the lever back again from the one position to the other, one of its sideway projections is sprung out from the front of the projection of the bar which has retained the lever in the position to which it has been moved, the lever is then moved back until the other projection

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thereof comes against the rearward shoulder of the gap of the corresponding bar, and the other sideway projection of the lever then springs in at the back of the projection of the corresponding bar. If a further speed is required, this may be obtained by extending the quadrant bars in a direction beyond the position into which the lever has been moved as last described, and forming the extensions so that from the mid-position one way the quadrant is reversely shaped to the other way; and if it is desired, as will usually be the case, that there shall be a neutral position in which the lever may be securely held until it is desired to move it therefrom, a notch may be formed in a projection of one of the bars, conveniently between the positions corresponding to the intermediate and lowest speeds, when three speeds are provided for, into which one of the projections of the lever will spring if the lever is moved sufficiently slowly along the part of the bar where this notch is formed. There might, of course, be any number of speeds provided for, by forming the side bars of the quadrant with the required number of projections and gaps, the projections and gaps of the one bar being related to those of the other in the manner already indicated.

The expressions "front", "back" and "rearward", may be read as having the opposite meanings, and are used simply as indicating relations.

According to a modification of the invention, the projections of the lever may be formed with a slider which may be lifted, such as in the manner of lifting the slider of ordinary lever-and-quadrant apparatus, clear of the projections of the bars, so that, if at any time desired, the lever can be moved right over from one extreme position to the other without need for moving it sideways to clear any projections thereof, being then used as in the ordinary lever-and-quadrant apparatus.

The modification described in the last preceding paragraph, for application to the lever-and-quadrant apparatus described as forming the main feature of the invention, is applicable to the lever-and-quadrant apparatus in which the space between the side bars of the quadrant is cranked at a point of its length and is formed with sideway but reverse notches at its opposite ends, respectively, and in which the lever cannot be moved clear from end to end of the quadrant but must be sprung sideways at about the middle thereof. In applying the said modification to this apparatus, the sideway projections or the portions of the lever which engage with shoulders of the quadrant, to hold the lever in different positions, are carried by a slider which may be lifted clear of the quadrant and will then allow the lever to be moved clear through from one end of the quadrant to the other, the lever being retained either in the mid-position, if desired, or in either of its end positions, or in any position at which there is a suitable notch, by allowing the slider to fall again within the quadrant.

Dated this 24th day of October, 1913.

STEPHEN WATKINS, SON & GROVES,
Chartered Patent Agents,
Royal London Buildings, Wolverhampton, and
170, Strand, London, W.C.,
Agents for the Applicants.

COMPLETE SPECIFICATION.

Improvements in Lever-and-Quadrant Apparatus for use in Change-speed Mechanism, more particularly in Change-speed Mechanism for a Motor Cycle.

We, A. J. Stevens and Company, Limited, of Retreat Street, Wolverhampton, in the County of Stafford, Motor Cycle Manufacturers, and George Stevens,

of the same address, Managing Director of the said Company, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to lever-and-quadrant apparatus by means of which an operator effects changes of speed, and, while it has wider application, is particularly intended for application to a motor cycle.

The main feature of this invention is illustrated by Figures 1, 2 and 3 of the drawings, herewith, of which:—

Figure 1 shows a side elevation of lever-and-quadrant apparatus for effecting changes of speed, the particular apparatus illustrated being specially devised for use with a motor cycle.

Figure 2 is an edge or end view of the apparatus shown by Figure 1, and

Figure 3 is a plan of such apparatus, the lever being shown as cut off in the plane of the broken line *x x* of Figure 1.

The quadrant A is formed double-sided, leaving a space between the side bars *a* which is of constant width as is usual, and the lever B passes through between such bars, as is also usual; but, the portion *b* of the lever which extends from near its pivot axis up to about the top or outer periphery of the quadrant A, is formed as a flat spring which allows it to be sprung sideways, or the lever may be otherwise adapted to be sprung sideways in both directions, and the space between the quadrant bars *a* is of such width as to allow the lever B to be sprung sideways in both directions. The lever is formed or provided with sideway projections b^1 which normally, that is to say when the lever is in its mid-position sideways, pass over the quadrant bars *a* respectively, and by springing the lever sideways either of these projections may be moved from across the corresponding bar. The upper or outer edge of the inner bar *a* is formed with a shoulder a^1 and with a shoulder a^2, which leave between them a long gap a^3, the shoulder a^2 and the main length of the bottom of the gap a^3 being indicated by broken lines Figure 1; and the upper or outer edge of the outer bar *a* has a long projection a^4 formed thereupon which provides a shoulder a^5 at one end and a shoulder a^6 at the other end. The shoulders a^1 and a^5 face in opposite directions, as do also the shoulders a^2 and a^6, and when the lever B is in the position shown, one of its projections b^1 comes across the face of the shoulder a^2 and the other projection b^1 across the face of the shoulder a^6, the lever thus being held from moving along the quadrant. If it is desired to move the lever towards the shoulder a^1, the lever is sprung sideways to clear its outer projection b^1 from the shoulder a^6, and then the lever may be moved along with the projection b^1 which has just been cleared from the shoulder moving along inside the outer quadrant bar *a* while the other projection b^1 moves along within the gap a^3. Immediately the inner projection b^1 comes against the shoulder a^1 the lever is in such position that, if allowed to do so, it will automatically spring out sideways and bring its outer projection b^1 across the shoulder a^5, the inner projection b^1 still remaining engaged with the shoulder a^1. The lever then cannot move back again until it has been first sprung sideways out of engagement with the shoulder a^5, but when this has been done the lever may be moved back again until its inner projection b^1 comes against the shoulder a^2, when if the lever is released its outer projection b^1 will again come across the shoulder a^6 while its inner projection b^1 remains engaged with the shoulder a^2. The lever may be brought into one of the positions indicated to bring in one speed, and may be brought into the other position indicated to bring in a higher or lower speed. The bars *a* prevent the lever from being sprung sideways unduly in either direction.

Thus far the invention has been described in its simplest form, as adapted for two speeds only, in which case, however, a notch for neutral position should be formed in the projection a^4. The apparatus illustrated, however, is shown to

be constructed for three speeds and a neutral position. For the extra speed, the portions of the quadrant bars *a* which extend at the opposite sides, respectively, of the lever B, when the same is in its mid-position, are correspondingly but reversely formed at their upper or outer edges, that is to say a shoulder a^7 is formed near the outer end of the outer bar *a*, leaving a gap a^8 between itself and the shoulder a^6; and a projection a^9 is formed upon the inner bar *a* which extends from a shoulder a^{10} to the shoulder a^3. Thus, if, when the lever B is in the position shown it is sprung sideways to disengage its inner projection b^1 from the shoulder a^3, it may be moved in the direction of the shoulder a^7, its inner projection b^1 moving along the inner face of the projection a^9 and its outer projection b^1 moving along the gap a^8 between the shoulders a^6 and a^7, and when its outer projection b^1 comes against the shoulder a^7, a further speed having been thereby brought in, the lever is in such position that, if it is then released, it will spring back and bring its inner projection b^1 across the shoulder a^{10}, the outer projection b^1 remaining in engagement with the shoulder a^7. If, as will usually be desired, it is required that there shall be a neutral position for the lever in which no speed is brought in, a gap a^{11} may be formed in the projection a^9, and the lever may be allowed to spring in and engage its inner projection b^1 with this gap, some care being required not to move the lever so rapidly as to prevent its projection engaging with the gap, whereas for the three speeds no care is required, as when the lever has been disengaged to move it from one speed it will automatically engage with the next, however quickly it may be moved, as will be obvious.

It will be obvious that the described formation of the upper or outer edges of the quadrant bars may be reversed, that is to say the inner bar may be formed as the outer has been described and the outer be formed as the inner has been described. Moreover, in lieu of the lever being stopped in its extreme positions by coming against a shoulder of the upper edge of one of the quadrant bars, it may be stopped against any suitable abutment.

There might, of course, be any number of speeds provided for, by forming the quadrant bars with the required number of projections and gaps, the projections and gaps of the one bar being related to those of the other in the manner already indicated. If desired, one of the extreme positions of the lever may represent the reverse drive, if the apparatus is used in circumstances in which a reverse drive is required.

According to a modification of the invention, the projections of the lever may be formed with a slider which may be lifted, such as in the manner of lifting the slider of ordinary lever-and-quadrant apparatus, clear of the projections of the bars, so that, if at any time desired, the lever can be moved right over from one extreme position to the other without need for moving it sideways to clear any projections thereof, being then used as in the ordinary lever-and-quadrant apparatus. Any convenient means for raising the projections of the lever clear of the projections of the quadrant may be adopted, such as those illustrated by Figures 4 and 5 of the drawings, herewith, of which:—

Figure 4 is a front view of a lever, and

Figure 5 an edge view thereof.

In both these views the lower portion of the lever is broken away.

The spring portion of the lever is formed of two flat spring plates *d* d^1 which overlap one another for the greater portion of their lengths. The plate *d* is fixed to the portion of the lever with which the projections b^1 are formed, and the plate d^1 is fixed to the portion of the lever which is carried by the pivot pin. Projections d^2, which are riveted to the plate d^1, fit within guide slots d^3 of the plate *d*, and the two plates are held together, with moderate friction between them, by means of a pin d^4 which passes through a slot d^5 of the plate d^1 and is screwed into the plate *d*. The portion of the lever with which the projections b^1 are formed may, consequently, be raised, such as when the lever is in one of its extreme positions, to clear its projections from the projections of the

quadrant bars, and may be then lowered down when the lever has been moved, such as right over into its other extreme position.

The modification described as applicable to the lever-and-quadrant apparatus which forms the main feature of the invention, is applicable to lever-and-quadrant apparatus of the type shown in plan view by Figure 6, in which the space between the side bars *e* of the quadrant is cranked at a point in its length and is formed with reversed shoulders e^1 at its opposite ends, respectively, and in which the lever B cannot be moved clear from end to end of the quadrant, but must be sprung sideways at about the middle thereof to enable it to be moved along one or other of the spaces e^2, as may be required, the lever being held in its mid-position by the engagement of a sideway projection b^1 with a shoulder e^3 of the quadrant and the engagement of another projection b^1 with a shoulder e^4 of the quadrant which faces the opposite way to the shoulder e^3, and being prevented from returning from either of its extreme positions, as required, by the engagement of one or other of its sideway projections b^1 with one or other of the shoulders e^1. In this type of lever-and-quadrant apparatus also, by arranging that the projections b^1 of the lever can be raised clear of the upper edges of the bars *e*, the lever can be readily moved clear over from its extreme position in one direction to its extreme position in the opposite direction. e^5 indicates the notch which is formed for retaining the lever in its neutral position.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. In lever-and-quadrant apparatus for use in change-speed mechanism, more particularly for a motor cycle, in which the space between the quadrant bars through which the lever passes is of the same width throughout and the sides thereof straight, as seen in plan view, the lever constructed to allow of it being sprung sideways and itself normally in engagement with a shoulder which stands upwards from the upper or outer edge of one of the quadrant bars and prevents the lever from moving back from the position into which it has been moved to engage it with such shoulder, from which however it may be disengaged by springing it sideways.

2. In lever-and-quadrant apparatus as in Claim 1, the lever constructed to allow of it being sprung sideways in both directions and carrying two sideway projections both of which must normally be over the upper or outer edges respectively of the side bars of the quadrant, and either of which can be withdrawn from over the corresponding quadrant bar by springing the handle sideways, and the upper or outer edges of the bars provided with shoulders to retain the lever in different positions.

3. Lever-and-quadrant apparatus as in Claim 2, in which in moving the lever from one position to another, it is first sprung sideways to clear one of its projections from a shoulder of the quadrant and is then moved along with the other projection passing along a gap of the quadrant until it comes against a shoulder thereof, when the lever may spring back and bring the first-mentioned projection across a shoulder of the corresponding side of the quadrant while the other projection remains in engagement with the shoulder against which it has been brought.

4. In lever-and-quadrant apparatus for use in change-speed mechanism, in which the lever carries two sideway projections, one or other of which can, by springing the lever sideways, be cleared from a shoulder to allow the lever to be moved from one position to another, the said projections adapted to be raised by the operator to bring them clear of any shoulders of the quadrant and allow the lever to be moved over from one extreme position to the other without requiring to be sprung sideways in either direction.

5. Lever-and-quadrant apparatus for use in change-speed mechanism, substantially as described with reference to Figures 1, 2, and 3 of the drawings herewith.

Dated this 25th day of April, 1914.

STEPHEN WATKINS, SON & GROVES,
Chartered Patent Agents,
Metropolitan Chambers, Lichfield Street, Wolverhampton, and
Aldwych Chambers, 170, Strand, London, W.C.,
Agents for the Applicants.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1914.

A.D. 1913. Oct. 25. № 24,173.

A. J. STEVENS & CO. & *another's* Complete Specification.

(2 SHEETS)

SHEET 1

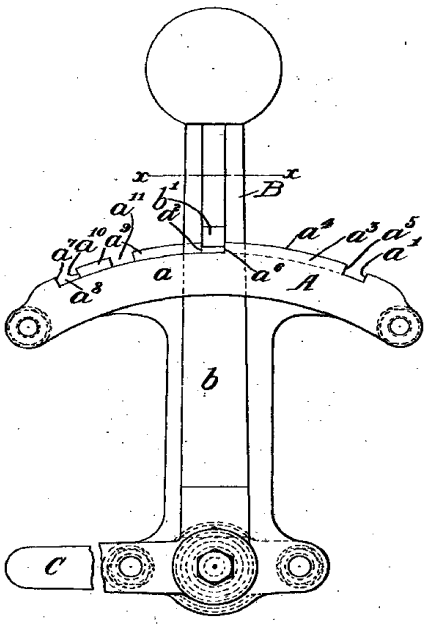


Fig. 1.

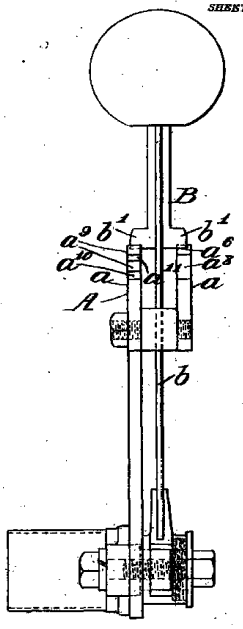


Fig. 2.

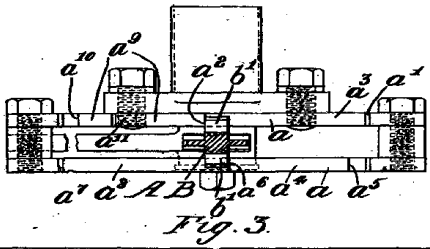


Fig. 3.

SHEET 2.

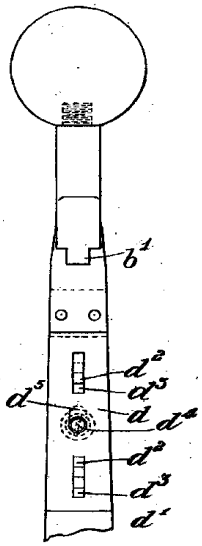


Fig. 4.

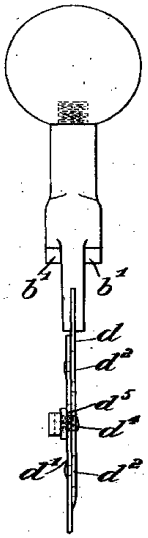


Fig. 5.

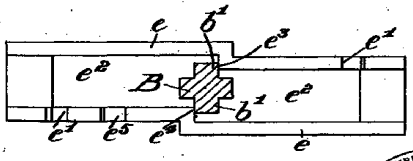


Fig. 6.

Malby & Sons, Photo-Litho

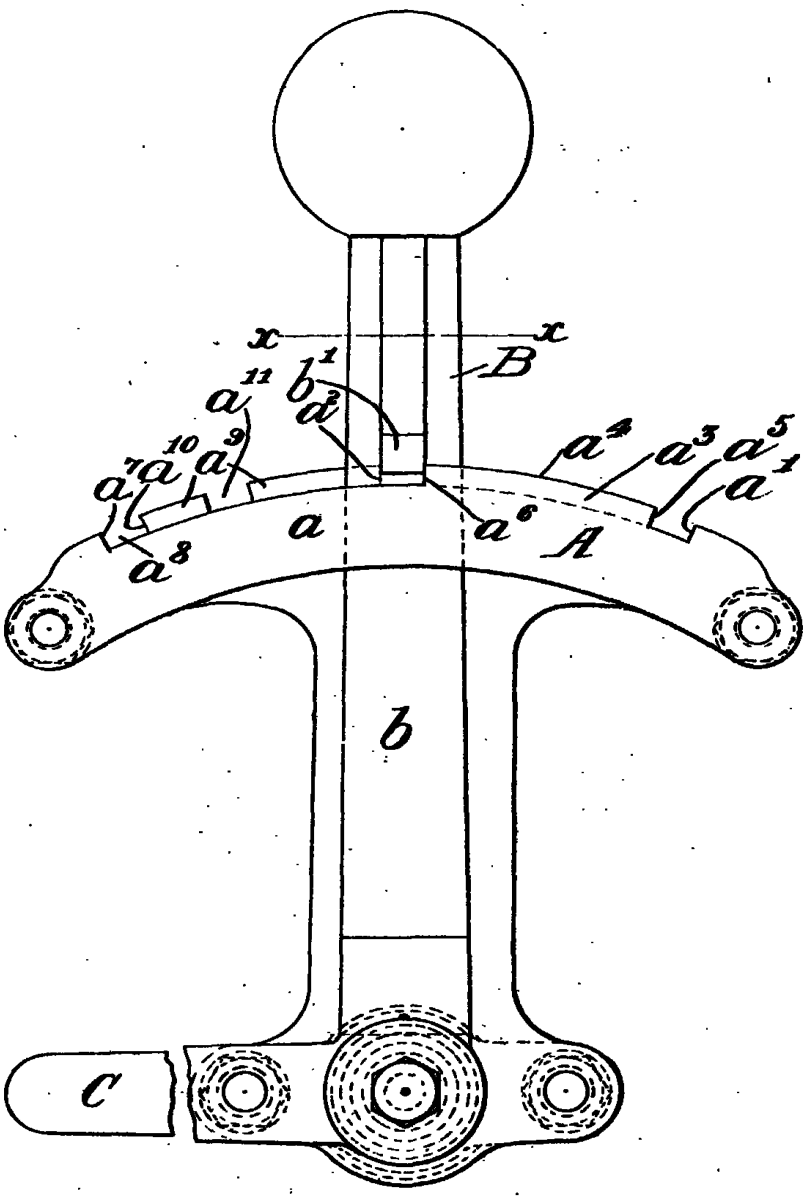


Fig. 1.

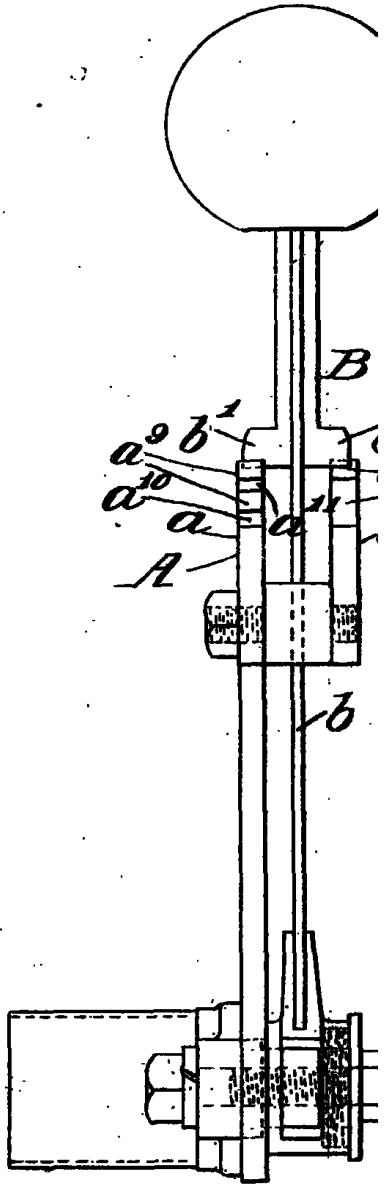


Fig. 2.

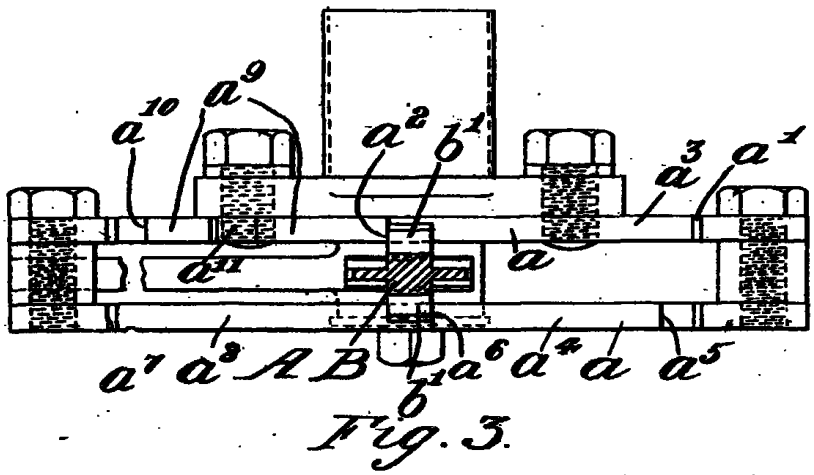


Fig. 3.

SHEET 1

SHEET 2.

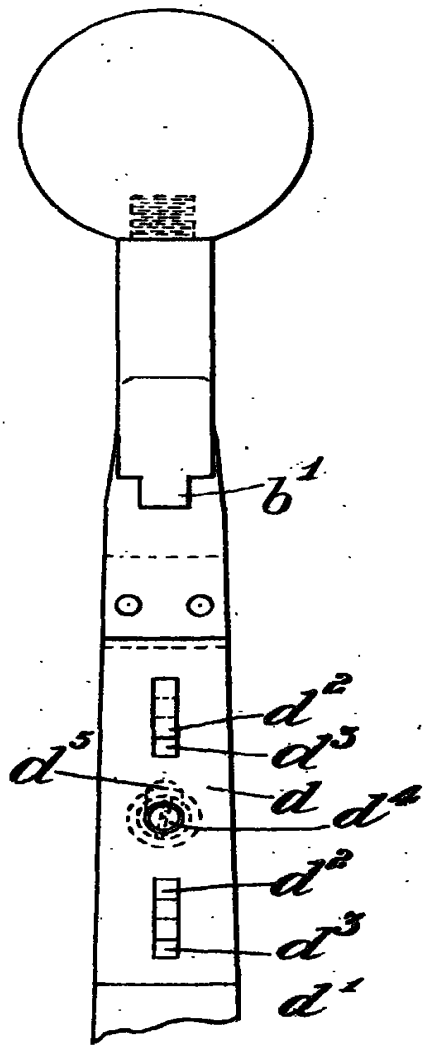


Fig. 4.

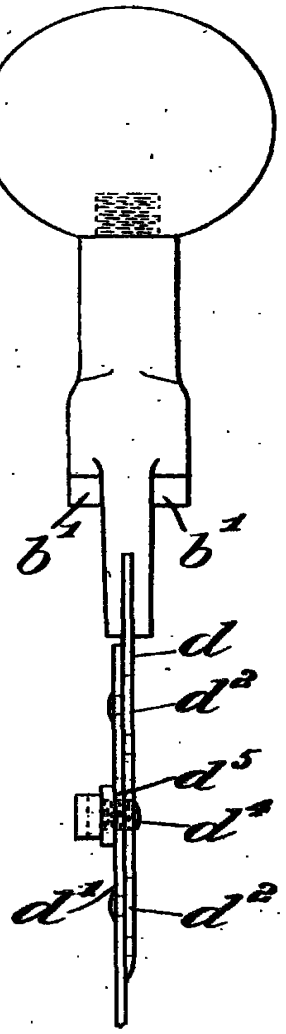


Fig. 5.

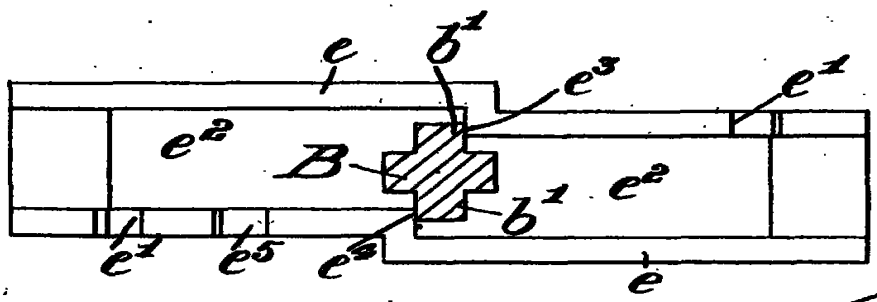


Fig. 6.

Malby & Sons, Photo-Litho

N° 26,015 A.D. 1912

Date of Application, 13th Nov., 1912

Complete Specification Left, 26th Apr., 1913—Accepted, 13th Nov., 1913

PROVISIONAL SPECIFICATION.

Improvements relating to Liquid Fuel Tanks for use with Motor Cycles and other Automobiles.

We, A. J. STEVENS AND COMPANY, LIMITED, of Retreat Street, Wolverhampton, in the County of Stafford, Motor Cycle Manufacturers, and HARRY STEVENS, of the same address, a Joint Managing Director of the said Company, do hereby declare the nature of this invention to be as follows:—

A cap having a glazed sight opening has been introduced for closing the filling opening of a petrol tank for a motor cycle, with a view to enabling the rider to observe, while the cycle is travelling, the height of the petrol within the tank, without need for removing the cap. As the interior of the tank is more or less dark, it is not always easy to observe correctly the height of the petrol within the tank, especially as there is a considerable wash of the petrol to-and-fro within the tank, whilst travelling, which causes a considerable variation in its apparent level as seen through the cap. Moreover, the wash of the liquid tends to splash out some of it through the vent hole which is usually provided in the cap.

Now, this invention has for its main object means, for use in connection with a cap of this type, which will greatly facilitate the correct observation of the level of liquid fuel within a tank of a motor cycle, and will lessen the tendency of the wash of the liquid to alter the apparent height thereof as seen through the cap, and prevent or lessen the splash of liquid through the vent hole; and this object is effected, according to this invention, by providing a sheet metal cylinder which is flanged at its upper end to rest within the mounting which forms the mouth of the filling opening and extends to nearly the bottom of the tank, and is perforated through the wall thereof, preferably near to the lower end, and preferably also through the bottom to allow it to readily drain as it is lifted out, and the inner surface of this cylinder is rendered bright such as by nickel-plating or the like, whereby light is readily reflected from above within the interior of the cylinder, and a float of cork or other suitable substance is placed within the cylinder and rests upon the top of the liquid, the light from the wall of the cylinder being readily reflected on to the float and making it clearly visible.

For the purpose of lessening the tendency of the wash of the liquid within the tank to alter the height of the liquid within the cylinder, any perforations through the wall of the cylinder should be either low down therein or at one side only, but in any case the perforations may be so small in area, compared with the area of the wall, that the wash of the liquid will exert comparatively little influence upon the portion of it which is within the cylinder.

The invention is applicable to liquid fuel tanks for automobiles generally, for the purpose of enabling the height of the liquid therein to be readily observed without removing the cap, as the character of the interior surface of

[*Price 8d.*]

the cylinder will ensure reflection of light upon a float which rests upon a surface of the liquid within the cylinder.

Dated this 12th day of November, 1912.

STEPHEN WATKINS, SON & GROVES,
Chartered Patent Agents,
Royal London Buildings, Wolverhampton, and
170, Strand, London, W.C.,
Agents for the Applicants.

COMPLETE SPECIFICATION.

Improvements relating to Liquid Fuel Tanks for use with Motor Cycles and other Automobiles.

We, A. J. Stevens and Company, Limited, of Retreat Street, Wolverhampton, in the County of Stafford, Motor Cycle Manufacturers, and Harry Stevens, of the same address, a Joint Managing Director of the said Company, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to appliances which are used with filling openings of liquid fuel tanks of motor cycles and other automobiles through which the liquid is strained as it flows out therethrough into the interiors of the tanks; and has for its object to provide such appliances in a form in which, while a bright interior surface reflects the light in a known manner, suitable provision is made for the proper straining of the liquid, and, if desired, a float provided upon which the light is reflected.

In order that the invention may be readily understood we will describe the same as applied to a liquid fuel tank for a motor bicycle, which is illustrated by the drawings herewith, of which:—

Figure 1 shews, mainly in longitudinal section, the liquid fuel tank, and in vertical section a strainer cylinder, the mounting within which it is fitted, a glazed cap which closes the filling opening which is formed through such mounting, and the float, and:

Figure 2 is a plan view of a portion of the tank and of the mounting and cylinder, the glazed cap having been removed from the mounting. This view shews also a portion of the float, the remaining portion being broken away to expose a portion of the bottom of the cylinder.

A is the tank, B the mounting through which the filling opening is formed, and C the glazed cap, all of which are of a well-known type. D is the cylinder, which (as illustrated) is of sheet metal, and E a float therein which may be, conveniently, a plain flat disc of cork. The cylinder extends to near the bottom of the tank, as shewn, and its upper end is formed with a portion d of enlarged diameter which is just an easy fit within a portion of enlarged diameter of the opening through the mounting B and leaves a shoulder d^1 between itself and the upper end of the main length of the cylinder. When the cylinder has been passed down through the mounting B, the shoulder d^1 of the cylinder rests upon the shoulder of the interior of the mounting B which is between the portions of larger and smaller diameter of the opening through the mounting. b, (Figure 2) indicates the usual vent groove which is cut across the screw-thread which surrounds the mounting, and the broken lines b^1 (Figure 2) indicate a small hole which is drilled from the groove through the wall of the mounting and thus air can escape from the tank between the portion of enlarged diameter

of the cylinder and the mounting and out through the hole b^1 into the groove b and thence into the outside atmosphere. A strip of fine metal gauze d^2 runs down one side of the cylinder D, closing a slot which has been formed through such side, and through this gauze liquid fuel can pass between the tank and the interior of the cylinder; and the bottom d^3 of the cylinder is formed of fine wire gauze. The inner face of the wall of the cylinder is made bright, such as by nickel plating, and, consequently, light passing through the glass c of the screw-cap C is readily reflected from the bright surface of the wall of the cylinder on to the float E (or on to the surface of the liquid within the cylinder, if the float is omitted) and the height of the liquid within the tank can, consequently, be readily seen. The gauze strip d^2, while it readily allows of liquid flowing between the tank and the cylinder, prevents any wash of the liquid within the tank from affecting the level of the liquid within the cylinder to an extent which will substantially mislead the observer as to the normal level, at the time, of the liquid within the tank.

While it is preferred to construct the strainer as a cylinder, it may be of other tubular shape which is parallel-sided longitudinally.

The invention is applicable to liquid fuel tanks for automobiles generally.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. For use with a liquid fuel tank of a motor cycle or other automobile, a cylinder (or other tubular device which is parallel-sided longitudinally) which is constantly carried by the filling opening mounting which is permanently fixed to the tank and is fitted with a cap or cover, said cylinder extending downwards to near the bottom of the tank, and presenting at the interior surface thereof a reflecting area which extends throughout the entire, or the greater portion of the, depth of the cylinder, and is exposed to view throughout substantially its whole depth, through a glazed cap or through the opening of the mounting when the same is uncovered, and presenting at the remainder of such interior surface wire gauze.

2. The invention as in Claim 1, characterised by a vertical slot through one side of the wall of the cylinder and a strip of wire gauze which closes the slot, for the purpose shown.

3. In combination with the cylinder referred to in Claim 1, or Claim 2, a flat topped float therein which is just of sufficiently less diameter than the interior of the cylinder (or other tubular device which is parallel-sided longitudinally) to ensure that it will readily rise and fall with the level of the liquid therein and upon which light from the wall of the cylinder is reflected.

4. The tubular device which passes down from the filling opening of a liquid fuel tank of a motor cycle or other automobile into the interior of such tank, as described and shewn by the drawings herewith.

Dated this 25th day of April, 1913.

STEPHEN WATKINS, SON & GROVES,
Chartered Patent Agents,
Royal London Buildings, Wolverhampton, and
170, Strand, London, W.C.,
Agents for the Applicants.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1913.

A.D. 1912. Nov. 13. N° 26,015.

A. J. STEVENS & CO. & *another's* COMPLETE SPECIFICATION. *(1 SHEET)*

[This Drawing is a reproduction of the Original on a reduced scale.]

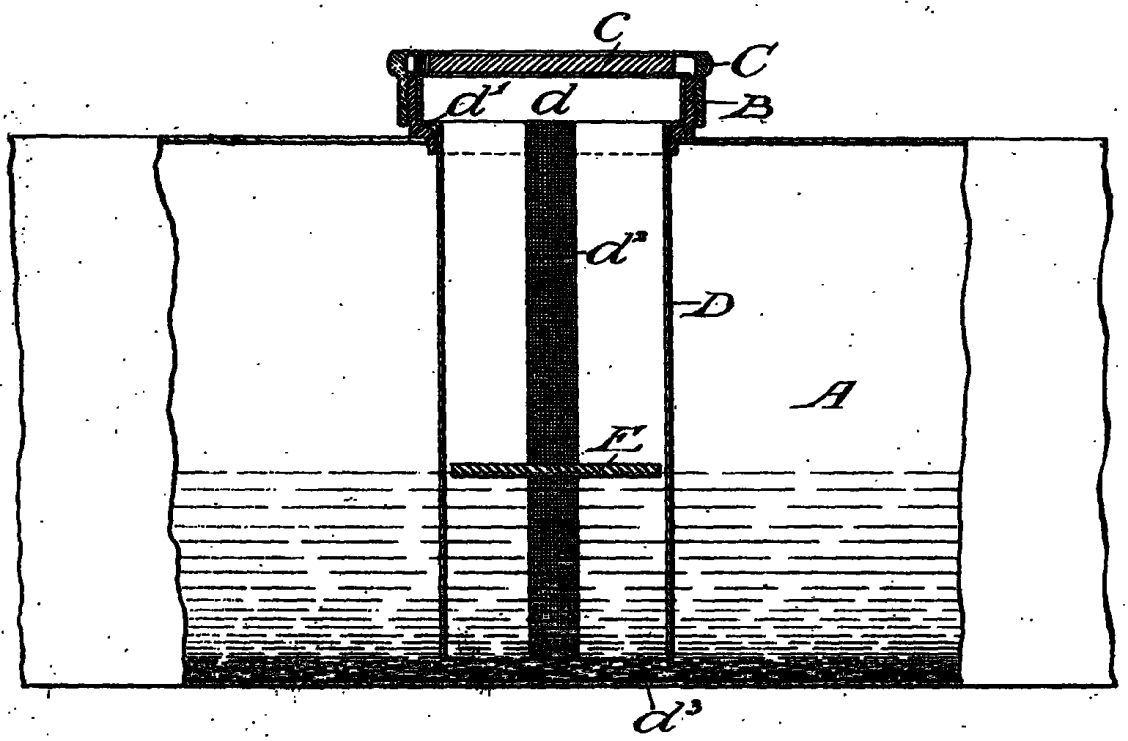


Fig. 1.

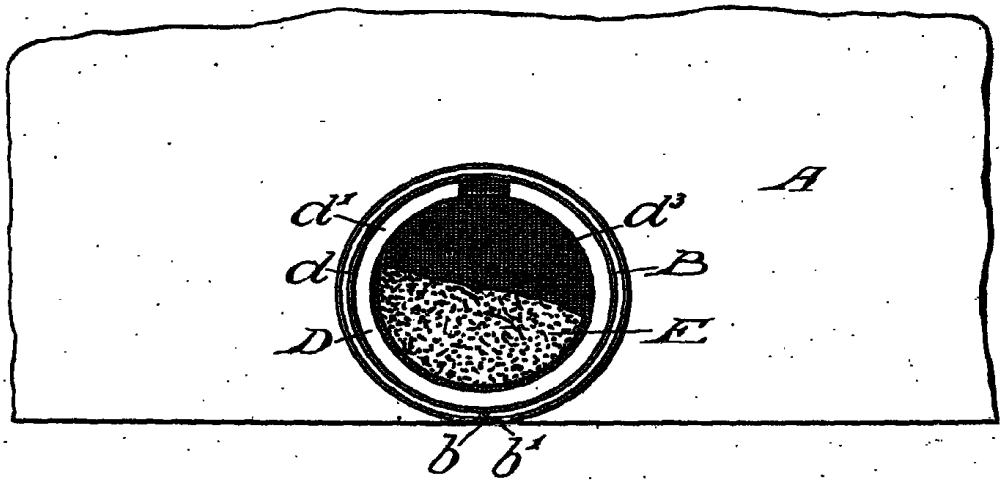


Fig. 2.

Malby&Sons, Photo-Litho.

139,331

PATENT SPECIFICATION

Application Date, Mar. 31, 1919. No. 8107/19.
Complete Left, Sept. 26, 1919.
Complete Accepted, Mar. 4, 1920.

PROVISIONAL SPECIFICATION.

Improvements in or relating to Footboards for Motor Cycles and the like.

We, A. J. STEVENS & COMPANY (1914), LIMITED, Manufacturers, and ALBERT JOHN STEVENS, Engineer, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in or relating to foot-boards of motor cycles and the like.

By these improvements a spring foot-board is obtained which absorbs or minimises shocks or vibration which would otherwise be transmitted to the riders feet, which foot-board is very simple in construction and does not entail the need of a multiplicity of parts, it being in fact practically as simple as an ordinary foot-board.

According to this invention the foot-board is formed of rubber suitably supported and comprises a series of projections which act as compression springs.

In a convenient embodiment the foot-board comprises a conveniently, wooden base plate and a rubber member supported thereby. This rubber member has a thin flange projecting from its lower surface and therefore forms a recess into which the wooden plate fits, the two members being fastened together by a suitable adhesive material.

The rubber member has projecting from the upper surface a series of truncated pyramids which are of a suitable height (in this example one half inch) and other dimensions to act as compression springs. An outide flange also projects from the upper surface of the rubber member the height being preferably equal to the height of the said truncated pyramids, the height being slightly increased at the rounded rear end which receives the riders heel.

The above foot-board forms an efficient resilient support for the foot, which minimises slipping and which presents a very neat appearance.

Dated this 27th day of March, 1919.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

[*Price 6d.*]

COMPLETE SPECIFICATION.

Improvements in or relating to Footboards for Motor Cycles and the like.

We, A. J. STEVENS & COMPANY (1914), LIMITED, Manufacturers, and ALBERT JOHN STEVENS, Engineer, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises certain improvements in or relating to the footboards of motor cycles. The rider's feet are supported by the footboards, and it is found that shocks and vibrations are transmitted to the rider's feet. To overcome this objection the footboards have been proposed which are spring mounted to the motor cycle frame. By the present improvements a spring footboard is obtained which absorbs or minimises shocks or vibration which would otherwise be transmitted to the feet of the rider, and which is very simple in construction and does not entail the need of a multiplicity of parts, it being in fact practically as simple as an ordinary footboard.

According to this invention the footboard is formed of rubber suitably supported, and comprises a series of projections which act as compression springs.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a plan view of a footboard constructed according to this invention.

Figure 2 is a side elevation, and

Figure 3 is a section on line X X of Figure 1.

In a convenient embodiment the footboard comprises a, conveniently, wooden base plate 1 and a rubber member 2 supported thereby. This rubber member has a thin flange 3 projecting from its lower surface and therefore forms a recess into which the wooden plate 1 fits, the two members being fastened together by a suitably adhesive material, such as croid glue.

The rubber member has projecting from the upper surface a series of truncated pyramids 4 which are of a suitable height (in this example one half inch) and other dimenions to act as compression springs. An outside flange 5 also projects from the upper surface of the rubber member, the height being preferably equal to the height of the said truncated pyramids, the height being slightly increased at the rounded rear end 6, which receives the heel of the rider. If desired a raised part may be provided in the centre, of the member 2, as shewn by Figure 1, for receiving the maker's name.

The above footboard forms an efficient resilient support for the foot, which minimises slipping and which presents a very neat appearance.

We are aware that rubber mats having projecting pyramids or ridges have previously been proposed for carriage and other steps to prevent slipping, but have not been designed, adapted or utilised for absorbing vibration or shocks.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A footboard for motor cycles, having a series of rubber projections which form compression springs, thus giving a resilient support to the foot, substantially as set forth.

2. A foot-board for motor cycles comprising a suitably supported rubber

member having a series of rubber projections forming compression springs, and having a rubber beading therearound, substantially as set forth.

3. A foot-board for motor cycles as set forth in the preceding claims, in which the rubber member has a depending flange forming a recess for the wooden or other support, substantially as set forth.

4. A foot-board for motor cycles, substantially as set forth or illustrated.

Dated this 25th day of September, 1919.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
Midland Chambers, 3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1920.

[This Drawing is a reproduction of the Original on a reduced scale.]

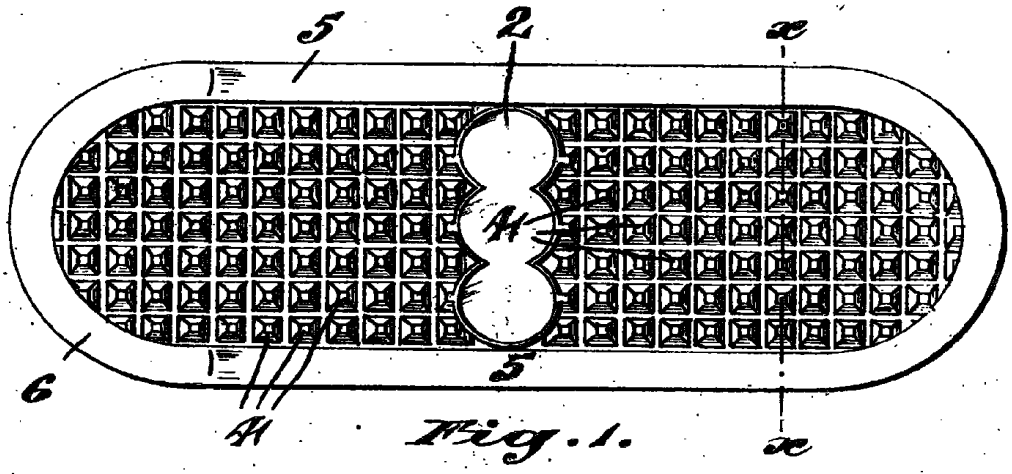


Fig. 1.

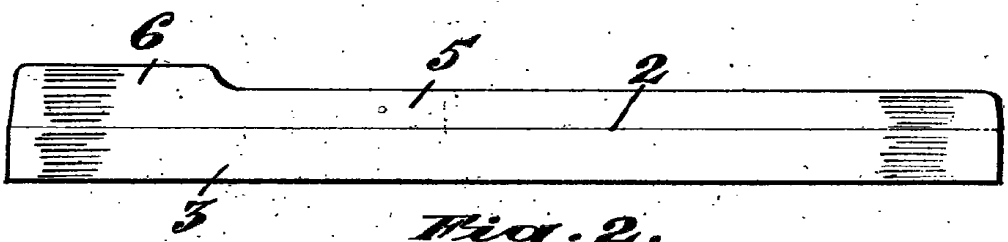


Fig. 2.

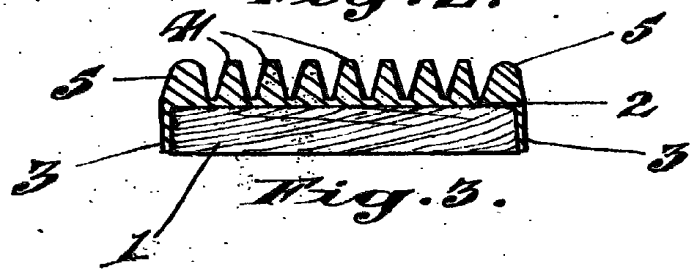


Fig. 3.

Malby & Sons, Photo-Litho.

PATENT SPECIFICATION

Application Date: July 11, 1919. No. 17,364/19.

144,894

Complete Left: Jan. 12, 1920.

Complete Accepted: June 24, 1920.

PROVISIONAL SPECIFICATION.

Improvements in or relating to Motor Vehicles.

We, A. J. STEVENS AND COMPANY (1914) LIMITED, Manufacturers, and HARRY STEVENS, Engineer, both of Graisley House, Penn Road, Wolverhampton, Staffordshire, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in or relating to motor vehicles, and relates more particularly to three wheeled vehicles.

According to the present improvements the chassis comprises two longitudinal members which are connected at the rear end by a transverse member and also connected towards the front end by a transverse member. These two transverse members are connected by a central longitudinal tube, the flanged ends of the tube being bolted to the transverse members. By the incorporation of this tube a light and rigid frame is obtained.

The forward transverse member conveniently comprises a metal plate strengthened by rib members, and is connected to the longitudinal members by bolts which pass through side webs. These bolts also conveniently pass through the web of an L-shaped bracket required to be secured to the outer side of each longitudinal member of the chassis. The front axle, carrying the two front steering wheels, are connected to the chassis by laminated springs, the rear of such springs being bolted to the said L-shaped brackets. The springs project rearwards of these L-shaped brackets and are bolted to a second L-shaped bracket secured to the longitudinal member. The rear driving wheel is carried by two laminated springs. The centres of these springs are pivotted on pins carried by the chassis, the forward ends being connected to the inner side of the longitudinal chassis members by means of links. The aforementioned rear transverse member is raised from the longitudinal member by means of blocks, such transverse member being fixed in position by means of bolts which pass vertically through horizontal flanges of the transverse member and through the said blocks and longitudinal chassis member. The aforementioned pivot pins for the laminated springs are carried by said blocks and depending brackets carried by the transverse member on the inner side of the longitudinal members.

The engine is mounted on the longitudinal chassis members forwards of the front transverse member and the main driving shaft is carried longitudinally of the chassis and underneath or above the central tube, to the gear box located conveniently towards the rear of the chassis. The gear box is supported from the longitudinal chassis members, and the support for the gear box may be utilised as the pivot for the radius rods connected to the rear driving wheel. This driving wheel is driven from the gear box by chain drive.

Dated this 9th day of July, 1919.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham,

COMPLETE SPECIFICATION.

Improvements in or relating to Motor Vehicles.

We, A. J. STEVENS AND COMPANY (1914) LIMITED, Manufacturers, and HARRY STEVENS, Engineer, both of Graisley House, Penn Road, Wolverhampton, Staffordshire, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises certain im-

[Price 1/-]

provements in or relating to motor vehicles of the type having a framework which is supported by means of springs from the front and rear road wheels and having a central longitudinal tube connected to transverse members located at the front and rear of the framework. A framework of this type has previously been proposed comprising a centre longitudinal tube joined at its backward end to a transversely extending gear box and at its forward end to transversely extending members, two side longitudinal members being carried by these transversely extending members and the sides of the gear box.

According to the present improvements the frame comprises two side longitudinal members which support the gear box by means of transverse members or supports, whilst a central longitudinal tube is not connected to the gear box but to transverse members spanning the longitudinal members towards the front and rear ends, the support for the central tube being located above the gear box supports. The engine is carried by transverse members at the forward end of the framework to one of which members the central longitudinal tube is connected, whilst the rear springs are pivotted on pins carried by one of the transverse members supporting the gear box and the longitudinal side members of the frame. A laminated spring is carried by the forward end of each longitudinal member for supporting the frame from the front road wheels.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a perspective view of the chassis of a motor vehicle constructed according to this invention.

Figure 2 is a plan view of the rear portion of the chassis with the central tube removed.

Figure 3 is an end view of the chassis the radius rod and rear springs being shewn in section, and

Figure 4 is a section on line X X looking in the direction of arrow *a* of the rear transverse member supporting the gear box.

According to a convenient embodiment of this invention as applied to a three-wheeled vehicle the chassis comprises the longitudinal members 1 and 2 which are connected together by transverse members. The transverse members 3 and 4, which are bolted to the longitudinal members 1 and 2, are connected by a longitudinal central tube 5 the ends of which are flanged for bolting to such transverse members. The member 3 is raised above the frame and comprises the web portion 3^a and flange portion 3^b.

The engine 6 is carried by the transverse members 4 and 7 and the drive is transmitted to the gear box 8 by the shaft 9. The gear box 8 is supported by the pressed steel sheet transverse members 10 and 11, lugs 12 being bent from such members to form supports to which the gear box is bolted. The rear driving wheel 14^c is carried by the radius rods 13 which pivot on the pins 14 carried by the respective longitudinal members 1 and 2 and the plates 14^a bolted to the lugs 14^b bent from the rear transverse member 10. The drive is transmitted to the rear wheel 14^c by means of the chain 15 which is in gear with the chain sprocket on the wheel and the chain sprocket wheel 18 driven by the change speed gear.

This chassis, upon which the body is directly built, is supported from the road wheels by the two sets of springs 16 and 17. The springs 16 are carried from the longitudinal members 1 and 2 and are connected to the front axle. The springs 17 are connected by their rear ends to the radius rods 13 through the medium of links 17^a, whilst the centre of the springs are pivotted on the said pins 14, the cap 19 fitting around the pins 14 and being bolted to the springs for this purpose. The forward ends of these springs 17 are fastened to the rod 20 directly or through the medium of links, the rod 20 being secured to the longitudinal members 1 and 2.

The use of the tube 5 spanning the cross members 3 and 4 impart to the chassis a very rigid yet light construction and therefore one part of the frame will not flex in relation to another part of the frame. This is particularly advantageous as the chassis is entirely supported from the road wheels by the four springs 16 and 17, the rear springs 17 of which are comparatively close together. The frame thus constructed also enables the mechanism carried thereby to be incorporated without the supporting members being subjected to undue strain, which enables a very light and rigid structure to be obtained suitable for a light car or runabout.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A framework for motor vehicles com-

prising two longitudinal members which support the gear box by means of transverse members or supports, and a central longitudinal tube connected at its rear end to a transverse member separate from the gear box and spanning the longitudinal members, such tube being connected at its front end to a transverse member spanning the longitudinal members towards their forward ends, substantially as set forth.

2. A framework for motor vehicles as set forth in the 1st claim in which the engine is secured to cross members to one of which is fastened the central longitudinal tube, substantially as set forth.

3. A framework for motor vehicles as set forth in Claims 1 and 2 having a laminated spring carried by the forward end of each longitudinal member for supporting the frame from the front road wheels, and having laminated springs carried by supports connected to the rear of the longitudinal members for supporting the frame from the single rear driving road wheel, substantially as set forth.

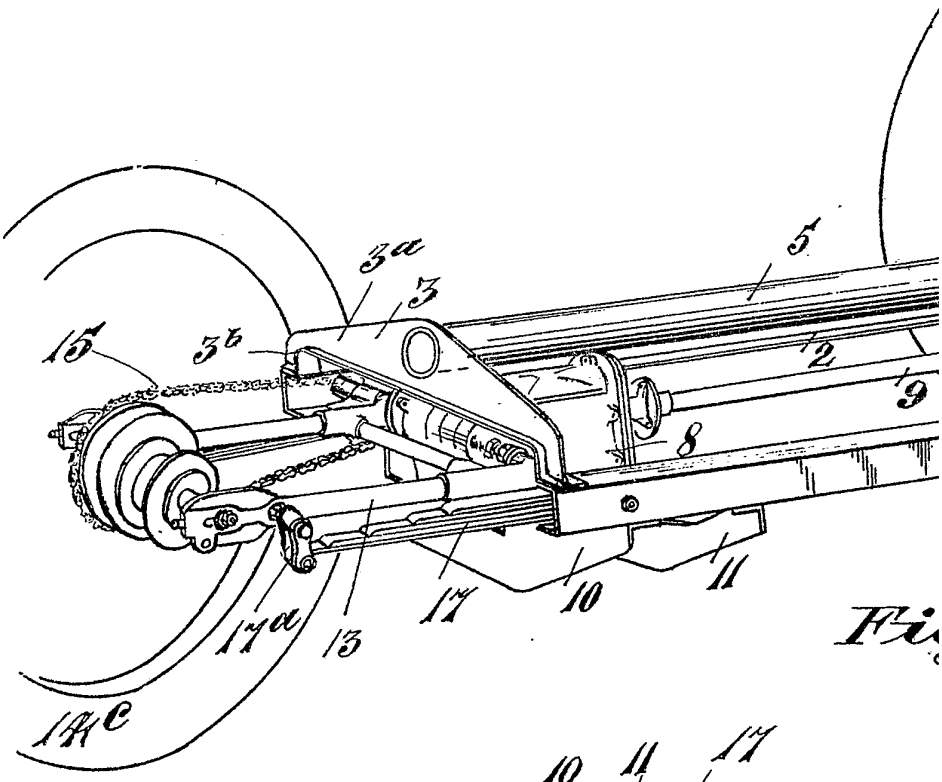
4. A framework as set forth in the 1st claim in which the radius rods and rear springs connecting the frame to the rear road wheel pivot on pins carried by the longitudinal side members and the rear transverse member supporting the gear box, substantially as set forth.

5. A motor vehicle substantially as herein set forth or illustrated.

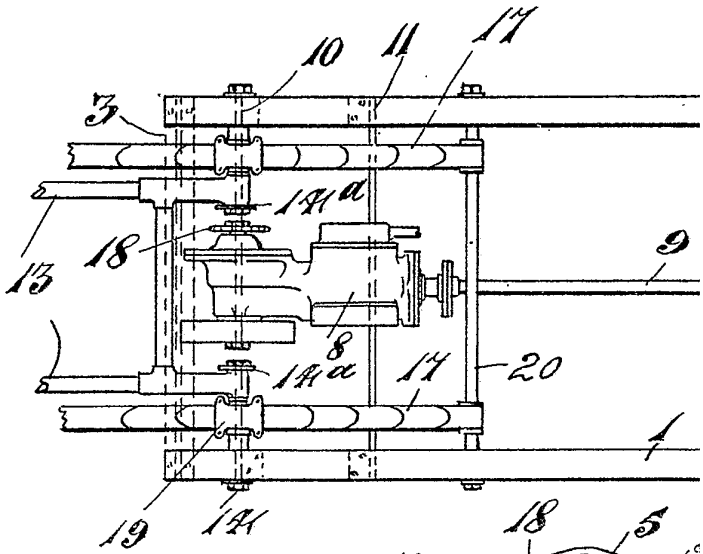
Dated this 10th day of May, 1920.

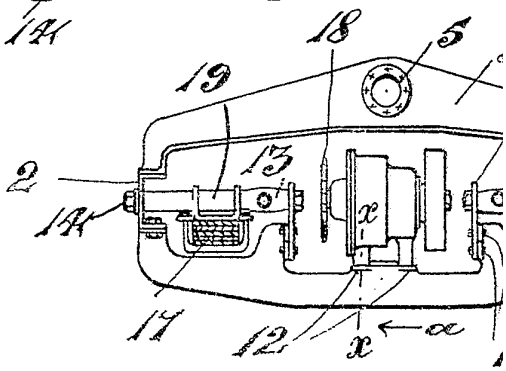
J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1920.



Fig





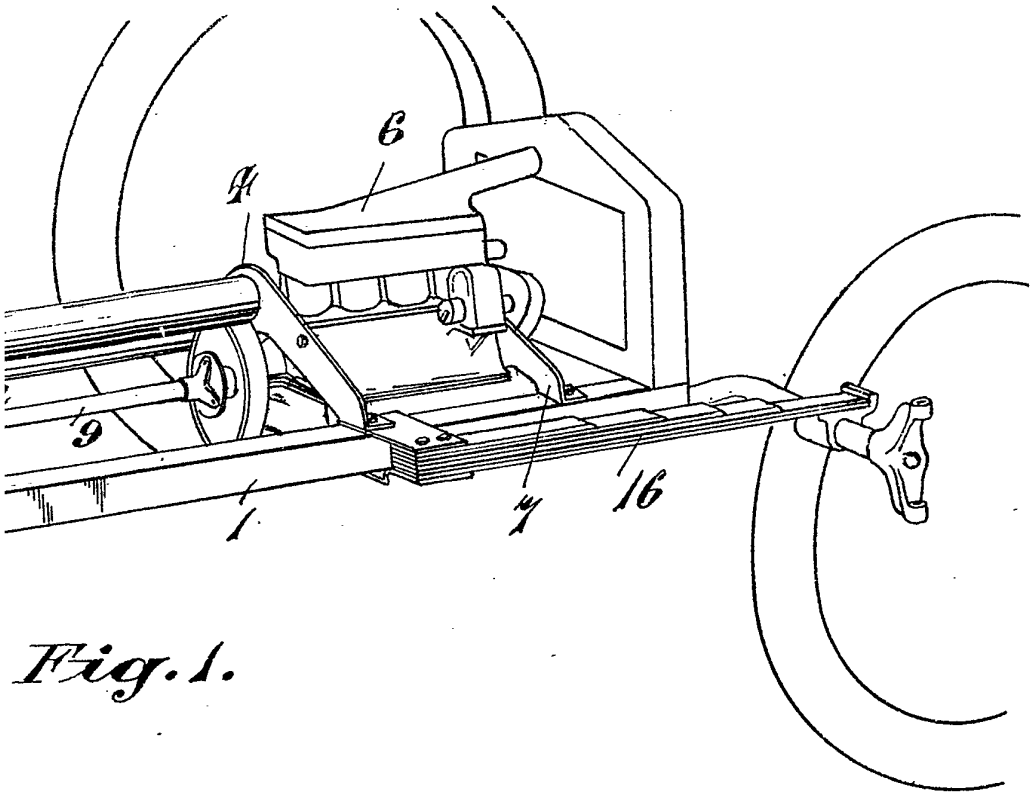
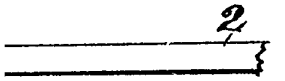


Fig. 1.



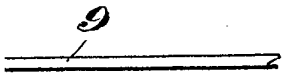
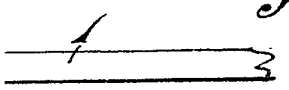


Fig. 2.



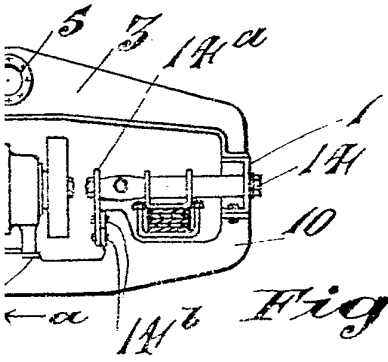


Fig. 3.

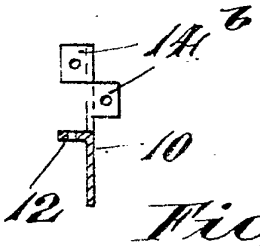


Fig. 4.

Malby & Sons, Photo-Litho

[This Drawing is a reproduction of the Original on a reduced scale.]

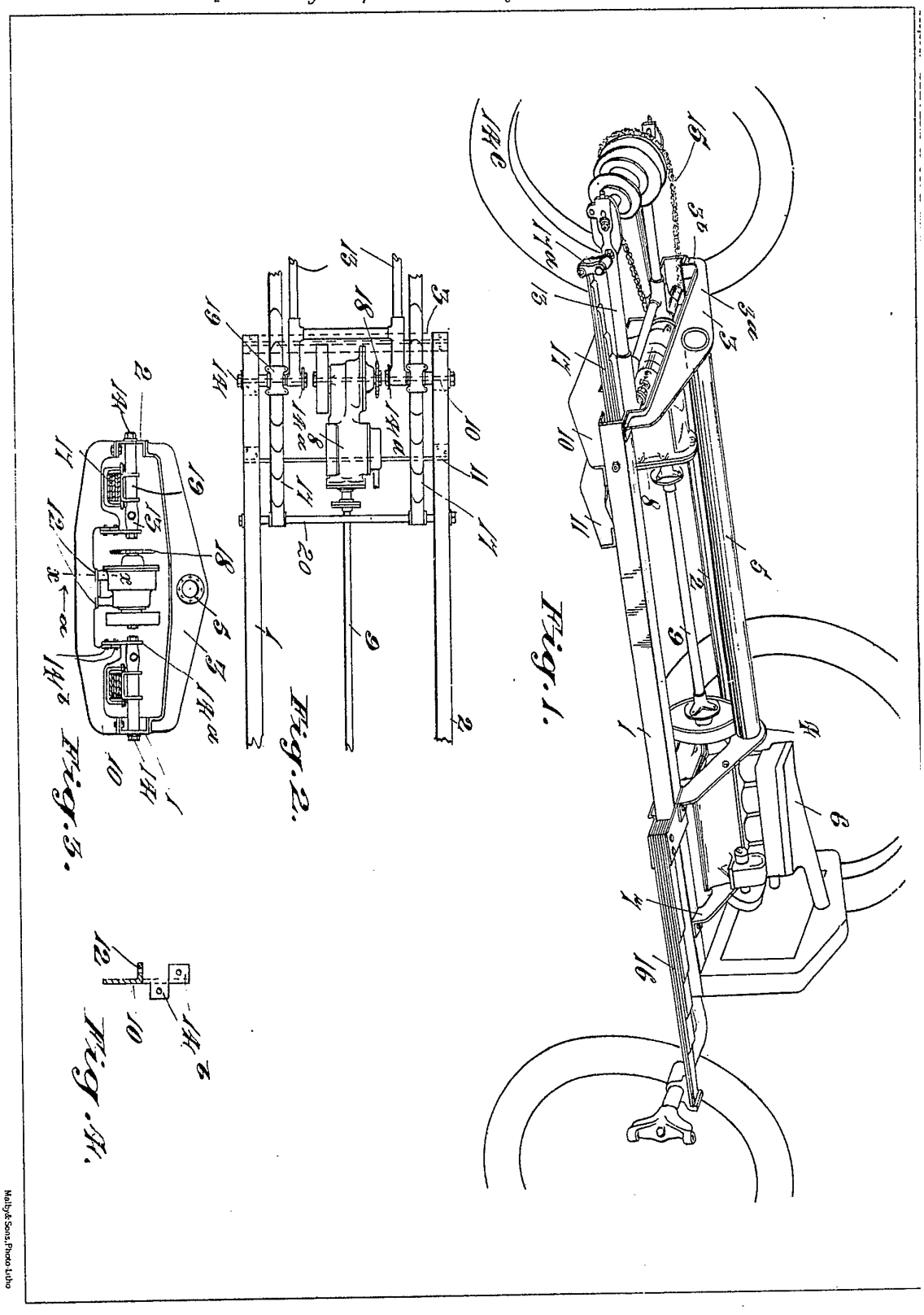


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Malby & Sons, Photo-Litho

PATENT SPECIFICATION

158,795

Application Date: Jan. 30, 1920. No. 2872/20.

Complete Left: Oct. 8, 1920.

Complete Accepted: Feb. 17, 1921.

PROVISIONAL SPECIFICATION.

Improvements in or relating to Springs for Motor Vehicles and the like.

We, A. J. STEVENS AND COMPANY (1914) LIMITED, Manufacturers, and ALBERT JOHN STEVENS, Engineer, both of Graisley House, Penn Road, Wolverhampton, subjects of the King of Great Britain, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in or relating to laminated springs for motor vehicles and the like.

In this type of spring the longest of the laminations is connected to the support or bearing member, so that in this type of spring as ordinarily constructed, one single lamination takes the strain near the support, and consequently the spring is liable to break at this part of the single lamination. The object of this invention is to strengthen the end of the longest lamination without interfering with the flexibility of the spring.

According to this invention the longest lamination is duplicated, the inner lamination of which is slit diagonally across the thickness between the neutral part and the end. The spring is thus of double strength at its weakest point, but as the inner of said laminations is free to move in relation to the lower lamination in virtue of the said slit the flexibility of the spring is not interfered with.

According to a convenient embodiment of this invention, as applied to a quarter eliptic laminated spring, such spring comprises a number of laminations the bottom and longest lamination of which is duplicated. The spring is clipped to the motor vehicle at its inner or thick end, whilst the bottom duplicated lamination is bolted to a clip carried by the front axle or other part of the vehicle. The inner of the two bottom laminations is split at a point near the said clip securing the inner end of the spring to the vehicle frame, which thus enables the outer portion of this divided lamination to move in relation to the inner portion of such lamination, whereby the flexibility of the bottom lamination is not affected. As there are two laminations to take any breaking strain at the outer end of the spring, liability of the spring breaking is minimised or prevented. In some cases the position of the slit in the lamination may be such that a clip is required to be positioned around the spring at that part.

Dated this 29th day of January, 1920.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
Midland Buildings, 3, New Street,
Birmingham.

COMPLETE SPECIFICATION.

Improvements in or relating to Springs for Motor Vehicles and the like.

We, A. J. STEVENS AND COMPANY (1914) LIMITED, Manufacturers, and ALBERT JOHN STEVENS, Engineer, both of Graiseley House, Penn Road, Wolverhampton, subjects of the King of Great Britain, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises certain improvements in or relating to laminated springs for motor vehicles and the like.

In this type of spring the longest of the

[Price 1/-]

laminations is connected to the support of bearing member, so that in such springs as ordinarily constructed, one single lamination takes the strain near the support, and consequently the spring is liable to break at this part of the single lamination. The object of this invention is to strengthen the end of the longest lamination without interfering with the flexibility of the spring.

According to this invention the longest lamination is duplicated, the inner lamination of which is slit diagonally across the thickness between the neutral part and the end. The spring is thus of double strength at its weakest point, but as the inner of said laminations is free to move in relation to the lower lamination in virtue of the said slit the flexibility of the spring is not interfered with.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a side elevation of a spring constructed according to this invention.

Figure 2 is a plan view of Figure 1.

According to a convenient embodiment of this invention, as applied to a quarter eliptic laminated spring 1, such spring comprises a number of laminations the bottom and longest lamination of which is duplicated. The spring is clipped to the motor vehicle at its inner or thick end, whilst the bottom duplicated laminations 2 and 3 are bolted to a clip carried by the front axle or other part of the vehicle. The inner lamination 3 of the two bottom laminations is split at 4, which thus enables the outer portion 3^a of this divided lamination to move in relation to the inner portion 3^b of such lamination, whereby the flexibility of the bottom lamination is not affected. As there are two laminations to take any breaking strain at the outer end of the spring, liability of the spring breaking is minimised or prevented. In some cases the position of the slit in the lamination may be such that a clip 5 is required to be positioned around the spring at that part.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Laminated springs for motor vehicles or the like in which the outer end of the longest lamination, connected to the support or bearing member, is strengthened by an additional lamination rigidly connected to the end thereof, but free to move lengthwise in relation thereto when the spring is deflected, substantially as and for the purpose set forth.

2. Laminated springs for motor vehicles or the like in which the longest lamination is duplicated and in which the inner lamination of such duplicated lamination is split diagonally to allow the two parts of such lamination to move in relation to one another when the spring is deflected, substantially as set forth.

3. Laminated springs for motor vehicles or the like as set forth in the preceding claims in which the laminations are straight and in which the longest lamination and strengthening lamination are bolted to a clip carried by the front axle or other part of the vehicle or the like, substantially as set forth.

4. A laminated spring substantially as herein set forth or illustrated.

Dated this 7th day of October, 1920.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1921.

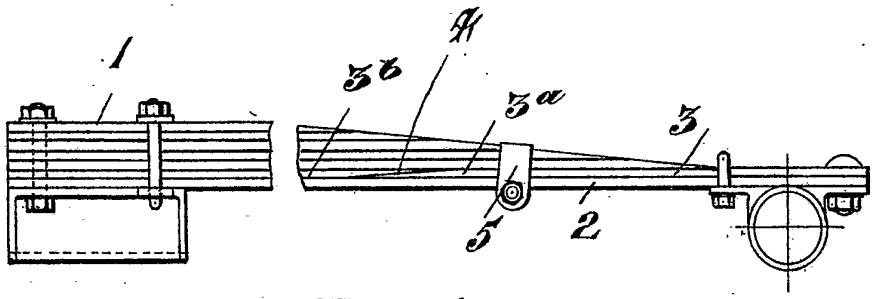


Fig. 1.

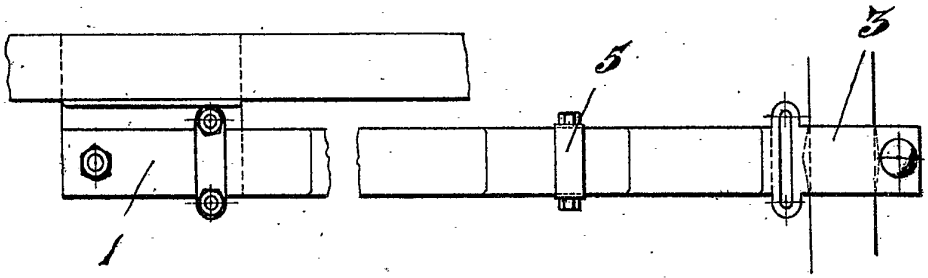


Fig. 2.

Malby & Sons, Photo-Litho

PATENT SPECIFICATION

Application Date: Sept. 30, 1920. No. 27,722/20.

169,906

Complete Left: June 23, 1921.

Complete Accepted: Oct. 13, 1921.

PROVISIONAL SPECIFICATION.

Improvements in the Cylinders of Internal Combustion Engines.

We, HARRY STEVENS, Engineer, a British subject, and A. J. STEVENS AND COMPANY (1914), LIMITED, Manufacturers, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in or relating to internal combustion engines; and it has for its object a means for preventing the packing between the detachable cylinder head and cylinder from being blown out by the high compression in the cylinder.

Heretofore the packing ring, which comprises asbestos encased in a U-section copper ring, is placed between two flat surfaces respectively on the detachable cylinder head and the cylinder, and it has been found in practice that the packing is blown out by the high compression in the cylinder. By the present improvements the packing ring is locked in a groove when the detachable head is fixed in position thus preventing any possibility of the ring being blown out.

According to a convenient embodiment of this invention in lieu of the packing ring resting on the flat shoulder on the cylinder, such shoulder inclines inwardly thus forming a V-groove. When the detachable head having the ordinary flat shoulder thereon is fixed in position the packing ring is compressed in the groove and is consequently locked therein to thereby prevent any expanding or lateral movement and obviating the liability of the ring being blown out.

If desired the shoulder on the cylinder head may have an inclined surface corresponding to the shape of the aforementioned groove to thus enter therein when the head is fixed in position. Or again the shoulder on the cylinder head may be flat, whilst the shoulder on the detachable head is inclined, thus reversing the arrangement aforedescribed.

Dated this 29th day of September, 1920.

J. E. S. LOCKWOOD,
Patent Agents for the Applicants,
3, New Street, Birmingham.

COMPLETE SPECIFICATION.

Improvements in the Cylinders of Internal Combustion Engines.

We, HARRY STEVENS, Engineer, a British subject, and A. J. STEVENS AND COMPANY (1914), LIMITED, a British company, Manufacturers, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises certain improvements in or relating to internal combustion engines; and it has for its object a means for preventing the packing between the detachable cylinder head and cylinder from being blown out by the high compression in the cylinder.

Heretofore the packing ring, which comprises asbestos encased in a U-section copper ring, is placed between two flat surfaces, lying in a plane at right angles to the axis of the cylinder, respectively,

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on the detachable cylinder head and the cylinder barrel, and it has been found in practice that the packing is blown out by the high compression in the cylinder. By the present improvements the packing ring is locked in a groove when the detachable head is fixed in position thus preventing any possibility of the ring being blown out.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a sectional view of the cylinder head joint, and

Figure 2 is a view of a portion of the packing ring.

According to a convenient embodiment of this invention in lieu of the packing ring resting on the flat shoulder on the cylinder barrel 1, such shoulder inclines inwardly thus forming a V-groove 2. When the detachable head, having the ordinary flat shoulder thereon, is fixed in position the packing ring 3 is compressed in the groove and is consequently locked therein to thereby prevent any expanding or lateral movement and obviating the liability of the ring being blown out. The packing ring 3 is preferably of the cross-sectional shape as shewn by Figure 2 to conform to the shape of the groove 2.

If desired the shoulder on the cylinder head 4 may have an inclined surface corresponding to the shape of the aforementioned groove to thus enter therein when the head is fixed in position. Or again the shoulder on the cylinder barrel may be flat, whilst the shoulder on the detachable head is inclined, thus reversing the arrangement illustrated.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A joint between the cylinder barrel and the detachable head or like joints of an internal combustion engine characterised in that the packing ring is locked between the faces of the jointed parts to prevent the ring being expanded and blown out, substantially as set forth.

2. A joint between the cylinder barrel and detachable head or like joints of an internal combustion engine, characterised in that the packing ring is locked in a wedge-shaped groove, substantially as set forth.

3. A joint between the cylinder barrel and detachable head or like joint, substantially as herein set forth or illustrated.

Dated this 11th day of June, 1921.

J. E. S. LOCKWOOD,
Patent Agents for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1921.

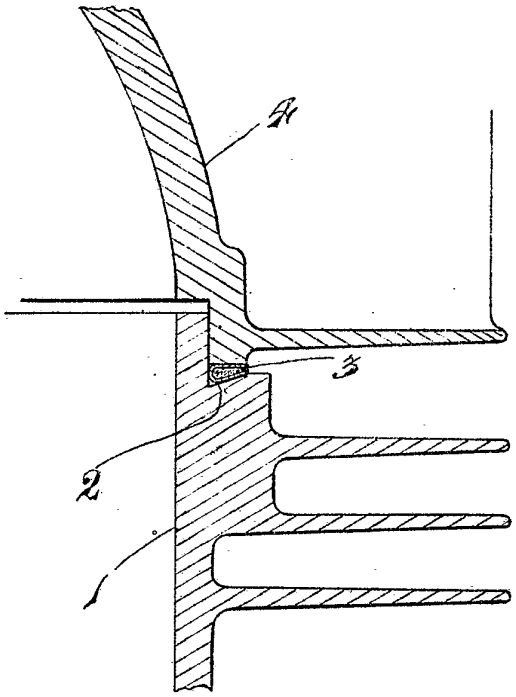

Fig. 1.

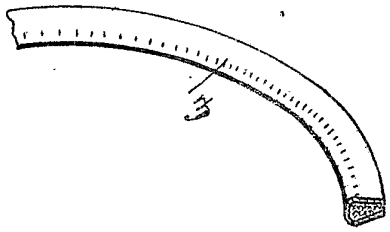

Fig. 2.

Malby&Sons, Photo-Litho

PATENT SPECIFICATION

Application Date: Nov. 29, 1920. No. 33,597/20. 174,501

Complete Left: Aug. 29, 1921.

Complete Accepted: Feb. 2, 1922.

PROVISIONAL SPECIFICATION.

Improvements in or relating to Mud Guards, Chain Cases and the like of Motor Cycles or other Road Vehicles.

We, A. J. STEVENS AND COMPANY (1914), LIMITED, Manufacturers, a British company, and GEORGE STEVENS, a British subject, Engineer, all of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention to be as follows:—

This invention pertains to mud guards, chain cases and other sheet metal casings on motor cycles and other road vehicles. In the construction of motor cycles for instance, the frame members in some forms pass through apertures in the mud guards and chain cases, and these apertures have heretofore had considerable clearance around the frame members with the result that water and mud could readily pass therethrough. If the apertures are a comparatively close fit around the frame members it is found that the vibration set up during the running of the vehicles causes the mud guards or the like to cut into the frame members or the contacting parts to be otherwise damaged.

By the present improvements a joint is formed between the mud guards or the like and frame members so that a substantial weather proof joint is obtained and so that vibration will not detrimentally affect the parts of the joint, and preferably for this purpose the edge of the aperture in the mud guard, chain case or the like is beaded or fitted with a resilient member.

According to a convenient embodiment the edge of the aperture is fitted with a rubber ring which, for the purpose of fixing, has an annular groove formed in the outside of the ring, this groove being adapted to engage over the edge of the aperture. In the case of a motor cycle, the two vertical members of a girder spring pass through apertures in the mud guard and these apertures are fitted with packing rings as aforedescribed. Again where the chain stay passes through an aperture in the chain case such aperture may also be fitted with a packing ring. With this construction therefore the packing ring can form a close joint between the frame member and the edge of the aperture and thus prevent mud and water passing therethrough which has heretofore caused considerable inconvenience especially in the case of mud guards. Further the rubber ring allows the parts to vibrate without any harm accruing.

Dated this 27th day of November, 1920.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

COMPLETE SPECIFICATION.

Improvements in or relating to Mud Guards, Chain Cases and the like of Motor Cycles or other Road Vehicles.

We, A. J. STEVENS AND COMPANY (1914), LIMITED, Manufacturers, a British company, and GEORGE STEVENS, Engineer, British subject, all of

[*Price* 1/-]

Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention pertains to mud guards, chain cases and other sheet metal casings on motor cycles and other road vehicles. In the construction of motor cycles for instance, the frame members in some forms pass through apertures in the mud guard and chain cases; and this invention has for its object an improved form of joint of the type wherein a rubber member is used to prevent water or mud passing through the clearance space between the edges of the apertures and the frame members.

According to the present improvements a joint between mud guards, chain cases or the like and frame members which pass through apertures therein is formed by intercepting a rubber packing between the edge of the aperture and the frame member. The frame member of this joint is not fastened to the mud guard or the like at this aperture but freely passes therethrough. The rubber packing comprises a ring having a groove therein for engaging over the material at the edge of the aperture. By this invention therefore whilst the mud guard or like member can vibrate in relation to the frame member without causing damage, mud or water is prevented from passing through the aperture.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a perspective view shewing a portion of the front fork and front wheel mud guard of a motor cycle.

Figure 2 is a section on line X X of Figure 1, and

Figure 3 is a side elevation of a packing ring constructed according to this invention.

According to a convenient embodiment the edge of the aperture is fitted with a rubber ring 1 which, for the purpose of fixing, has an annular groove 2 formed in the outside of the ring, this groove being adapted to engage over the edge of the aperture. In the case of a motor cycle, the two vertical members 3 of a girder spring fork pass through apertures in the mud guard and these apertures are fitted with packing rings as aforedescribed. The packing ring 1 is conveniently moulded and is split for fitting around the members 3. The mud guard illustrated is built up in two parts 4 and 5 which are suitably recessed for engaging in the groove 2 of the ring 1. Again where the chain stay passes through an aperture in the chain case such aperture may also be fitted with a packing ring. With this construction therefore the packing ring can form a close joint between the frame member and the edge of the aperture and thus prevent mud and water passing therethrough which has hertofore caused considerable inconvenience especially in the case of mud guards. Further the rubber ring allows the parts to vibrate without any harm accruing.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A joint between mud guards, chain cases or the like and frame members which pass through apertures therein, but not fastened thereto at such apertures, formed by intercepting a rubber packing between the edge of the aperture and the frame member, the rubber packing having a groove therein for engaging over the edge of the mud guard or the like, substantially as set forth.

2. A joint between mud guards, chain cases or the like and frame members, substantially as herein set forth or illustrated.

Dated this 27th day of August, 1921.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1922.

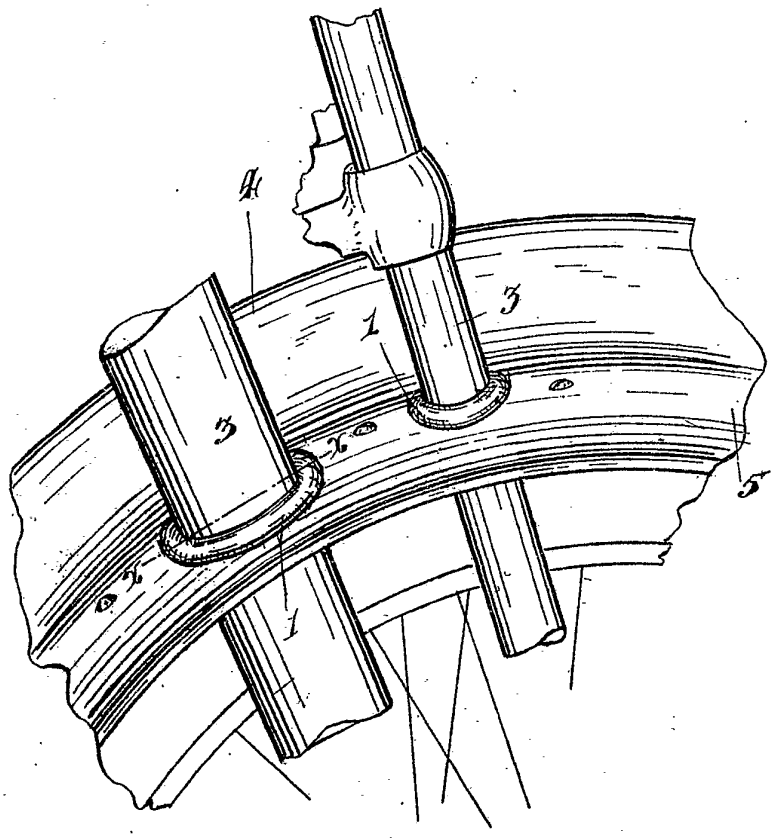

Fig. 1.

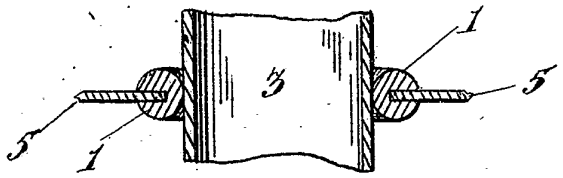

Fig. 2.

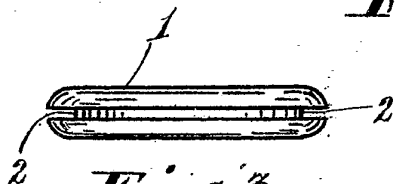

Fig. 3.

Malby&Sons, Photo-Litho

PATENT SPECIFICATION

Application Date: Nov. 16, 1920. No. 32,270/20.

175,079

Complete Left: Aug. 16, 1921.

Complete Accepted: Feb. 16, 1922.

PROVISIONAL SPECIFICATION.

Draught and Rain Excluding Means for Hinged Flaps of Motor Cycles, Side Cars and the like.

We, CHARLES WILLIAM HAYWARD, of Talbot Works, Stewart Street, Wolverhampton, Manufacturer, a British subject, and A. J. STEVENS AND COMPANY (1914) LIMITED, a British company, of Graiseley House, Penn Road, Wolverhampton, Manufacturers, do hereby declare the nature of this invention to be follows:—

This invention comprises certain improvements in or relating to hinged joints such as for use with hinged cover flaps of motor cycle side cars or other joints through which it is desirable to prevent rain from penetrating; and it has for its object to provide a water tight joint between the hinged members.

According to the present improvements when the hinged members are closed a packing strip is adapted to be compressed between the joint of the hinged members.

According to a convenient embodiment of this invention, as applied to a side car flap which is hinged to the rear horizontal edge of the covered nose of the side car such flap is hinged by means of two arms carried thereby and pivotted upon pins carried by fittings let into a cross member of the side car body. Each latter fitting comprises a face plate screwed to the said cross member and two inwardly projecting lugs which carry the hinge pin. The arm hinging on this pin is curved and the hinged pin is so located that when the flap is closed the side faces of the cross members of the side car body and flap are substantially parallel and adjacent one another, but when the flap is raised the cross piece of the flap is raised above the cross piece of the side car body. The top edge of the said body cross piece carries a packing strip, whilst the flap has a forward projection running transversely along the flap, and this projection is adapted to be pressed on the packing strip when the flap is closed.

The packing strip conveniently comprises a strip of india rubber having a central channel running along the top face. A thin strip of metal is placed in this channel and pins or screws are driven therethrough for fixing the india rubber strip in position. The flap is conveniently held in the closed position so that the said packing strip is pressed by the projecting flange of the flap. Conveniently this is effected by means of spring clips, which clips comprise a U-shaped piece of spring steel rivetted or fixed to a base plate which is screwed to the side car body. Brackets are fixed to the rear of the flap on each side thereof, which brackets carry cylindrical projections or studs. When the flap is closed down the studs enter the mouth of the U-shaped clips and press back the arms which then grip round the pin, the arms of the clip being curved inwardly at the top and beaded to facilitate the pins being moved into and out of engagement with the spring clips when the flap is opened or closed.

An effective water tight joint is thus formed between the hinged member, and the hitherto great inconvenience of water running into the side car is obviated.

Dated this 15th day of November, 1920.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

[*Price* 1/-]

COMPLETE SPECIFICATION.

Draught and Rain Excluding Means for Hinged Flaps of Motor Cycles, Side Cars and the like.

We, CHARLES WILLIAM HAYWARD, of Talbot Works, Stewart Street, Wolverhampton, Manufacturer, British subject, and A. J. STEVENS AND COMPANY (1914) LIMITED, a British company, of Graiseley House, Penn Road, Wolverhampton, Manufacturers, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises certain improvements in or relating to draught and rain excluding means for hinged cover flaps or dashes of motor cycle side cars or the like. The hinged joint for the cover flap is arranged horizontally on the top of the side car body in front of the flap and having regard to this position of the joint water has been found to collect at and run through the joint into the side car.

According to the present improvements a flange is formed on the cover flap to project forwardly over the surface of the side car body, and the flap is provided with a hinge, the pivot axis of which is so arranged that when the flap is raised the said flange is raised clear of the side car body and so that abutting faces on the flap and side car body can be compressed when the flap is down. The top surface of the flap may be formed from sheet metal and the said flange is formed by extending the sheet metal forwardly. A packing strip is in the hereinafter described embodiment inserted between the flange and surface of the side car, such packing strip comprising a channelled strip of rubber, within the channel of which a metal strip is placed for receiving the heads of fixing screws or the like.

It has previously been proposed to form a draught preventing window frame of angle iron, step shaped in cross section, which is hinged to an angle iron casement frame, an elastic packing being fixed by metal strips to the face flange of the casement frame to be compressed by the angle iron frame when closed into the casement frame. It has also been proposed to fix a hollow india rubber cushion to the door post of a carriage frame by means of recesses and edge strips, the door having a recess, the bottom of which is adapted to compress the cushion when the door is closed.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a side elevation of the side car flap hinged to a side car in accordance with the present improvements.

Figure 2 is a sectional view of the inner ends of the jointed members.

Figure 3 is a plan view of the packing strip.

Figures 4 and 5 are respectively side and end views of a bracket fixed to the side car flap, and

Figures 6 and 7 are side and front views of a spring clip hereinafter referred to.

According to a convenient embodiment of this invention, as applied to a side car flap 1 which is hinged to the rear horizontal edge of the covered nose of the side car 2, such flap is hinged by means of two arms 3 carried thereby and pivoted upon pins 4 carried by fittings let into a cross member 5 of the side car body. Each latter fitting comprises a face plate 6 screwed to the said cross member and two inwardly projecting lugs 7 which carry the hinge pin 4. The arm 3 hinging on this pin is curved and the hinged pin is so located that when the flap is closed the side faces of the cross members of the side car body and flap are substantially parallel and adjacent one another, but when the flap is raised the cross piece 8 of the flap is raised above the cross piece of the side car body. The top edge of the said body cross piece carries a packing strip 9, whilst the flap has a forward projection 10 running transversely along the flap, and this projection is adapted to be pressed on the packing strip when the flap is closed.

The packing strip 9 conveniently comprises a strip of india rubber having a central channel 11 running along the top face. A thin strip of metal 12 is placed in this channel and pins or screws are driven therethrough for fixing the india rubber strip in position. The flap is conveniently held in the closed position so

that the said packing strip 9 is pressed by the projecting flange 10 of the flap. Conveniently this is effected by means of spring clips, which clips comprise a U-shaped piece of spring steel 13 rivetted or fixed to a base plate 14 which is screwed to the side car body. Brackets 15 are fixed to the rear of the flap on each side thereof, which brackets carry cylindrical projections or studs 16. When the flap is closed down the studs enter the mouth of the U-shaped clips 13 and press back the arm thereof which then grip round the pin, the arms of the clip being curved inwardly at the top and beaded to facilitate the pins being moved into and out of engagement with the spring clips when the flap is opened or closed.

An effective water tight joint is thus formed between the hinged members, and the hitherto great inconvenience of water running into the side car is obviated.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. A hinged joint for side car cover flaps or dashes comprising a flange adapted to project forwardly over the surface of the side car body, and a hinge, the pivot axis of which is so arranged that when the flap is raised the said flange is raised clear of the side car body and so that abutting faces on the flap and side car body or parts carried thereby can be compressed when the flap is down, substantially as and for the purpose set forth.

2. A hinged joint as set forth in the 1st claim in which the top face of the cover flap is formed from sheet metal which is extended forwardly for projecting over the surface of the side car body, substantially as set forth.

3. A hinged joint as set forth in the preceding claims in which a rubber or like packing strip is compressed between the side car body and the flange of the cover flap when the latter is closed down, substantially as set forth.

4. A packing strip for hinged joints as claimed in claim 3 comprising a channel strip of rubber in the channel of which is placed a metal or like strip for receiving the heads of fixing screws or the like, substantially as set forth.

5. Hinged joints for motor cycle side car flaps as set forth in the preceding claims in which the side car flap is held in the closed position by means of a bracket having a cylindrical member thereon which is adapted to engage a spring clip fixed to the side car, substantially as set forth.

6. Hinged joints for motor cycle side car flaps and the like substantially as herein set forth or illustrated.

Dated this 6th day of December, 1921.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

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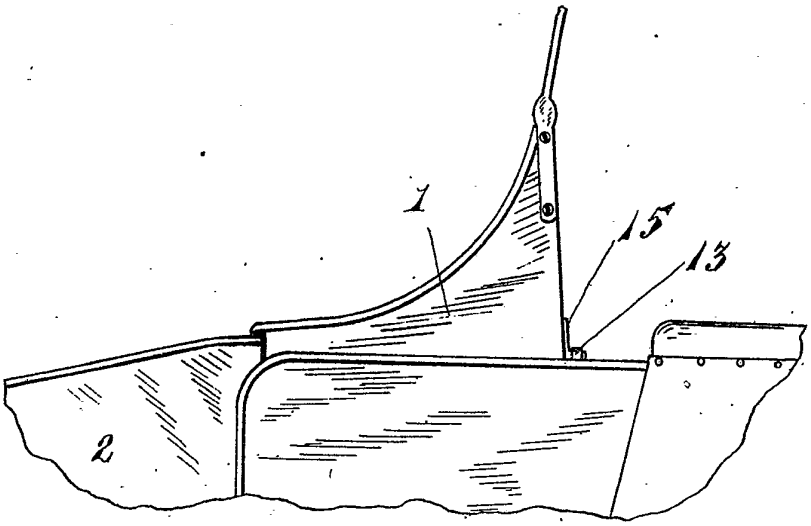


Fig. 1.

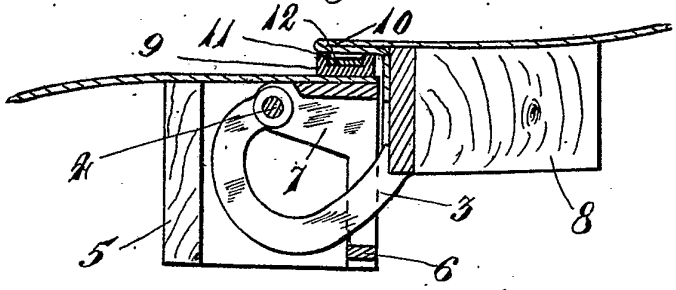


Fig. 2.

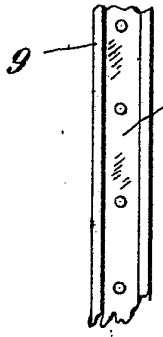


Fig. 3.

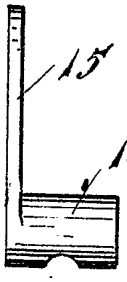


Fig. 4.

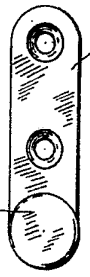


Fig. 5.

Fig. 6.

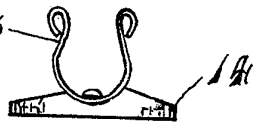


Fig. 7.

Malby & Sons, Photo-Litho

PATENT SPECIFICATION

Application Date: Nov. 29, 1920. No. 33,598/20. 175,120

Complete Left: Aug. 29, 1921.

Complete Accepted: Feb. 16, 1922.

PROVISIONAL SPECIFICATION.

Improvements in Mechanism for Adjusting the Gear Box of a Motor Cycle.

We, A. J. STEVENS AND COMPANY (1914) LIMITED, Manufacturers, a British company, and HARRY STEVENS, a British subject, Engineer, all of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in adjusting mechanism particularly applicable for use in connection with gear boxes of motor cycles; and by the present improvements a screwed bolt or member is longitudinally adjusted in either direction by means of rotating a single nut or screwed member, the bolt or member being connected to a member the position of which it is required to adjust.

The gear box of a motor cycle, according to common practice, is secured to the underside of the bottom bracket of the main frame by means of two bolts which pass up vertically through the said bottom bracket; and in the application of this invention to adjusting the gear box in either direction along the bottom bracket an eye bolt is engaged over the rear bolt of said vertical bolts inside the bottom bracket, the bolt passing out from the bottom bracket at the rear thereof. The nut or screwed member is engaged over the projecting end of this eye bolt and is so arranged that when rotated in one direction the eye bolt is forced through into the bracket and when rotated in the other direction the eye bolt is withdrawn from the bracket, the gear box being moved in virtue of the engagement of the eye bolt with said vertical bolt.

According to the preferred means for withdrawing or forcing inwards the said eye bolt, which means form a feature of this invention, a right handed externally screwed sleeve, having a hexagonal head thereon, is adapted to have screwed engagement in a tapped hole in the rear of the bottom bracket. The bore of the sleeve is screw threaded and engages the left hand screw thread on the eye bolt. Thus when the screwed sleeve is turned in one direction the sleeve is moved outwards from the bottom bracket and at the same time, as the eye bolt is prevented from rotating, such eye bolt is drawn further into the sleeve, whereby the bolt is moved outward with a multiplied movement. When the screwed sleeve is screwed inwards of the bracket the eye bolt is also forced inwards with a multiplied movement. By this arrangement therefore a very simplified construction is obtained whereby by the rotating of a single member the eye bolt may be withdrawn or forced inwards of the bracket. When the gear box has been adjusted in the required position the nuts on the bolts passing vertically through the bracket can be turned for clamping the gear box in position.

Whilst the invention has been described for use in adjusting the gear box of a motor cycle it will be obvious that the internally and externally screwed sleeve can be utilised in other applications.

Dated this 27th day of November, 1920.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

COMPLETE SPECIFICATION.

Improvements in Mechanism for Adjusting the Gear Box of a Motor Cycle.

We, A. J. STEVENS AND COMPANY (1914) LIMITED, Manufacturers, a British company, and HARRY STEVENS, Engineer, British subject, all of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises certain improvements in adjusting mechanism for use in connection with gear boxes of motor cycles of the type in which a screwed bolt engages a securing bolt for the gear box, and is forced inwards and outwards by means of a screwed member thereon fitted between suitable abutments; and by the present improvements the means for adjusting the gear box of a motor cycle comprises an eyed bolt which engages the rear securing bolt of the gear box inside the bottom bracket and which passes through a boss on the bottom bracket, such bolt being forced inwards or outwards by a screwed member engaging thereon. The screwed member in the hereinafter described embodiment comprises a headed screwed sleeve reversely screwed on its interior and exterior surfaces for engaging the screwed eye-bolt and the boss on the bottom bracket which boss is screw threaded.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a side elevation of a motor cycle bottom bracket and gear box, and

Figure 2 is a plan view of the bottom bracket shewn by Figure 1.

The gear box 1 of a motor cycle, according to common practice, is secured to the underside of the bottom bracket 2 of the main frame by means of two bolts 3 which pass up vertically through the said bottom bracket; and by this invention for adjusting the gear box in either direction along the bottom bracket an eye bolt 4 is engaged over the rear bolt of said vertical bolts 3 inside the bottom bracket, the bolt passing out from the bottom bracket at the rear thereof. The nut or screwed member is engaged over the projecting end of this eye bolt and is so arranged that when rotated in one direction the eye bolt is forced through into the bracket and when rotated in the other direction the eye bolt is withdrawn from the bracket, the gear box being moved in virtue of the engagement of the eye bolt with said vertical bolt. For the purpose of withdrawing or forcing inwards the said eye bolt 4, a right handed externally screwed sleeve 5, having a hexagonal head 6 thereon, is adapted to have screwed engagement in a tapped hole in the boss 8 of the bottom bracket. The bore of the sleeve is screw threaded and engages the left hand screw thread on the eye bolt. Thus when the screwed sleeve 5 is turned in one direction the sleeve is moved outwards from the bottom bracket 2 and at the same time, as the eye bolt 4 is prevented from rotating, such eye bolt is drawn further into the sleeve, whereby the eye bolt is moved outward with a multiplied movement. When the screwed sleeve is screwed inwards of the bracket the eye bolt is also forced inwards with a multiplied movement. By this arrangement therefore a very simplified construction is obtained whereby by the rotating of a single member the eye bolt 4 may be withdrawn or forced inwards of the bracket. When the gear box has been adjusted in the required position the nuts 7 on the bolts 3 passing vertically through the bracket can be turned for clamping the gear box in position.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. Means for adjusting the gear box of a motor cycle comprising an eyed bolt which engages the rear securing bolt of the gear box inside the bottom bracket, and which passes through a boss on the bottom bracket, such bolt being forced inwards or outwards by a screwed member engaging thereon, substantially as set forth.

2. Means for adjusting the gear box

of a motor cycle comprising an eyed bolt which passes through a screwed boss in the bottom bracket, and a headed screwed sleeve reversely screwed on its interior and exterior surfaces for engaging the screwed pin and boss, substantially as set forth.

3. Adjusting mechanism, substantially as herein set forth or illustrated.

Dated this 27th day of August, 1921.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1922.

[This Drawing is a reproduction of the Original on a reduced scale]

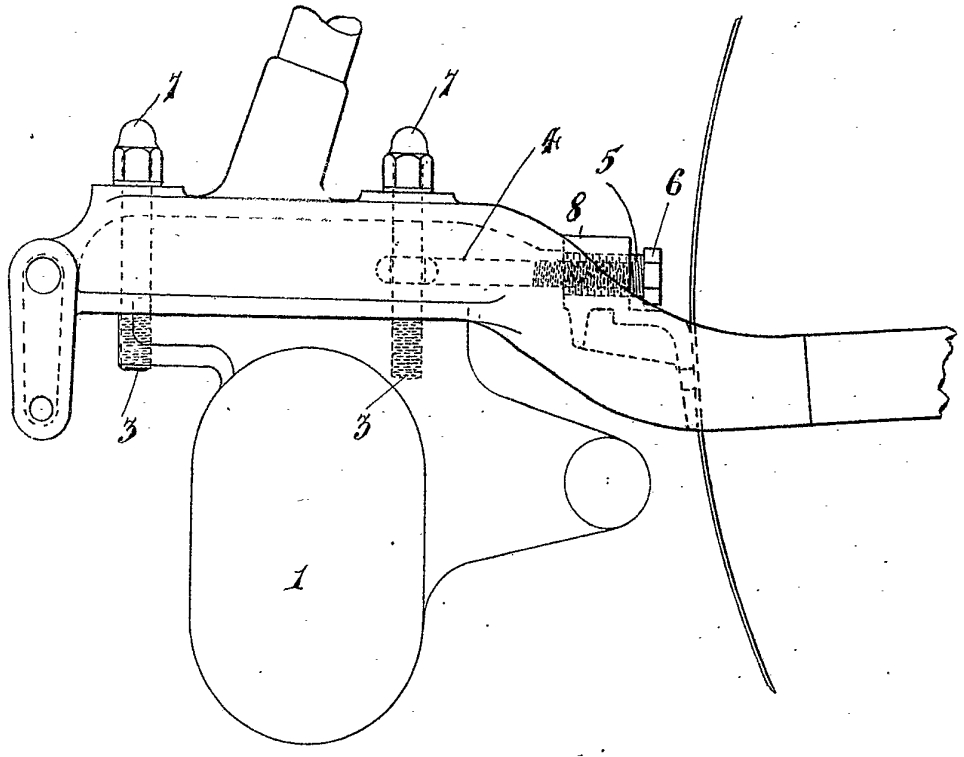


Fig. 1.

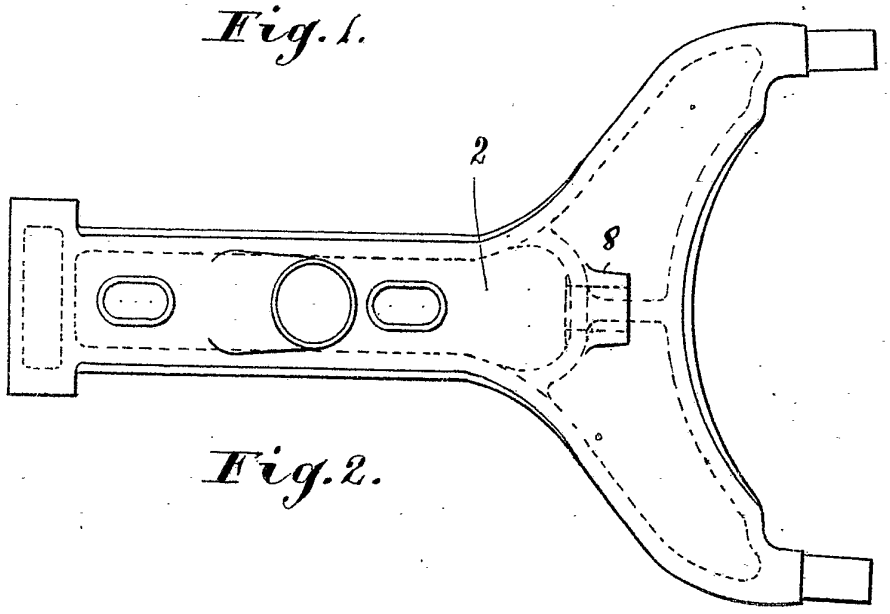


Fig. 2.

Malby & Sons, Photo-Litho

PATENT SPECIFICATION

Application Date: Nov. 16, 1920. No. 32,269/20

175,407

Complete Left: Aug. 16, 1921.

Complete Accepted: Feb. 16, 1922.

PROVISIONAL SPECIFICATION.

An Improved Auxiliary Seat for Attachment to Side Cars of Motor Cycles or the like.

We, CHARLES WILLIAM HAYWARD, of Talbot Works, Stewart Street, Wolverhampton, Manufacturer, a British subject, and A. J. STEVENS AND COMPANY (1914), LIMITED, a British company, of Graiseley House, Penn Road, Wolverhampton, Manufacturers, do hereby declare the nature of this invention to be as follows:—

This invention comprises an auxiliary seat for attachment to the outside of motor cycle side cars or the like.

According to the present improvements the luggage carrier is adapted to form the support for the auxiliary seat, and conveniently the board or platform of the luggage carrier forms the seat itself. The frame work forming sides and back to the seat is detachably fixed to the luggage carrier and a well or support for the feet may also be carried or fitted to this frame work. The well is preferably fitted to lie between the front edge of the luggage carrier and the side car or other body, and where the space is limited this well is hinged to the frame work in order that it may be threaded into position.

According to a convenient embodiment as applied to a side car of a motor cycle the luggage carrier, which is of the usual type hinged to the back of the side car, is itself adapted to form the seat of the auxiliary seat. A frame work comprising two longitudinal members and a back and front member is adapted to form the sides and back and front of the seat, the front fitting up to and conforming to the shape of the back of the side car. A cross bar spanning the said members at a point midway of their length carries a bolt which passes through a hole in the luggage carrier and this bolt forms a means of detachably fixing the seat in position, a wing nut engaging the threaded end of the bolt projecting on the underside of the carrier. A well is hinged to the front of the framework so that when the auxiliary seat is being fitted in position the well can be threaded into the space between the forward edge of the carrier and the side car body. The well is then moved back into a horizontal position and fixed in such position by means of an angle bracket, one member of which is fixed to the rear wall of the well, whilst the other member is adapted to engage on the said fixing bolt for holding the well in the horizontal position. A loose cushion is placed on the carrier to complete the seat for the occupant. The auxiliary seat thus formed can be quickly attached or detached and forms a very convenient seat for a child, and the occupant is effectively screened from wind. The seat is also a very light structure.

According to a modified form the seat may be supported by the frame work in a position raised from the luggage carrier, and in such construction only a small depth of well is necessary which can be slid into position between the luggage carrier and the side car body and therefore need not be hinged to the frame work. This auxiliary seat can be fixed in position by side lugs thereon engaging the two studs projecting rearwardly from the back of the side car. Similar studs may be fixed to the back of the auxiliary seat for attaching a spare wheel.

Dated this 15th day of November, 1920.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

[*Price* 1/-]

COMPLETE SPECIFICATION.

An Improved Auxiliary Seat for Attachment to Side Cars of Motor Cycles or the like.

We, CHARLES WILLIAM HAYWARD, of Talbot Works, Stewart Street, Wolverhampton, Manufacturer, British subject, and A. J. STEVENS AND COMPANY (1914), LIMITED, a British company, of Graiseley House, Penn Road, Wolverhampton, Manufacturers, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to auxiliary seats of the type carried by the luggage carriers of motor cycles.

According to the present improvements the luggage carrier or similar projecting member carried by the side car body is adapted to form the support for the auxiliary seat, and conveniently the board or platform of the luggage carrier forms the support for the seat cushion. The frame work forming sides and back to the seat is detachably fixed to the luggage carrier and a well or support for the feet may also be carried or fitted to this frame work. The well is preferably fitted to lie between the front edge of the luggage carrier and the side car or other body, and when the space is limited this well is hinged to the frame work in order that it may be threaded into position.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a perspective view of an auxiliary seat constructed according to this invention and also the rear portion of a side car with the luggage carrier projecting therefrom.

Figure 2 is a side elevation of the auxiliary seat, showing the well hinged down in dotted lines, and

Figure 3 is a plan view of Figure 2 with the seat cushion removed.

According to a convenient embodiment as applied to a side car of a motor cycle the luggage carrier 1, which is of the usual type fixed to the back of the side car, is itself adapted to form the support for the seat cushion of the auxiliary seat. A frame work comprising two longitudinal members 2 and 3 and back and front members 4 and 5 are adapted to form the sides and back and front of the seat, the front 5 fitting up to and conforming to the shape of the back of the side car. A cross bar 6 spanning the side members at a point midway of their length carries a bolt 7 which passes through a hole 8 in the luggage carrier and this bolt forms a means of detachably fixing the seat in position, a wing nut engaging the threaded end of the bolt projecting on the underside of the carrier. The cross members 6 and 6^a project beyond the sides in order to nest on the outer frame members 1^a of the luggage carrier. A well 9 is hinged to the front of the frame work so that when the auxiliary seat is being fitted in position the well can be threaded into the space 10 between the forward edge of the carrier and the side car body. The well is then moved back into a horizontal position and fixed in such position by means of an angle bracket 11, one limb of which is fixed to the rear wall of the well, whilst the other member is adapted to engage on the said fixing bolt for holding the well in the horizontal position. A loose cushion 12 is placed on the carrier to complete the seat for the occupant. The auxiliary seat thus formed can be quickly attached or detached and forms a very convenient seat for a child, and the occupant is effectively screened from wind. The seat is also a very light structure.

According to a modified form the seat may be supported by the frame work in a position raised from the luggage carrier, and in such construction only a small depth of well is necessary which can be slid into position between the luggage carrier and the side car body and therefore need not be hinged to the frame work. This auxiliary seat can be fixed in position by side lugs thereon engaging the two studs projecting rearwardly from the back of the side car. Similar studs may be fixed to the back of the auxiliary seat for attaching a spare wheel.

Having now particularly described and ascertained the nature of our said inven-

tion and in what manner the same is to be performed, we declare that what we claim is:—

1. An auxiliary seat for attachment to motor cycle side cars comprising a frame work adapted to be placed on the luggage carrier carried by the side car body to fit up against the rear of the side car and means for detachably fixing the seat in position, substantially as set forth.

2. An auxiliary seat as set forth in the 1st claim in which the platform of the luggage carrier supports the removable seat cushion, substantially as set forth.

3. An auxiliary seat as set forth in the preceding claims having a well for the feet which fits into a space between the luggage platform and side car, substantially as set forth.

4. An auxiliary seat as set forth in the 3rd claim in which the well is hinged to the auxiliary seat, substantially as set forth.

5. An auxiliary seat as set forth in the 4th claim in which the seat is fixed in position by means of a bolt which passes through the luggage platform and through a cross member on the seat and a bracket on the hinged well, substantially as set forth.

6. An auxiliary seat for motor cycle side cars, substantially as herein set forth or illustrated.

Dated this 16th day of August, 1921.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1922.

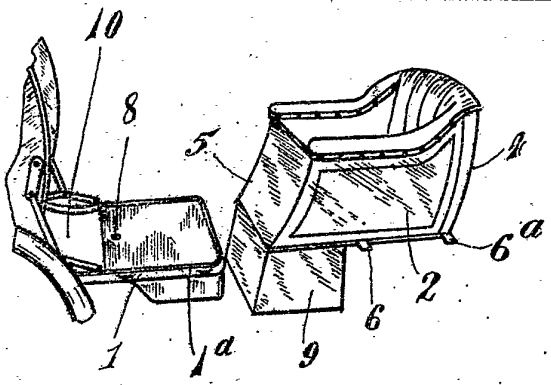


Fig. 1.

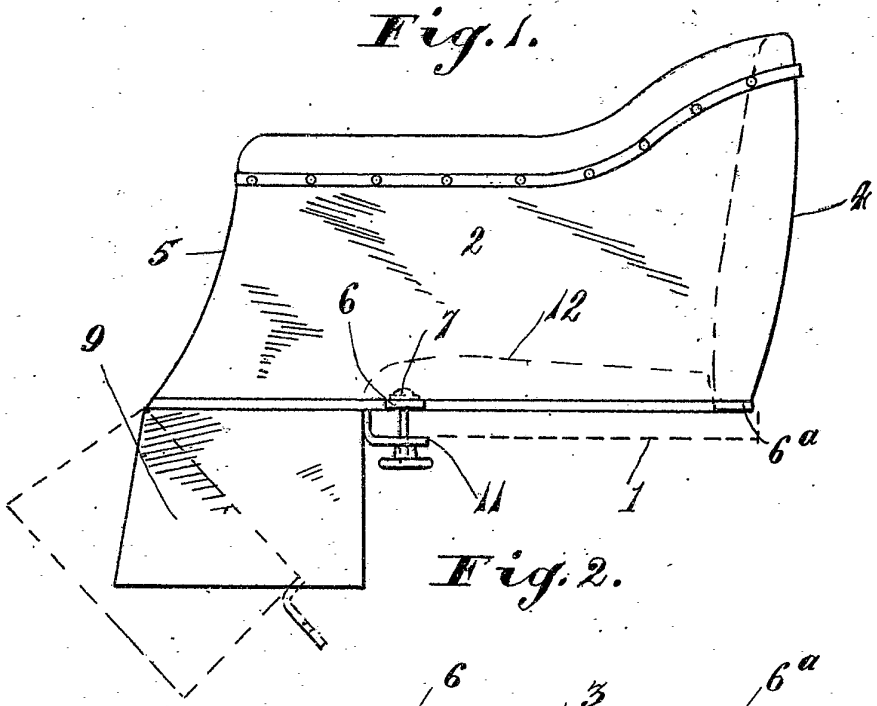


Fig. 2.

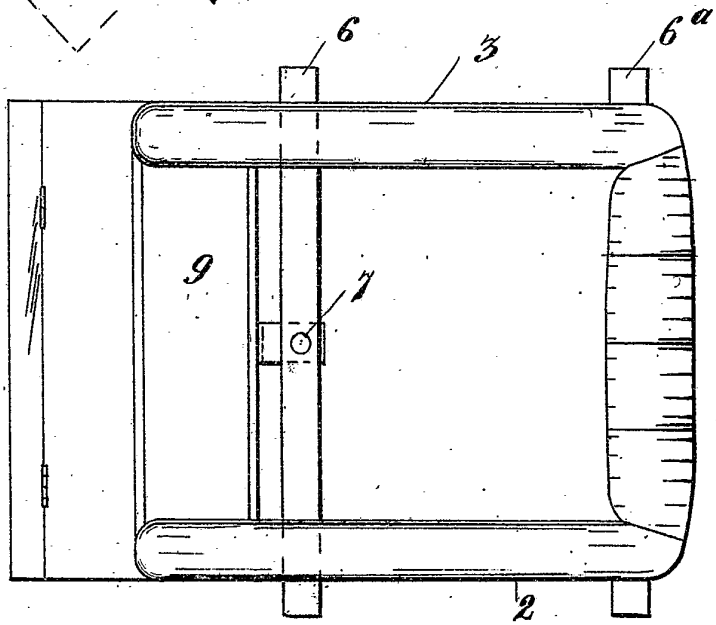


Fig. 3.

Malby & Sons, Photo-Litho

PATENT SPECIFICATION

Application Date: Nov. 29, 1920. No. 33,596/20. **175,446**

Complete Left: Aug. 29, 1921.

Complete Accepted: Feb. 23, 1922.

PROVISIONAL SPECIFICATION.

Improvements in or relating to the Front Wheel Brakes of Motor Cycles and such like Vehicles.

We, A. J. STEVENS AND COMPANY (1914) LIMITED, Manufacturers, a British company, and HARRY STEVENS, a British subject, Engineer, all of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention to be as follows:—

This invention pertains to the front wheel brakes of motor cycles and such like vehicles; and it has for its object the fitting of a brake drum or member to the detachable front wheel hub in such manner that the hub may be easily detached and replaced with a minimum of trouble. By the present improvements the brake drum is detachably and operatively engaged with the removable hub of the road wheel in such manner that the hub may be removed without disturbing the mounting of the brake drum on the frame of the motor cycle. The brake drum is mounted on a member carried by the front fork of the motor cycle so that when the front wheel is removed the brake drum is carried by this member and when the front wheel is fitted into position the wheel hub is operatively engaged with the brake drum.

According to one form of the invention the brake drum and wheel hub are supported upon a bolt or retaining member which is formed in two parts, one part being adapted to be removed to allow of the detachment of the wheel, whilst the other part is adapted to remain secured to the frame for retaining the brake drum in position. when the road wheel is detached. The latter part consists of a cylindrical member flanged at one end and having a threaded stem, reduced in diameter, projecting axially from the other end to receive nuts for securing same to the frame. The flanged end of the cylindrical member is tapped to receive the component part of the retaining bolt or member when passed through the hollow spindle of the hub. The face of the brake drum has secured thereto, by means of screws, a plate which is recessed inwardly away from the hub of the road wheel to receive a boss on such road wheel, and such plate has a cylindrical neck or boss which is adapted to fit around the said cylindrical retaining member to act as a guide for retaining the brake drum in position when the wheel is detached. The hub is secured to the brake drum by means of studs carried by the drum which pass through holes in the flange of the hub, bolts passing through holes in the other flange screwing on to the ends of said studs.

With such construction therefore by withdrawing the removable component of the retaining bolt or member and a sleeve carried thereon the hub can be disengaged from said studs and removed without disturbing the brake drum. With this construction also the front and rear wheels are interchangeable as the wheel hub may be similarly connected to the driving chain sprocket. In this construction also the brake drum when the wheel hub has been fitted thereto is rigidly carried by the hub, but it will be obvious that other means of connection between the brake drum and wheel hub can be used without departing from the spirit of this invention.

Dated this 27th day of November, 1920.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

[*Price* 1/-]

COMPLETE SPECIFICATION.

Improvements in or relating to the Front Wheel Brakes of Motor Cycles and such like Vehicles.

We, A. J. STEVENS AND COMPANY (1914) LIMITED, Manufacturers, a British company, and HARRY STEVENS, Engineer, British subject, all of Graiseley House, Penn Road Wolverhampton, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to front wheel brakes for use with detachable wheels of motor cycles and the like, of the kind in which the brake drum is supported by the front fork when the front wheel is removed but which is adapted to rotate with the front wheel when fixed in position, and particularly relates also to mechanism as set forth in Harry Stevens' Specification No. 330 of 1914.

According to the present improvements the removable hub of the front wheel, which is mounted on ball bearings on a hollow spindle, and the brake drum are carried on a retaining bolt mounted in the front fork and formed in two parts one of which is removable to permit of the detachment of the hub, whilst the other remains attached to the front fork for carrying the brake drum. The brake drum, as hereinafter set forth, is rigidly bolted to the front wheel hub so that it is supported on the ball bearings of the wheel hub. With this construction therefore the front forks are substantially of ordinary construction and a brake drum can be fitted in a very simple manner.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a longitudinal cross-sectional view of a device constructed according to this invention.

According to one form of the invention the brake drum 1 and wheel hub 2 are supported upon a bolt or retaining member which is formed in two parts, one part 3 being adapted to be removed to allow of the detachment of the wheel, whilst the other part 4 is adapted to remain secured to the frame 5 for retaining the brake drum 1 in position when the road wheel is detached. The latter part 4 consists of a cylindrical member flanged at one end and having a threaded stem 4^a, reduced in diameter, projecting axially from the other end to receive a nut 6 for securing same to the frame. The flanged end of the cylindrical member is tapped to receive the component part 3 of the retaining bolt or member when passed through the hollow spindle of the hub. The face of the brake drum has a cylindrical neck or boss 7 which is adapted to fit around the said cylindrical retaining member 4 to act as a guide for retaining the brake drum in position when the wheel is detached. The hub is secured to the brake drum by means of studs 8 carried by the drum which pass through holes in the flange 9 of the hub, bolts 10 passing through holes in the other flange 11 screwing on to the ends of said studs.

With such construction therefore by withdrawing the bolt 10 and the removable component 3 of the retaining bolt or member and a sleeve 12 carried thereon, the hub can be disengaged from said studs 8 and removed without disturbing the brake drum. With this construction also the front and rear wheels are interchangeable as the wheel hub may be similarly connected to the driving chain sprocket. In this construction also the brake drum when the wheel hub has been fitted thereto is rigidly carried by the hub, but it will be obvious that other means of connection between the brake drum and wheel hub can be used without departing from the spirit of this invention as set out in the subjoined statement of claim.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. Means for fitting a brake drum of the type set forth to a detachable front wheel of a motor cycle in which the removable hub and the brake drum are carried on a retaining bolt mounted in the front fork and formed in two parts, one of which is removable to permit of the detachment of the hub whilst the other remains attached to the front fork for

carrying the brake drum, substantially as set forth.

2. Means for fitting a brake drum to the detachable front wheel of a motor cycle as set forth in the first claim in which the brake drum is rigidly carried by the wheel hub when fitted thereto, substantially as set forth.

3. Means for fitting a brake drum to the detachable front wheel of a motor cycle, substantially as illustrated.

Dated this 7th day of December, 1921.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1922.

[This Drawing is a full-size reproduction of the Original.]

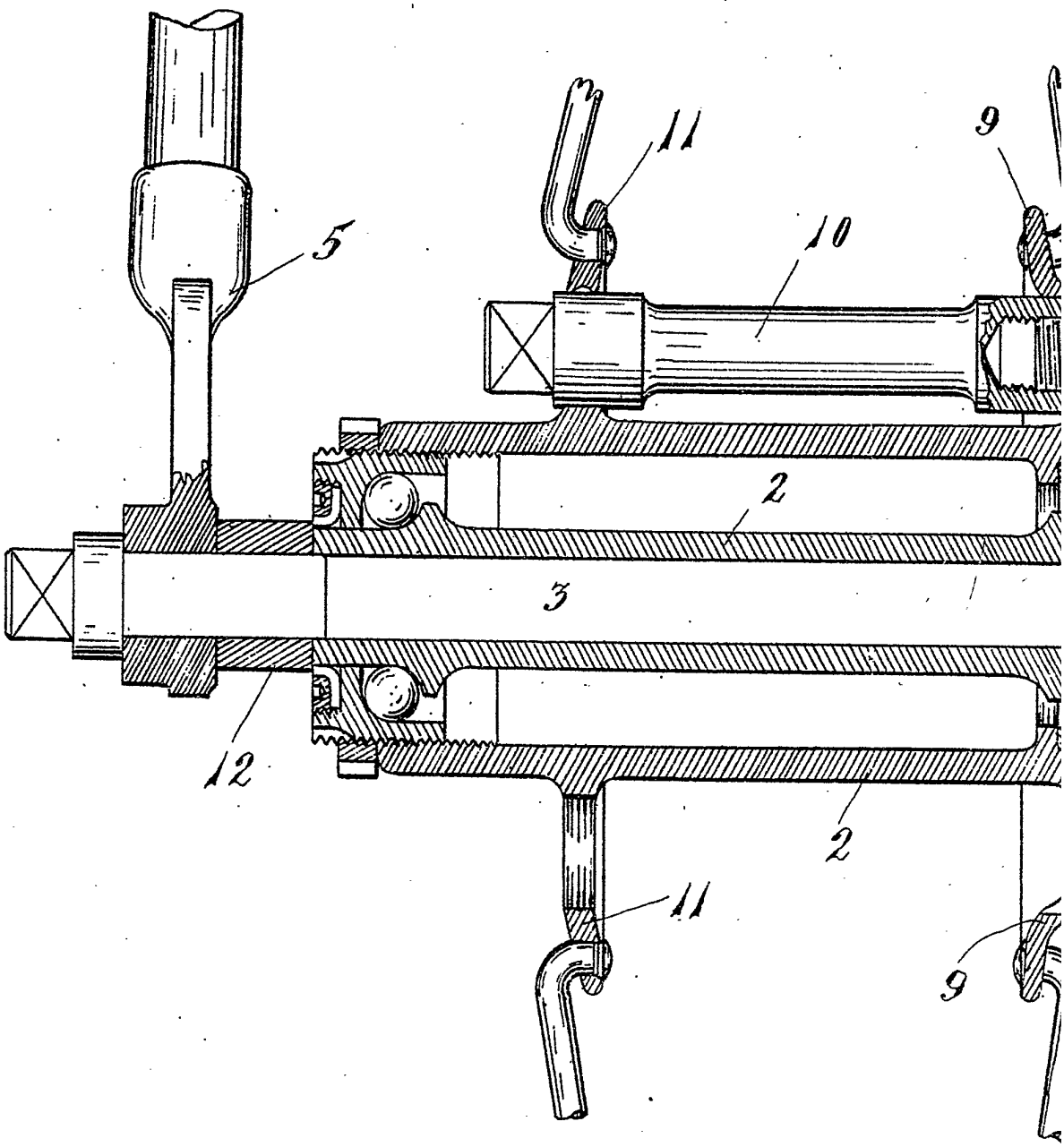


Fig. 1.

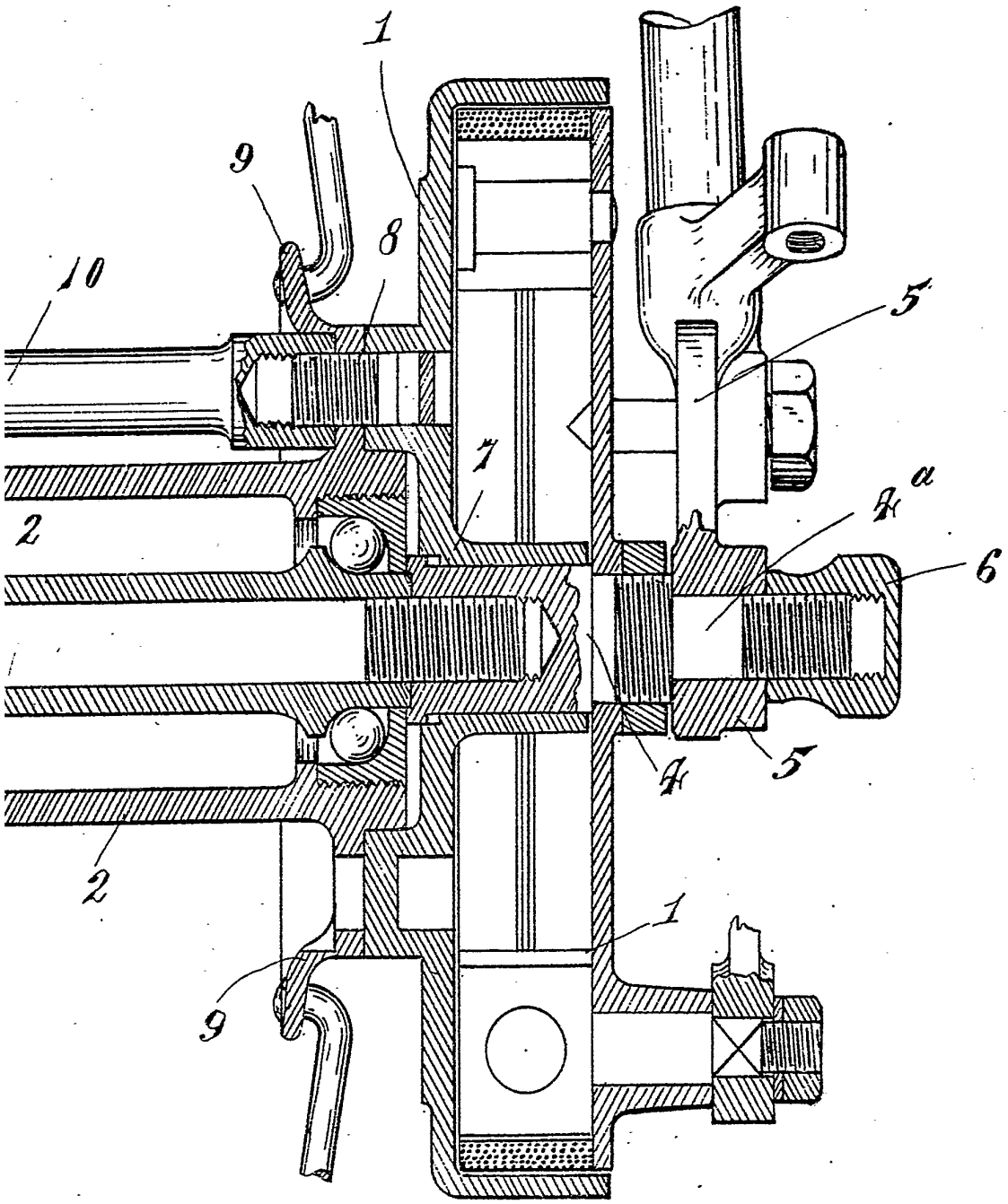


Fig. 1.

Malby & Sons, Photo-Litho

[This Drawing is a full-size reproduction of the Original.]

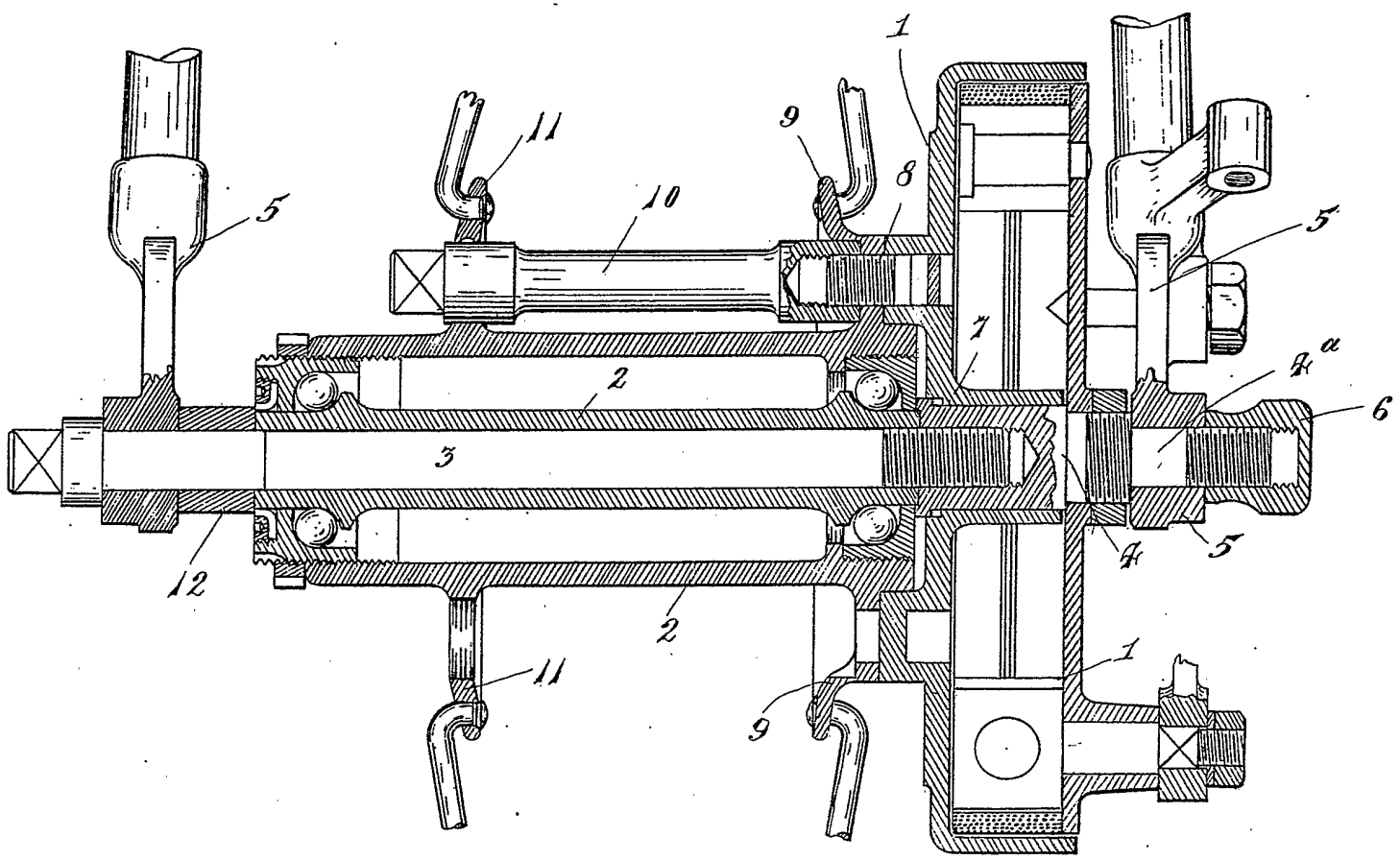


Fig. 1.

Malby & Sons, Photo-Litho

PATENT SPECIFICATION

Application Date: Nov. 16, 1920. No. 32,268/20. **175,722**

Complete Left: Aug. 16, 1921.

Complete Accepted: Feb. 16, 1922.

PROVISIONAL SPECIFICATION.

Improvements in Wind Screens for use with Motor Cycle Side Cars.

We, CHARLES WILLIAM HAYWARD, of Talbot Works, Stewart Street, Wolverhampton, Manufacturer, a British subject, and A. J. STEVENS AND COMPANY (1914) LIMITED, a British company, of Graisley House, Penn Road, Wolverhampton, Manufacturers, do hereby declare the nature of this invention to as follows:—

This invention relates to wind screens for use with motor cycle side cars and comprises an improved screen which will effectively screen the side car occupant from side winds or winds deflected by the rider of the motor cycle.

According to the present improvements a rigid screen is fixed to the side of the side car and also fixed in relation to the rigid front wind screen or like part. The screen conveniently comprises a metal or other rigid frame work to which is fixed a transparent or other sheet of material. The side car is preferably fitted with a hinged cover flap which projects over the door opening and which flap has fixed thereto a wind screen; and in this construction or other construction carrying a rigid front screen the side screen is adapted to be detachably fixed to the front wind screen in order that the flap may be raised or the front screen moved when the person wishes to enter or leave the side car.

According to a convenient embodiment of this invention the side wind screen comprises a metal frame work the lower member of which is shaped to follow the contour of the top of the side car and is directed towards the rear thereof. The rear side member of this frame work is carried below the lower horizontally directed member and such projecting part is fixed to the side car. This projecting part may be permanently fixed thereto by means of screws or may be detachably fixed in a socket fitting fixed to the side car, a thumb screw holding the projection in the socket. The top forward end of the side screen is detachably fitted to the frame carrying the front screen which latter is mounted on the hinged flap. This is effected by means of a ball headed fitting fixed to the front wind screen frame, the ball being adapted to engage a spring clip carried by the forward vertical member of the side screen. The spring clip comprises a U-shaped strip of spring steel the base of which is fixed to a fitting rivetted or screwed to the side vertical member. The lower front corner of the side screen is also fixed to the side car body conveniently by a projecting portion entering a socket fitting within which it is fixed by means of a thumb screw. When it is desired to enter or leave the side car the side screen is disengaged from the front screen which then allows the side car flap to be raised. When the flap is again lowered the spring clip carried by the side screen may then be snapped into engagement with the said ball fitting. In order to prevent breakage of any part should it be attempted to raise the cover flap without disengaging the side screen the said spring clip is arranged at a suitable angle so that the ball can slide out of engagement therewith. The said ball headed fitting conveniently comprises a socket member which fits over the U-strip carrying the transparent member of the front screen, such socket being slotted so that the opening registers with the groove in the U-strip. This socket member carries a ball headed projection at the side and a screw is passed axially through

[*Price* 1/-]

the ball headed projection for fixing the fitting in the desired position. The side car flap is rigidly held in its closed position such as by means of U-shaped spring clips fixed on each side of the side car with which cylindrical projections or pins are engaged when the flap is closed.

The side car flap comprises a member the surface of which curves upwardly to the rear so that, as seen in side elevation the flap is somewhat triangular shaped, the top side being of a concave curvature; the top corner carries the wind screen, and as only a short depth of glass is necessary this corner is carried to a considerable height thus obviating the need of a deep glass or transparent wind screen member.

It will thus be seen that a rigid structure comprising a front and side screen is obtained, and as the top edge of the side screen can run rearwardly in a horizontal or other direction the occupant of the side car is effectively screened from wind.

Dated this 15th day of November, 1920.

J. E. S. LOCKWOOD.
Patent Agent for the Applicants,
3, New Street, Birmingham.

COMPLETE SPECIFICATION.

Improvements in Wind Screens for use with Motor Cycle Side Cars.

We, CHARLES WILLIAM HAYWARD, of Talbot Works, Stewart Street, Wolverhampton, Manufacturer, a British subject, and A. J. STEVENS AND COMPANY (1914) LIMITED, a British company, of Graiseley House, Penn Road, Wolverhampton, Manufacturers, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to wind screens for use with motor cycle side cars and the like and comprises an improved screen which will effectively screen the side car occupant from side winds or winds deflected by the rider of the motor cycle.

According to the present improvements a side wind screen is formed separate from the front screen and comprises a metal framework and celluloid or like sheet, the screen being attached at its lower side to the side car body to be supported upright therefrom and detachably connected to the front screen so that the front screen may be lifted whilst the side screen remains attached to the side car.

It has previously been proposed to construct a side car wind screen comprising a front screen or member and two side flaps or members, detachably connected thereto by screws such as for package and transport, the screen being fixed in position for use by connecting the side flaps to fittings on the side car body, and the front screen and side flaps being lifted away to permit of entry to and exit from the side car.

The side car is preferably fitted with a hinged cover flap which projects over the door opening and which flap has fixed thereto a wind screen; and in this construction or other construction carrying a rigid front screen the side screen is adapted to be detachably fixed to the front wind screen in order that the flap may be raised or the front screen moved when the person wishes to enter or leave the side car.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a side elevation of a side car body with the side screen in position.

Figure 2 is a view of the skeleton framing of a side screen.

Figures 3 and 4 are plan and side elevation respectively of a fitting hereinafter referred to.

Figures 5 and 6 are respectively end and face views of the spring clip fixed to the side screen.

Figures 7 and 8 are respectively end and face views of a fitting fixed to the rear of the side car body, and

Figures 9 and 10 are respectively face view and edge view of a fitting fixed to the front of the side car body.

According to a convenient embodiment of this invention the side wind screen comprises a metal frame work 1, the lower member 2 of which is shaped to follow the contour of the top of the side car and is directed towards the rear thereof. The rear side member 3 of this frame work is carried below the lower member 2 and such projeting part 4 is fixed to the side car. This projecting part may be per-

manently fixed thereto by means of screws or may be detachably fixed to a fitting 5 fixed to side car, a thumb screw and pin holding the projection to the fitting. The top forward end of the side screen is detachably fastened to the frame 6 carrying the front screen which latter is mounted on the hinged flap 7. This is effected by means of a ball headed fitting 8 fixed to the front wind screen frame, the ball 8^a being adapted to engage a spring clip 10 carried by the forward vertical member 11 of the side screen. The spring clip 10 comprises a U-shaped strip of spring steel the base of which is fixed to a fitting rivetted or screwed to the side vertical member 11. The lower front corner of the side screen is also fixed to the side car body conveniently by a projecting portion 12 being fixed to a fitting 13 by means of a bolt and thumb screw. When it is desired to enter or leave the side car the side screen is disengaged from the front screen which then allows the side car flap 7 to be raised. When the flap 7 is again lowered the spring clip 10 carried by the side screen may then be snapped into engagement with the said ball fitting 8. In order to prevent breakage of any part should it be attempted to raise the cover flap without disengaging the side screen the said spring clip 10 is arranged at a suitable angle so that the ball can slide out of engagement therewith. The said ball headed fitting 8 conveniently comprises a socket member 8^b which fits over the U-strip or side column 9 carrying the transparent member of the front screen, such socket being slotted at 9^a so that the opening registers with the groove in the U-strip or column 9. A screw 14 is passed axially through the ball headed projection 8^a for fixing the fitting in the desired position. The side car flap is rigidly held in its closed position such as by means of U-shaped spring clips fixed on each side of the side car with which cylindrical projections or pins are engaged when the flap is closed.

The side car flap 7 comprises a member, the surface of which curves upwardly to the rear so that, as seen in side elevation, the flap is somewhat triangular shaped, the top side being of a concave curvature; the top corner carries the wind screen, and as only a short depth of glass is necessary this corner is carried to a considerable height thus obviating the need of a deep glass or transparent wind screen member, the flap itself forming a portion of the screen.

It will thus be seen that a rigid structure comprising a front and side screen is obtained and as the top edge of the side screen can run rearwardly in a horizontal or other direction the occupant of the side car is effectively screened from wind.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. A side wind screen for motor cycle side cars and the like formed separate from the front screen and comprising a metal framework and celluloid or like sheet, the screen being attached at its lower side to the side car body to be supported upright therefrom and detachably connected to the front screen so that the front screen may be lifted whilst the side screen remains attached to the side car, substantially as set forth.

2. A side wind screen such as set forth in the 1st claim in which the top front corner is detachably connected to the front screen carried by the side car cover flap by means of a spring clip carried by one part being pressed into engagement with a projection carried by the other part, substantially as set forth.

3. A side wind screen as set forth in the 2nd claim in which the top corner is connected to the front screen carried by the cover flap by means of a U-spring clip on the side screen and a ball fitting carried by the front screen side pillar, the arrangement being such that when the side car flap is fitted the ball fitting will slip out of engagement with the U-spring clip, substantially as set forth.

4. A side screen as set forth in the preceding claims in which the steel framing is formed with projections at its front and rear lower corners which are detachably bolted to outstanding fittings fixed to the body of the side car, substantially as set forth.

5. A side wind screen for motor cycle side cars substantially as herein set forth and illustrated.

Dated this 16th day of August, 1921.

J. E. S. LOCKWOOD.
Patent Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office. by Love & Malcomson, Ltd.—1922.

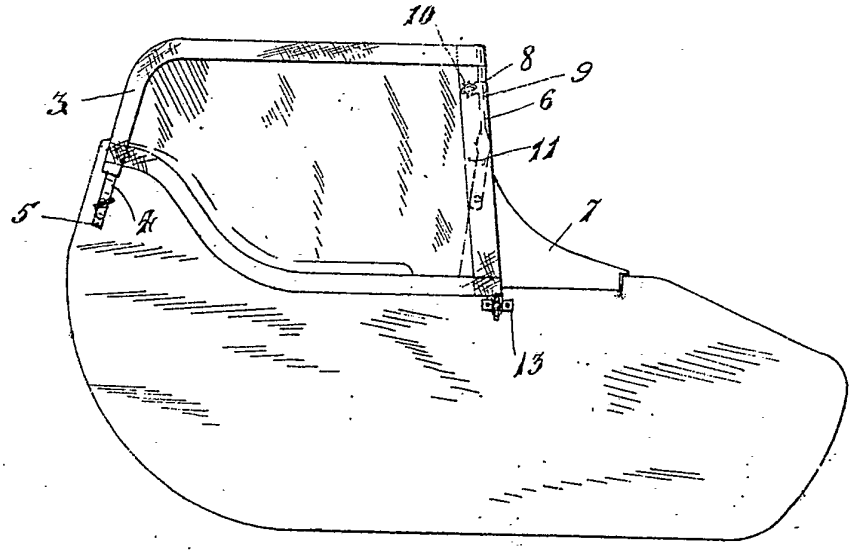


Fig. 1.

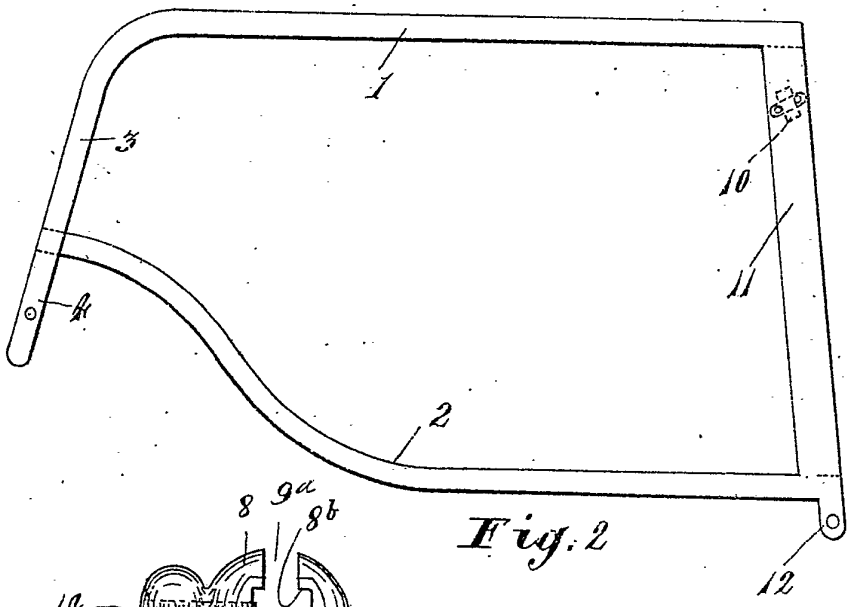


Fig. 2

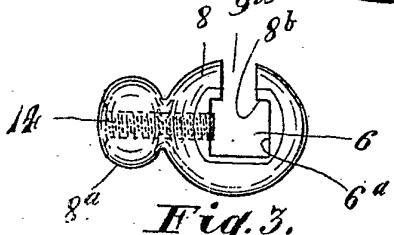
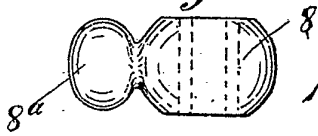


Fig. 3.



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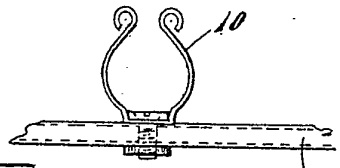

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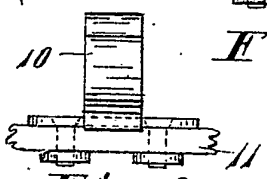


Fig. 6.

SHEET 1

SHEET 2

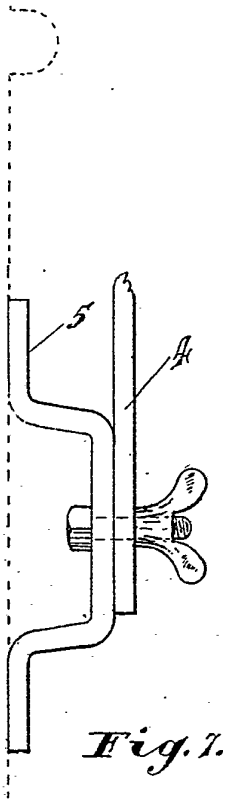
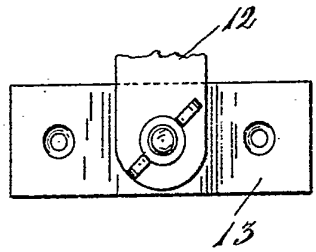


Fig. 7.

Fig. 8.



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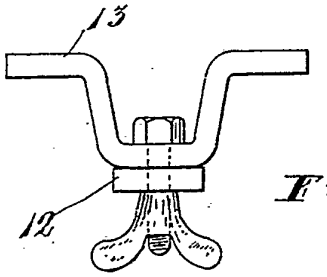

Fig. 10.

Malby&Sons, Photo-Litho

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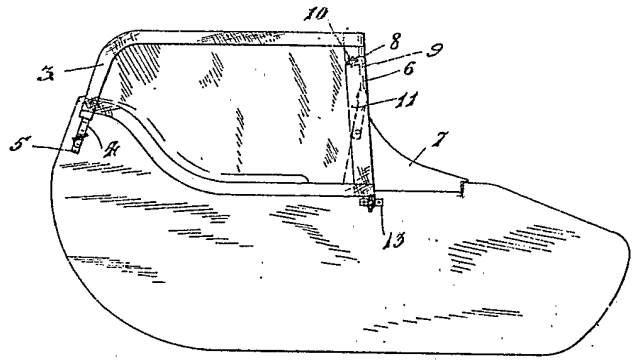
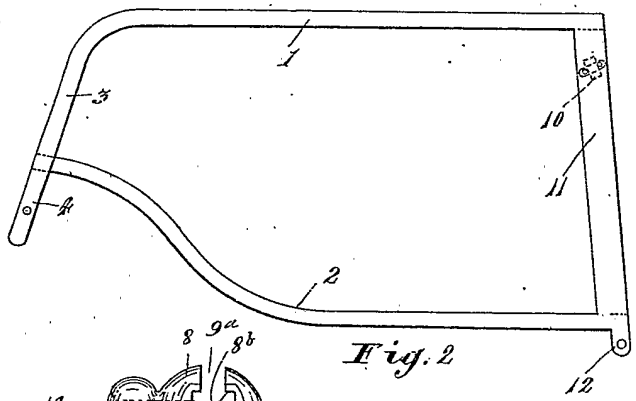


Fig. 1.



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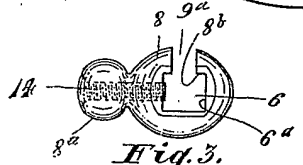

Fig. 3.

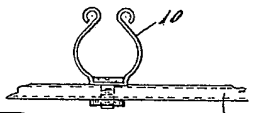

Fig. 5.

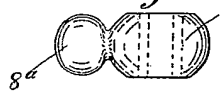

Fig. 4.

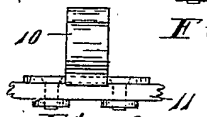

Fig. 6.

SHEET 2

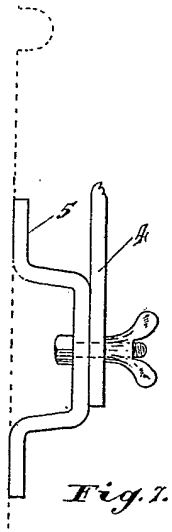

Fig. 7.

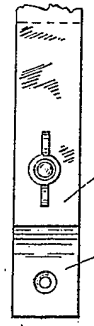

Fig. 8.

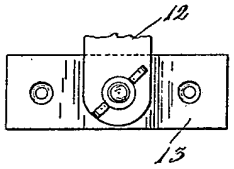

Fig. 9.

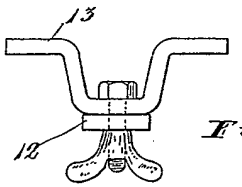

Fig. 10.

Malby&Sons, Photo-Litho

PATENT SPECIFICATION

Application Date: Nov. 9, 1923. No. 28,218/23. **225,358**

Complete Left: July 8, 1924.

Complete Accepted: Dec. 4, 1924.

PROVISIONAL SPECIFICATION.

Improvements in or relating to Side-car and like Wheeled Carrier Attachments to Motor-cycles.

We, A. J. STEVENS & COMPANY (1914) LIMITED, of Graiseley House, Penn Road, Wolverhampton, a British company, and CHARLES WILLIAM HAYWARD, of Walsall Street, Wolverhampton, British subject, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in or relating to side-car and like wheeled carrier attachments to motor-cycles and it has for its object an improved method of fixing the mudguard in position.

According to the present improvements the mudguard is not only spring supported from the chassis springs but is connected only to the chassis, thereby avoiding the need of fixing the mudguard to the side of the side car body. Thus the construction and assembly of the chassis and mudguard is completed before fixing the side car body, and the assembly of the side car body on the chassis is also considerably facilitated.

According to one form of the invention, the transverse bar which is carried by the chassis springs and to which the bottom of the side car body is bolted, carries on one side an extended upstanding arm to which the mudguard is fixed. The mudguard is also fixed at a second point to this upstanding arm, or to another suitable member spring supported by the chassis springs. According to a convenient embodiment, a C- or curved plate spring is carried by each side of the chassis, and a transverse bar is pivotally mounted on the ends of these springs, the transverse bar having bent-up ends to which is fixed a stud engaging the ends of the springs. The bent-up arm on one side is extended up beyond the pivot pin, and the side web of the mudguard is bolted to the ends of this arm. The said pivot pin is extended, and a clip, carried by a rod fixed to one side of a mudguard at the bottom thereof, is mounted on such extension. A sleeve is mounted on the pin, and is located between the clip and a shoulder on the pin, and a nut is screwed on the end of a pin for binding the clip against the sleeve. The upper end of the bent-up arm is conveniently slotted for receiving a bolt fixing such arm to the mudguard. With this construction it will be seen that the mudguard is fixed directly to the chassis. The body can thus be fixed in position by merely passing bolts or other fixing means through the bottom of the body and the said transverse bar. The need is obviated, therefore, of attaching special fittings to the side of the body for connecting the mudguard thereto, or the need of working to fine limits in order to interchangeably fit the body to the chassis. The chassis complete with mudguard can be constructed and despatched to another works for the fitting of the side car bodies. Moreover by the use of a chassis constructed according to this invention, a touring body and a tradesman's delivery box, may be interchangeable with a minimum of trouble and without interfering with the mudguard; and in this instance only one mudguard is required instead of one on the touring body & one on the delivery box.

According to a modified form of the invention, the tube or bar passing along the inner side of the mudguard, may be fixed to a fitting carried by a C- or like spring near one end thereof.

Dated this 2nd day of November, 1923.

J. E. S. LOCKWOOD,
Patent Agent for the Applicant,
3, New Street, Birmingham.

[*Price* 1/-]

COMPLETE SPECIFICATION.

Improvements in or relating to Side-car and like Wheeled Carrier Attachments to Motor-cycles.

We, A. J. STEVENS & COMPANY (1914) LIMITED, of Graiseley House, Penn Road, Wolverhampton, a British company, and CHARLES WILLIAM HAYWARD, of Walsall Street, Wolverhampton, British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises certain improvements in or relating side-car and like wheeled carrier attachments to motor-cycles, and it has for its object an improved construction of the kind wherein the mudguard is supported on springs carried by the chassis and supporting the rear of the side-car body, there being no direct connection of the mud guard to the body.

According to the present improvements, the mudguard is supported on C- or leaf springs carried by the chassis and supporting the rear of the side-car body. In one form of the invention, the transverse bar, which is carried by the chassis C-springs and to which the bottom of the side car body is bolted, carries on one side an extended upstanding arm to which the mudguard is fixed. The mudguard is also fixed at a second point to this upstanding arm, or to another suitable member spring supported by the chassis C-spring.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a side elevation of the rear portion of a chassis constructed according to this invention.

Figure 2 is an end view of the parts shewn by Figure 1, the mudguard being shewn in section and the parts broken away for convenience in illustration.

According to a convenient embodiment, a C- or curved plate spring 1 is carried by each side of the chassis, and a transverse bar 2 is pivotally mounted on the ends of these springs, the transverse bar having bent-up ends 3 to which are fixed studs 4 engaging the ends of the springs. The bent-up arm 3, on one side of the chassis, is extended up beyond the pivot pin to form the support arm 5, and the side web 6 of the mudguard is bolted to the end of this arm 5, a metal strap 7 being fixed to the inside of the mudguard to strengthen the connection of this arm to the mudguard. The said pivot pin 4 is extended, and a clip 8, carried by a rod 9 fixed to one side of a mudguard at the bottom thereof, is mounted on such extension. A sleeve or distance piece 10 is mounted on the pin, and is located between the clip and a shoulder on the pin, and a nut is screwed on the end of a pin for binding the clip against the sleeve. The spring 1 can thus freely pivot on the pin 4, whilst the mudguard and bar 2 are fixed thereon. The bar 9 is fixed to the mudguard by the clips 11. The ends of the bar are also fixed by nuts to the ends of the metal straps 12, which straps are fixed to the inside of the mudguard, the said ends passing through perforations in the web 6. With this construction it will be seen that the mudguard is fixed directly to the chassis. The body can therefore be fixed in position by merely passing bolts, or other fixing means, through the bottom of the body and the said transverse bar. The need is obviated also of attaching special fittings to the side of the body for connecting the mudguard thereto, or the need of working to fine limits in order to interchangeably fit the body to the chassis. The chassis, complete with mudguard, can be constructed and despatched from one workshop to another for the fitting of the side car bodies. Moreover by the use of a chassis constructed according to this invention, a touring body and a tradesman's delivery box, may be interchangeable with a minimum of trouble, and without interfering with the mudguard; and in this instance only one mudguard is required instead of one on the touring body and one on the delivery box.

According to a modified form in lieu of the bar 9 being carried by the pin 4 such bar may be fixed to another form of fitting carried by the spring 1.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Side-care or wheeled carrier attachments to motor-cycles, in which the mud-

guard is mounted on the chassis to be spring supported by the chassis C- or leaf springs in such a manner that the side-car body is fitted to the chassis without fixing the mudguard to such body.

2. Side-cars or wheeled carrier attachments to motor-cycles, in which the single transverse bar of the chassis or member supported by the chassis C-springs is extended upwardly on one side, and in which the mudguard is rigidly fixed to such extension.

3. Side-cars or wheeled carrier attachments to motor-cycles as set forth in the 2nd claim, in which the mudguard is connected at a second point to the said extension or to another member spring supported by the chassis C-spring.

4. Side-cars or wheeled carrier attachments to motor-cycles as set forth in the 2nd and 3rd claims, in which a rod secured to the mudguard is fixed to a pivot pin by means of which the said transverse member is supported from the chassis spring.

5. A side-car chassis or wheeled carrier attachment to motor cycles, substantially as herein set forth or illustrated.

Dated this 4th day of July, 1924.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1924.

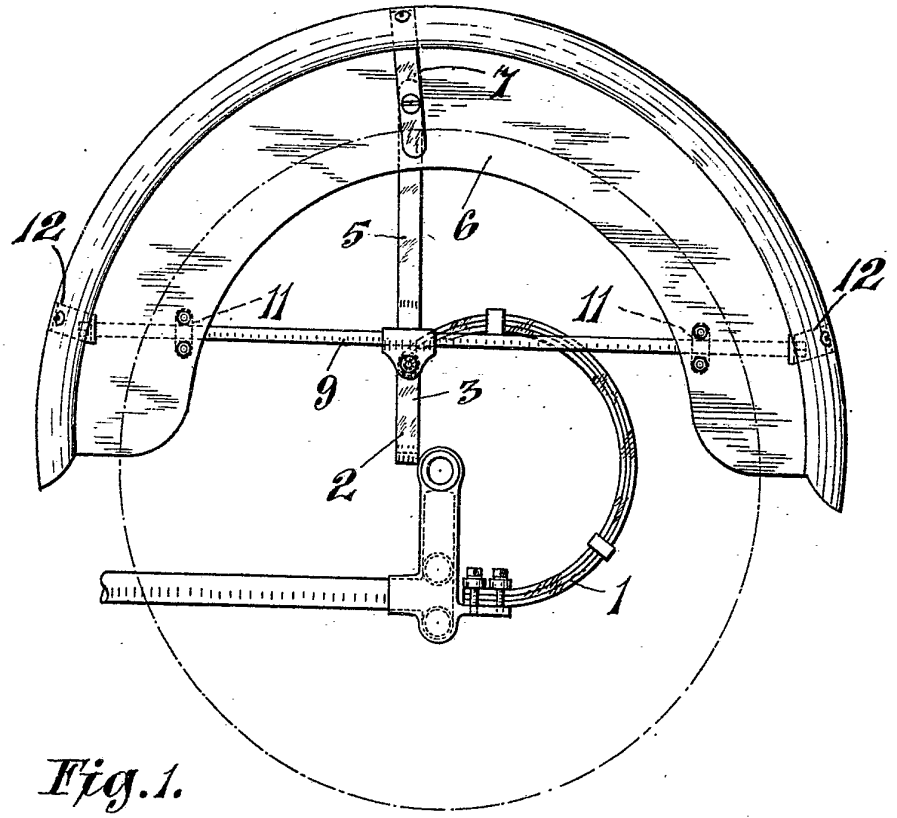

Fig. 1.

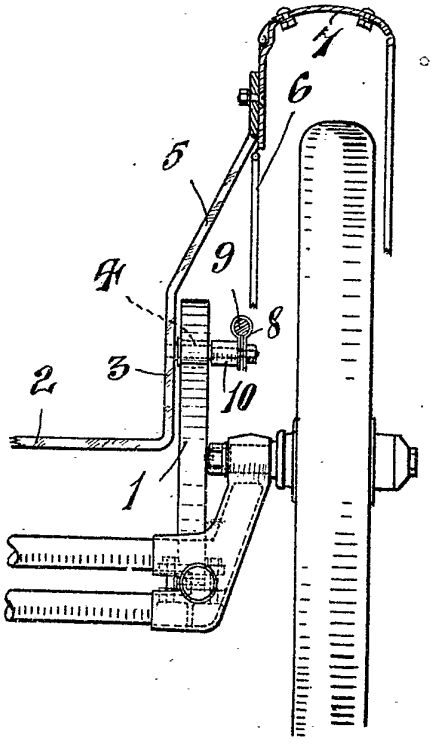

Fig. 2.

Malby&Sons, Photo-Litho

PATENT SPECIFICATION

227,210

Application Date: Oct. 15, 1923. No. 25,625/23.

Complete Left: July 9, 1924.

Complete Accepted: Jan. 15, 1925.

PROVISIONAL SPECIFICATION.

Improvements in or relating to Friction Joints for Motor Cycle Spring Forks or like Shock Absorbing Devices.

We, JOSEPH STEVENS, a British subject, and A. J. STEVENS & COMPANY (1914) LIMITED, a British company, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in or relating to friction joints for motor cycle spring forks or like shock absorbing devices.

According to the present improvements, the pivotal connection between two parts of a shock absorber, which allows relative movement of the said parts for absorbing shock, has a friction retarding joint incorporated therewith. The friction joint comprises disc-like members which are pressed together so that a frictional resistance opposes the relative pivotal movement of the two parts.

The invention is particularly applicable to the spring fork of a motor cycle, and a feature of the invention is present in that the device itself forms an integral part of the ordinary spring fork unit.

According to a convenient embodiment, the invention is applied to the type of spring fork which is connected to the steering tube through the medium of two pairs of links. The ends of the links mounted on the bracket fixed to the upper end of the tube are enlarged to form disc-like members on such ends of the links. The ends of the said bracket fixed to the upper end of the steering tube have flanges thereon which also form disc-like members, the size of which correspond to the size of the disc-like members on the ends of the connecting links. A bolt passes through a plain hole in one connected link and after passing through the said bracket engages a tapped hole in the other connected link. A hard wood or like disc is located between each connecting link and the respective flanges on the bracket to form a friction joint between the links and the bracket. Box wood discs have been found to give an effective frictional resistance. A spring member is interposed between the head of the said bolt and the adjacent connecting link, such spring member conveniently comprising a dish-shaped metal disc having four shallow curved notches therein to form four short spring arms. When the bolt is tightened up therefore the box wood discs or washers will be tightly compressed between the respective connecting links and bracket flanges by the somewhat stiff resilient pressure of the spring washer aforementioned. By adjusting the said bolt the pressure and consequently the frictional resistance to the movement of the links can be varied. A lock nut is mounted on the end of the bolt projecting through the tapped hole in the connecting link.

With this construction of spring fork the recoil action of the spring is counteracted by the friction joint thereby preventing undue vibration of the spring fork. Lighter controlling springs may also be fitted to the forks.

Dated this 13th day of October, 1923.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

[*Price* 1/-]

COMPLETE SPECIFICATION.

Improvements in or relating to Friction Joints for Motor Cycle Spring Forks or like Shock Absorbing Devices.

We, JOSEPH STEVENS, a British subject, and A. J. STEVENS & COMPANY (1914) LIMITED, a British company, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises certain improvements in or relating to motor cycle spring front forks, of the type in which a movement retarding device is incorporated at a pivotal connection allowing the wheel carrying member and the cycle or like frame to have relative movement, such shock absorbing devices comprising disc members carried by the jointed members between which a friction element is compressed by means of a plate spring.

The invention relates to the type of spring fork which is connected to the steering tube of a motor cycle frame through the medium of two pairs of links; and according to the present improvements the upper pair of the said links have enlarged ends at their connection to a bracket fixed to the steering tube. This bracket has end flanges and a hard wood or friction washer is placed between such flanges and the enlarged ends of the links. A bolt passes through the said bracket and links, and a plate spring is located between the head of the bolt and a link.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a side elevation of an upper portion of a motor cycle spring fork, constructed according to this invention.

Figure 2 is a plan view of the parts shewn by Figure 1.

Figure 3 is a section on line *x x* of Figure 2.

Figure 4 is a face view of a spring washer.

Figure 5 is a side elevation of Figure 4.

Figure 6 is a face view of a box-wood washer.

Figure 7 is an edge view of Figure 6, and

Figure 8 is a view of a portion of the spring fork constructed according to this invention.

The spring fork is connected to the steering tube through the medium of two pairs of links 1. The ends of the links mounted on the bracket 2, fixed to the upper end of the steering tube, are enlarged to form disc-like members 3 on such ends of the links. The ends of the said bracket 2 fixed to the upper end of the steering tube have flanges 4 thereon which also form disc-like members, the size of which correspond to the size of the disc-like members 3 on the enlarged ends of the connecting links. A bolt 5 passes through a plain hole 6 in one connected link and after passing through the said bracket engages a tapped hole 7 in the other connecting link. A hard wood or like disc 8 is located between each connecting link and the respective flanges on the bracket to form a friction joint between the links and the bracket. Box-wood discs have been found to give an effective frictional resistance. A plate spring is interposed between the head of the said bolt 5 and the adjacent connecting link, such spring comprising a dish-shaped metal disc 9 having four shallow curved notches therein to form four short spring arms 10. When the bolt 5 is tightened up therefore the box-wood discs 8 or washers will be tightly compressed between the respective connecting links 1 and bracket flanges 4 by the somewhat stiff resilient pressure of the spring washer 9 aforementioned. By adjusting the said bolt the pressure and consequently the frictional resistance to the movement of the links can be varied. A lock nut 11 is mounted on the end of the bolt projecting through the tapped hole in the connecting link.

With this construction of spring fork the recoil action of the shock absorbing spring or springs is counteracted by the friction joint thereby preventing undue vibration of the spring fork. Further advantage is also present in that lighter controlling springs may also be fitted to the forks.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A spring fork for motor cycles, of the type connected to the steering tube through the medium of two pairs of links,

in which the upper pair of links have enlarged ends for connection to a bracket fixed to the steering tube, such bracket having end flanges, and in which a hard wood or friction washer is placed between such flanges and enlarged ends of the links, a bolt passing through the bracket and said links and a plate spring being located between the head of the bolt and a link.

2. A spring fork for motor cycles as set forth in the 2nd Claim, in which the bolt passing through the bracket and links has screwed engagement with one link.

3. A spring fork substantially as herein set forth and illustrated.

Dated this 8th day of December, 1924.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1925.

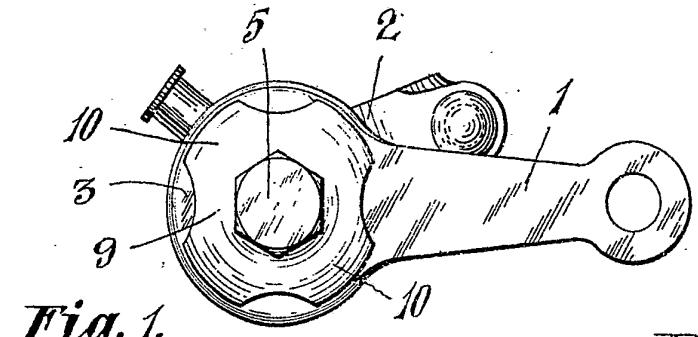

Fig. 1.

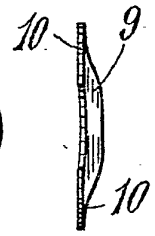

Fig. 5.

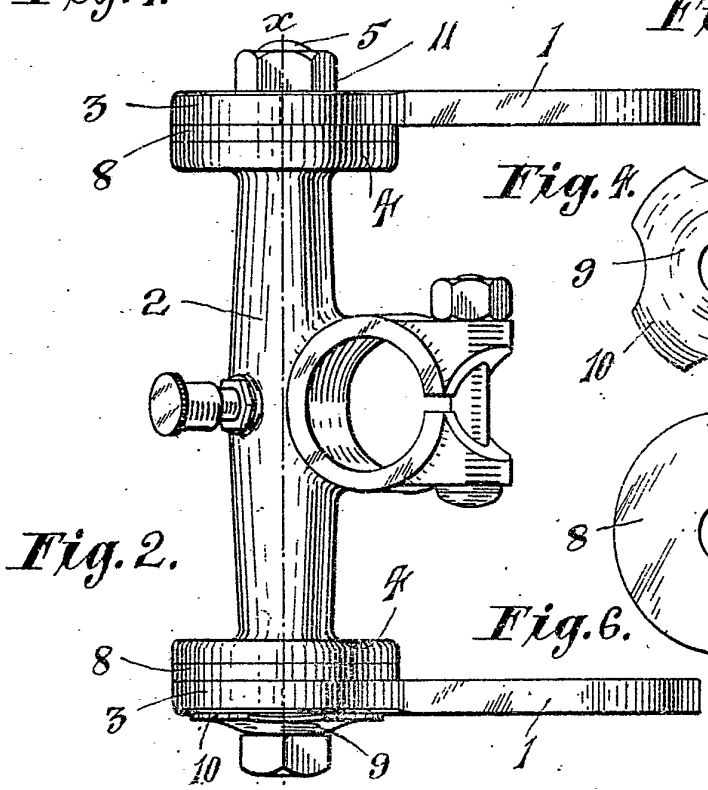

Fig. 2.

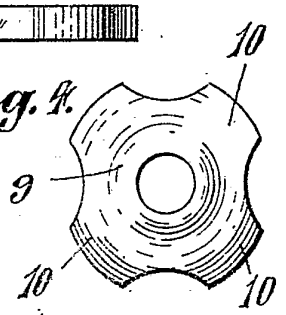

Fig. 4.

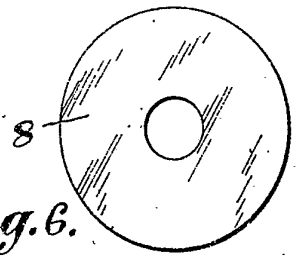

Fig. 6.

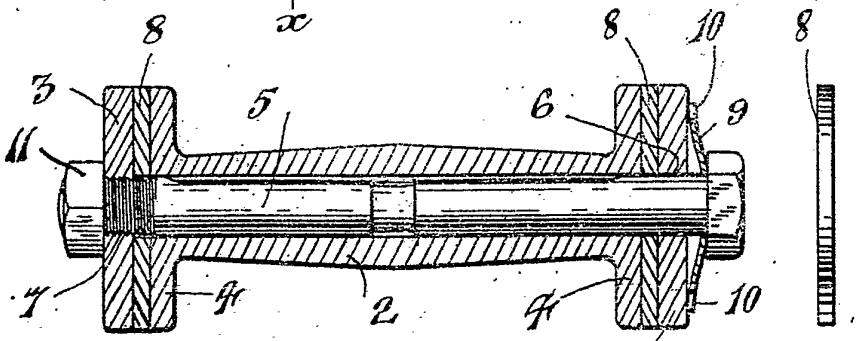

Fig. 3.

Fig. 7.

SHEET 1

5.

7.

SHEET 2

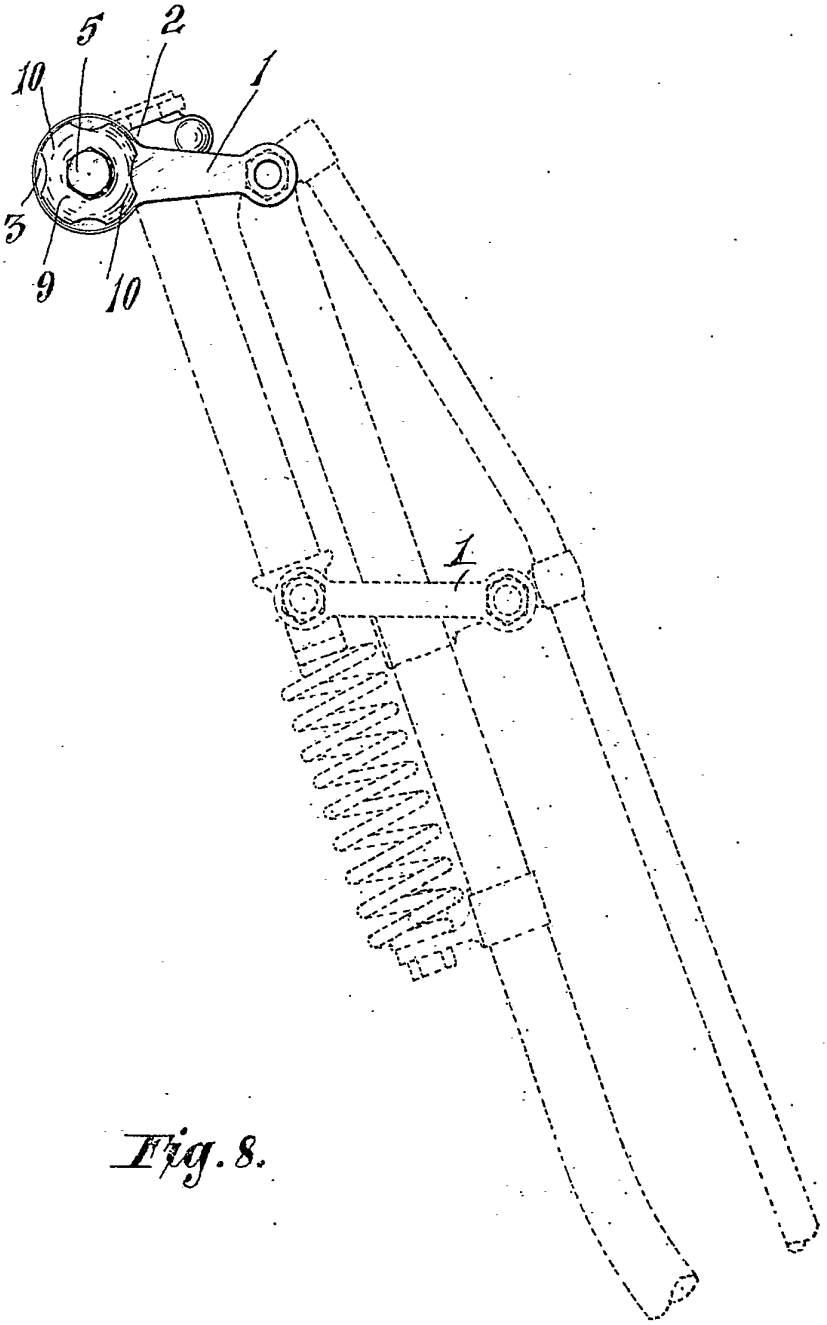

Fig. 8.

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[This Drawing is a reproduction of the Original on a reduced scale]

SHEET 1

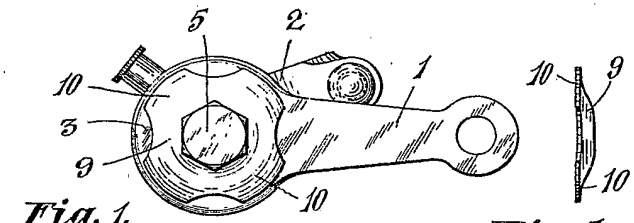

Fig. 1.

Fig. 5.

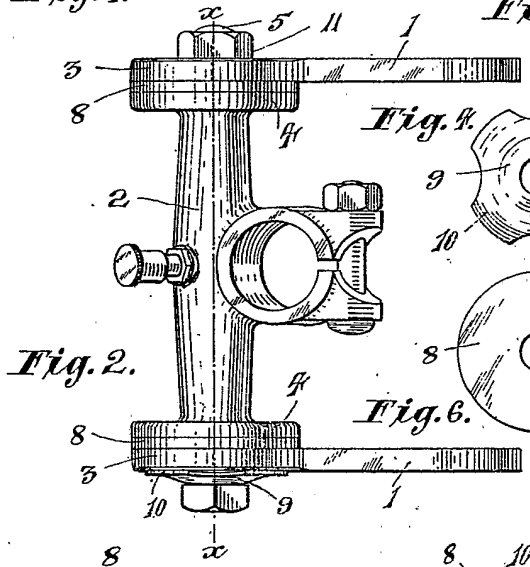

Fig. 2.

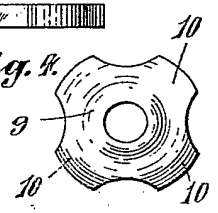

Fig. 4.

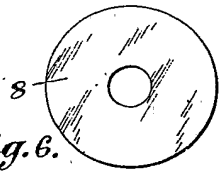

Fig. 6.

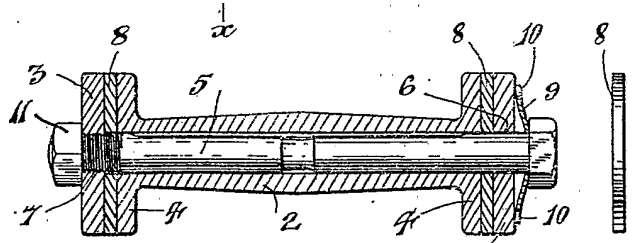

Fig. 3.

Fig. 7.

SHEET 2

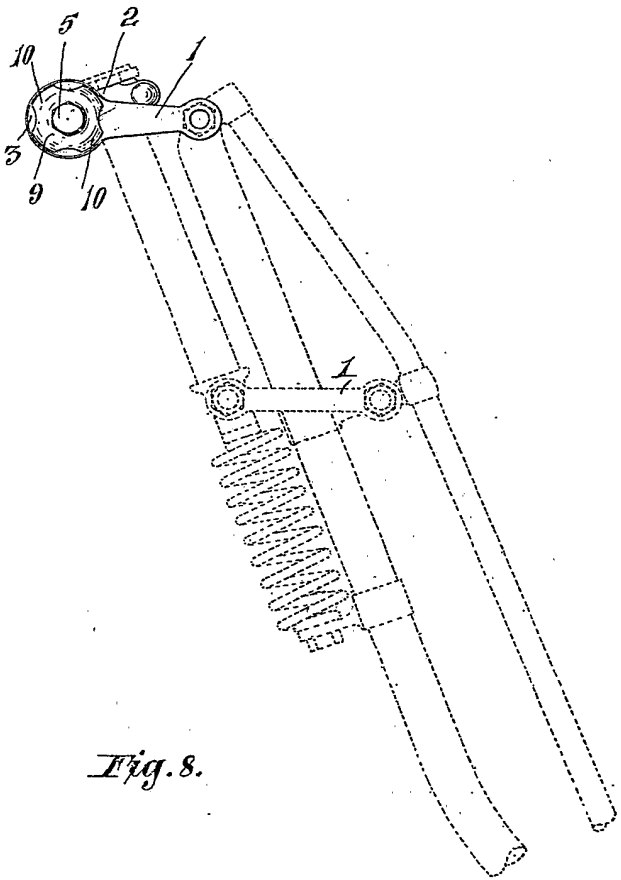

Fig. 8.

Malby&Sons, Photo-Litho

PATENT SPECIFICATION

Application Date: Nov. 16, 1923. No. 28,916/23.

228,836

Complete Left: July 8, 1924.

Complete Accepted: Feb. 12, 1925.

PROVISIONAL SPECIFICATION.

Improvements in or relating to the Fixing of Beading or the like on Vehicle Bodies or the like.

We, CHARLES WILLIAM HAYWARD, of Walsall Street, Wolverhampton, British subject, and A. J. STEVENS AND COMPANY (1914) LIMITED, of Graiseley House, Penn Road, Wolverhampton, a British company, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in or relating to the fixing of metal beading to wood or like frames, and particularly relates to fixing aluminium beading to cover the joints of the sheet metal panelling of side car bodies or other motor vehicle bodies. Heretofore the beading has been fixed in position by means of screws which pass through the beading, and this invention has for its object a fastening for fixing the beading which is invisible or substantially invisible, thus enhancing the finished appearance of the bodywork.

According to the present improvements nails having taper heads are adapted to be driven through holes in the beading, which holes are tapered so that the head of the nail is wedged inside the hole. The head of the nail is then filed or smoothed over so that it conforms to the shape of the beading to give the beading a continuous surface.

According to a convenient embodiment of this invention the beading is formed of aluminium strip which is flat on one side and curved on the other side. Holes are punched in the bead at intervals therealong, such holes being cylindrical at the base of the strip and tapering outwardly towards the outer surface of the strip. The flat surface of the strip may have a small groove running down the centre so that when the holes are punched from the outer surface of the beading allowance is made for the metal being pressed downwardly around the bottom edge of the hole. It is thus ensured that the beading will lie flat over the meeting edges of the panels to be covered. The punching tool is shaped so that it forms the finished shape of the hole in one operation. The fixing nails comprise wire or like cylindrical stems having a pointed end and a conical head. The angle of the wall of the conical head is steep so that it will wedge itself in the tapered end of the hole in the beading. The nail being formed of aluminium, the wall of the conical head will expand to be tightly wedged in the hole and it will not be necessary to rivet over or splay the end of the head of the nail. The conical head of the nail also projects beyond the surface of the bead so that the beading itself will not be damaged when driving in the nails. The projecting portion of the nail head can then be filed away or otherwise smoothed over, whereby the appearance of a bead having a continuous surface is obtained without showing any fixing means.

Dated this 15th day of November, 1923.

J. E. S. LOCKWOOD,
Patent Agent for the Applicant,
3, New Street, Birmingham.

COMPLETE SPECIFICATION.

Improvements in or relating to the Fixing of Beading or the like on Vehicle Bodies or the like.

We, CHARLES WILLIAM HAYWARD, of Walsall Street, Wolverhampton, British subject, and A. J. STEVENS AND COMPANY (1914) LIMITED, of Graiseley House,

[Price 1/-]

Penn Road, Wolverhampton, a British company, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to fixing means comprising conical headed nails which are driven through conical holes in the part to be fixed, and comprises certain improvements in or relating to the fixing of metal beading or the like to the wood frames of vehicle bodies or the like, and particularly relates to fixing aluminium beading to cover the joints of the sheet metal panelling of side car bodies or other motor vehicle bodies; and this invention has for its object a fastening for fixing the beading or the like which is invisible or substantially invisible, thus enhancing the finished appearance of the bodywork.

Accordng to the present improvements, aluminium or like soft metal nails, having taper or conical heads, are driven through holes in the beading or the like, which holes have taper or conical mouths of such a taper that the heads are fixed by a wedge action, the heads projecting above the beading or the like after being driven therein, which projecting heads are filed or smoothed over to impart the appearance of a continuous surface to the beading. The beading or the like conveniently has the holes punched therein, and the inner surface of the beading or the like is channelled or recessed.

It has previously been proposed to fix beading or the like by means of screws, nails, or pins, the heads of which pass into counter-sunk holes in the beading, the counter-sunk holes being formed by a process so that a flange is formed around the edge of the counter-sunk hole, which flange is hammered over to cover the head of the screw.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a face view of a length of beading.

Figure 2 is an underside view of the beading shewn by Figure 1.

Figure 3 is an edge view.

Figure 4 is a section on line *x x*.

Figure 5 is a cross sectional view, shewing the beading fixed to a wooden frame and covering the joint between two sheet metal panels, a fixing nail being shewn before being filled or smoothed over, and

Figure 6 is a similar view to Figure 5 with the nail filed or smoothed over.

According to a convenient embodiment of this invention, the beading 1 is formed of aluminium strip which is flat on one side and curved on the other side. Holes 2 are punched in the bead at intervals therealong, such holes being cylindrical at the base of the strip and tapering outwardly towards the outer surface of the strip. The flat surface of the strip may have a small groove 3 running down the centre, or may be otherwise shaped so that, when the holes 2 are punched from the outer surface of the beading, allowance is made for the metal being slightly pressed downwardly around the bottom edge of the hole. It is thus ensured that the beading will lie flat over the meeting edges of the panels to be covered. The punching tool is shaped so that it forms the finished shape of the hole in one operation. The fixing nails 4 comprise wire or like cylindrical stems having a pointed end and a conical head 5. The angle of the wall of the conical head is steep, so that it will wedge itself in the tapered end or mouth of the hole in the beading. The nail being formed of aluminium, the wall of the conical head will expand to be tightly wedged in the hole, and it will not be necessary to rivet over or splay the end of the head of the nail. The conical head of the nail also projects beyond the surface of the bead so that the beading itself will not be damaged when driving in the nails. The projecting portion of the nail head can then be filed away or otherwise smoothed over, as shewn by Figure 6, whereby the appearance of a bead having a continuous surface is obtained without showing any fixing means.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. The fixing of metal beading or the like to the wood or like frames of motor vehicle bodies or the like, by means of aluminium or like soft metal nails having taper or conical heads, which are driven through holes in the beading or the like, which holes have taper or conical mouths of such a taper that the nail heads are fixed by a wedge action, the heads projecting above the beading or the like when driven therein which projecting ends are filed or smoothed over to impart the appearance of a continuous surface to the beading or the like, substantially as set forth.

2. Beading or the like, adapted to be fixed in position in accordance with Claim 1, which has holes punched

therein and in which the inner surface of the beading or the like is channelled or recessed, substantially as and for the purpose set forth.

3. The fixing of beading or the like to a wood frame of a motor vehicle body to cover the joints of sheet metal panelling, substantially as herein set forth or illustrated.

Dated this 24th day of December, 1924.

J. E. S. LOCKWOOD,
Patent Agent for the Applicant,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1925

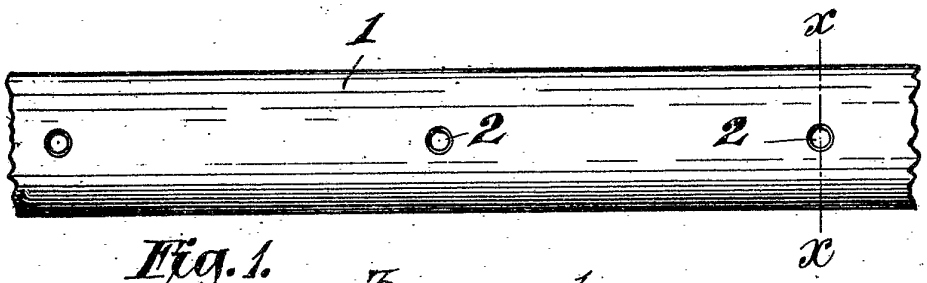

Fig. 1.

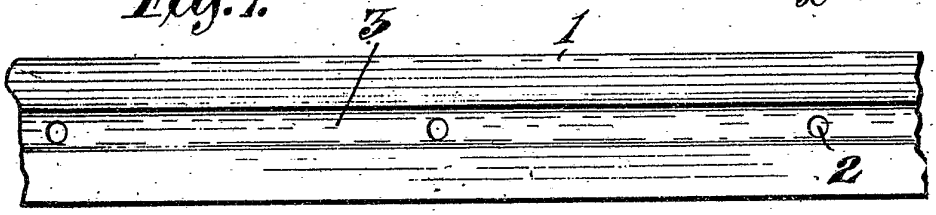

Fig. 2.

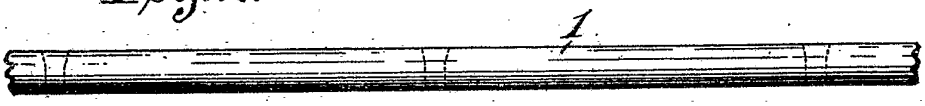

Fig. 3.

Fig. 4.

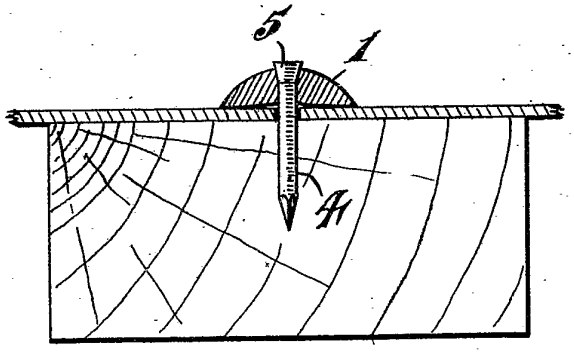

Fig. 5.

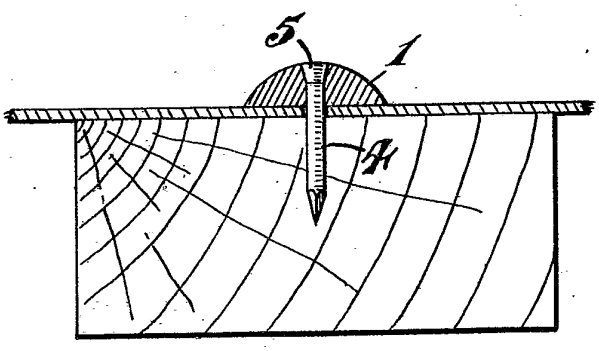

Fig. 6.

Malby & Sons, Photo-Litho

PATENT SPECIFICATION

230,950

Application Date: Jan. 16, 1924. No. 1239/24.

Complete Left: Oct. 16, 1924.

Complete Accepted: March 26, 1925.

PROVISIONAL SPECIFICATION.

Improvements in or relating to Side Car and like Wheeled Carrier Attachments to Motor Cycles.

We, CHARLES WILLIAM HAYWARD, of Walsall Street, Wolverhampton, British subject, and A. J. STEVENS AND COMPANY (1914) LIMITED, of Graiseley House, Penn Road, Wolverhampton, a British company, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in side cars or like wheeled carrier attachments to motor cycles, and it has for its object an improved construction of chassis which will facilitate the detachment of the wheel, the chassis maintaining a strong and rigid construction and also a neat appearance.

As heretofore constructed the side car wheel has been mounted on a spindle carried, at its inner side, in a socket of a chassis frame, and at its outer side in a socket of a portion of the chassis frame which passes around the wheel. According to the present improvements the portion of the frame supporting the outer end of the wheel spindle is so constructed that it passes around the front half of the wheel only. The wheel can thus be disengaged from the chassis by being moved rearwardly thereof.

According to one convenient embodiment of this invention, the chassis comprises a front tubular transverse member and a rear double tubular transverse member, which are connected together by longitudinal side members. The lug, connecting the double rear transverse member and the outer side longitudinal member, also carries an extension having a hole therein for receiving the inner end of the wheel spindle. A U-shaped tube is brazed to the top of this extension and such tube is carried vertically over the wheel and down the outer side thereof. The end of this tube is connected by means of a lug with a stay tube which passes forwardly along the outer face of the wheel and round the front of the wheel to a lug brazed on the outer side longitudinal member of the chassis. The lug connecting the U-shaped tube with the stay tube has a hole formed therethrough for receiving the outer end of the wheel supporting spindle. The stay tube inclines downwardly from this lug as the longitudinal member of the chassis lies below the level of the wheel spindle. The stay tube may be horizontally arranged and have a bracket on the end which is connected to the U-shaped tube. The mud-guard is fixed to the U-shaped tube by means of a bolt which passes through the top of the U-shaped tube and the centre of the mud-guard, and by means of a cross stay which is fixed to each side of the mud-guard, near the lower end, and which is also fixed to the U-shaped tube by means of a clip. The U-shaped and stay tubes aforementioned rigidly support the outer end of the wheel axle. When it is desired to remove the sidecar wheel it is only necessary to remove the centre spindle when the wheel can be moved rearwardly from engagement with the chassis.

Dated this 15th day of January, 1924.

J. E. S. LOCKWOOD,
Patent Agent for the Applicant,
3, New Street, Birmingham.

[*Price* 1/-]

COMPLETE SPECIFICATION.

Improvements in or relating to Side Car and like Wheeled Carrier Attachments to Motor Cycles.

We, CHARLES WILLIAM HAYWARD, of Walsall Street, Wolverhampton, British subject, and A. J. STEVENS AND COMPANY (1914) LIMITED, of Graiseley House, Penn Road, Wolverhampton, a British company, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises certain improvements in side cars or like wheeled carrier attachments to motor cycles; in one known kind the outer end of the wheel spindle is supported through the medium of a U-tube which passes over the top of the wheel, with the outer limb on the outer side of the wheel, and also through the medium of a tube which passes from the said outer limb along the outer face of the wheel and round the front thereof to an outer longitudinal member of the chassis, the ends of the wheel spindle being carried in brackets or lugs adapted solely to support the wheel spindle and clamped only to the outer and inner limbs of the said U-tube. This invention has for its object an improved construction of chassis which, whilst facilitating the attachment of the wheel, is strong and rigid, and also neat in appearance.

According to the present improvements the inner limb of a U-tube which passes over the top of the wheel is fixed to a bracket which connects the rear transverse member and the outer side longitudinal member of the chassis and which supports the inner end of the wheel spindle, and the outer limb of the U-tube is connected to a tube which passes along the outer face of the wheel and along the front thereof by means of a bracket or lug, which bracket or lug receives the outer end of the wheel spindle. This latter bracket also pivotally carries a single tube adapted to form a stand or support for the chassis. By the present improvements also, the tube which passes over the top of the wheel and down the outer face thereof, and the tube which passes along the outer face of the wheel and around the front thereof, are connected together by a metal strap which passes along the inside of the mudguard.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a side elevation of a portion of a side car chassis constructed according to this invention.

Figure 2 is a plan view of the parts shewn by Figure 1, and

Figure 3 is an end view.

According to one convenient embodiment of this invention, the chassis comprises a front tubular transverse member 1 and a rear double tubular transverse member 2, which are connected together by longitudinal side members 4. The bracket or lug 5, connecting the double rear transverse member 2 and the outer side longitudinal member 4, also carries an extension 6 having a hole therein for receiving the inner end of the wheel spindle. A U-shaped tube 7 is brazed to the top of this extension 6 and such tube is carried vertically over the wheel and down the outer side thereof. The end of this tube is connected by means of a lug 8 with a stay tube 9 which passes forwardly along the outer face of the wheel and round the front of the wheel to a lug 10 brazed on the outer side longitudinal member of the chassis. The lug connecting the U-shaped tube 7 with the stay tube 9 has a hole formed therethrough for receiving the outer end of the wheel supporting spindle. The stay tube 9 inclines downwardly from this lug as the longitudinal member of the chassis lies below the level of the wheel spindle. According to a modified form the stay tube may be horizontally arranged and have a bracket on the end which is connected to the U-shaped tube and supports the outer end of the wheel spindle. The mud-guard 11 is fixed to the U-shaped tube by means of a bolt which passes through the top of the U-shaped tube and the centre of the mud-guard, and by means of a cross stay 12 which is fixed to each side of the mud-guard, near the lower end, and which is also fixed to the U-shaped tube by means of a clip. The tubes 7 and 9 aforementioned rigidly support the outer end of the wheel axle. A bar 13 may be pivotally mounted on the lug 8 to form a stand when it is required to remove the side car wheel, the stand pivoting into the position shewn by

dotted lines Figure 1, and abutting against the shoulder 14 formed on the lug 8. This bar 13 carries a laterally projecting pin 15 which is adapted to engage the spring clip 16 carried by the mudguard 11 when the stand is out of use. This stand also gives a finished appearance to the chassis. When it is desired to remove the side car wheel it is only necessary to remove the centre spindle when the wheel can be moved rearwardly from engagement with the chassis.

In order to prevent vibration of the tube 7 a metal strap 17 passes longitudinally around the inside of the mudguard 11 to connect the tube 9 with the top of the tube 7.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A chassis for side cars or like wheeled carrier attachments to motor cycles, in which a U-shaped tube which passes over the top of the wheel is fixed to a bracket which connects a longitudinal member and a transverse member of the chassis and which supports the inner end of the wheel spindle, and in which the outer limb of the U-tube is connected to a tube, which passes along the outer face of the wheel and round the front thereof, by means of a lug or bracket which supports the outer end of the wheel spindle.

2. A chassis for side cars or like wheeled carrier attachments to motor cycles as set forth in the 1st Claim, in which a stand is provided, characterised in that the stand comprises a single tube which is pivoted to the bracket supporting the outer end of the wheel spindle.

3. A chassis for side cars or like wheeled carrier attachments to motor cycles as set forth in the preceding claims, in which the wheel spindle supporting tubes, which pass respectively over the top of the wheel and down the outer face thereof, and along the outer face of the wheel and round the front thereof to an outer longitudinal member of the chassis, are connected by a metal strap which passes along the inside of the mudguard, substantially as set forth.

4. A chassis for side cars or like wheeled carrier attachments to motor cycles, substantially as herein set forth or illustrated.

Dated this 19th day of February, 1925.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
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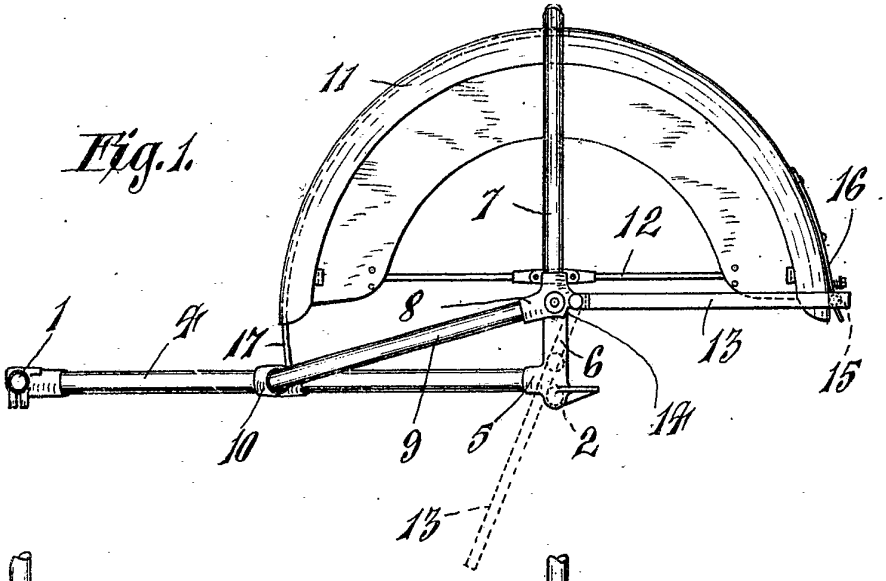
Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1925.

[This Drawing is a reproduction of the Original on a reduced scale]

Fig. 1.



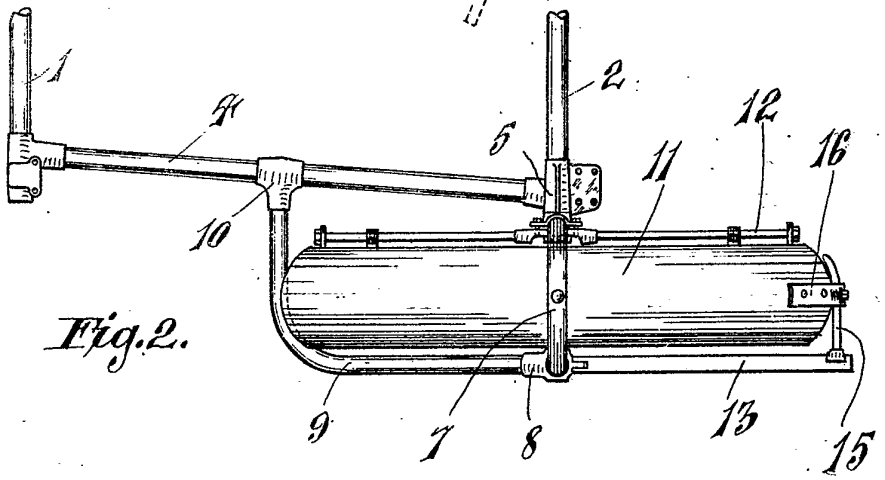


Fig. 2.

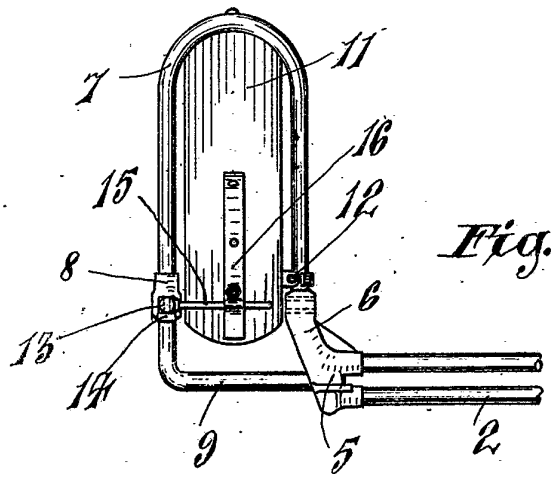


Fig. 3.

Malby & Sons, Photo-Litho

PATENT SPECIFICATION

231,973

Application Date: Jan. 29, 1924. No. 2316/24.

Complete Left: Oct. 29, 1924.

Complete Accepted: April 16, 1925.

PROVISIONAL SPECIFICATION.

A New or Improved Lubricating System or Apparatus for Internal-combustion Engines.

We, A. J. STEVENS & COMPANY (1914), LIMITED, a British company, of Graiseley House, Wolverhampton, and ALBERT JOHN STEVENS, a British subject, of the same address, do hereby declare the nature of this invention to be as follows:—

The present invention has relation to lubricating systems or apparati for internal-combustion engines, more particularly those designed for motor cycles, and the invention has for its object to provide for the more positive and thorough lubrication of the operative parts of the engine, whereby its efficiency is increased under all working conditions.

The present invention therefore comprehends a lubricating system or apparatus for an internal-combustion engine wherein the oil is adapted to be pumped or conveyed from a suitable container to a trough beneath the fly-wheels or crank-shaft, whence it is adapted to gravitate, into a sump, from which it is returned to the container. A circulating system is thereby provided which ensures a continuous supply of fresh and cool oil to the operative parts of the engine. The oil is replaced when its efficiency has been impaired after considerable use.

The trough is preferably of an arcuate character conforming to the curvature of the fly-wheel or fly-wheels or the path of the crank-shaft or other rotating part, and a dipper or projecting web is provided on the fly-wheel or wheels or other part aforesaid of the engine adapted to pass along the trough to spray a film of oil on to working parts, such as directly on to the cylinder. The dipper or web may be of an adjustable character.

A dual pumping system is preferably employed, one pump being adapted to force or direct the oil into the trough and the second to elevate it from the sump to the container, after it has gravitated into the trough. Both pumps are conveniently driven from a common shaft by worm and worm wheel and are readily detachable therefrom for inspection purposes.

In a convenient embodiment of the present invention, as applied to an internal combustion engine for a motor cycle, from which its application to any other similar internal-combustion engine will readily be understood, the crank case of the engine has an annular wall conforming to the circular configuration of the fly-wheels. Provided within the crank case at its base are two small upstanding webs, disposed in parallel relationship to thereby constitute a shallow trough, the curvature of which conforms to that of the fly-wheels. If desired, each web may be formed on its particular half of the crank case and on each outer side of this trough, which may be of a length somewhat more than a fifth part of the perimeter of the complete crank case, two or more apertures are formed which open into a sump at the base of the crank case. This sump may be constituted by a box-like extension of the crank case which is closed by a suitable bottom plate. Provided upon the crank-shaft where it projects from that part of the crank case housing the fly-wheels, is a worm adapted to mesh with a worm-wheel on a small horizontal shaft provided beneath the crank-shaft. Pumps of any suitable character adapted to propel oil have end long slot and projection locking engagements with the extremities of this small horizontal shaft and each pump is itself adapted to have a sliding engagement with an extension formed integral with the crank case proper,

whereby said pumps are readily removed for inspection purposes. This extension of the crank case may house the timing gear and may be virtually the usual timing gear casing.

The left-hand pump (viewing the engine in its elevation) has one conduit leading to the base of an oil tank, which may be situated on any suitable part of the frame of the cycle, and a second conduit which leads firstly down the face of the crank case proper, then horizontally beneath the trough, and opens into that member substantially centrally thereof.

The right-hand pump has a conduit leading down the face of the crank case into the sump and a second conduit leading to the oil tank and adapted to project above the level of the oil conveniently through the tank and precipitate oil on to that already in the tank. Such precipitation may be viewed through a suitable inspection glass or cover. These conduits leading to the pumps, and which connect with the oil tank are preferably provided in a plate or part which closes that extension of the crank case wherein the pumps and their driving mechanism are accommodated.

The pumps have a plain sliding connection with the crank case extension and their ports are brought into register with suitable ports connecting with the crank case and with those conduits leading to the oil tank, so that the pumps can be readily removed without dis-assembling any of the conduits, for inspection purposes. Conveniently the two conduits connecting with the oil tank may lead into the edge of that plate adapted to close the crank case extension, the upper conduit being connected to the left hand pump, and the lower conduit to the right hand pump by an oblique conduit extending through the closure plate.

A dipper, or small projecting web is provided upon one or both of the fly-wheels. This dipper may be in the form of a small point or narrow concave web and is adapted to dip into the oil in the trough and cause a film of oil to be sprayed on to the cylinder wall. Obviously instead of placing the dipper on the fly-wheels in some instances it may be necessary or advisable to place it upon a crank of the crank-shaft or upon the big end of the connecting rod, the desideratum in each instance being to raise a film of oil in the arc of a circle towards the cylinder.

In operation upon the engine commencing to function, oil is pumped downwardly from the oil tank by the left hand pump into the trough. This oil is sprayed by the dipper and its excess flows over the edges of the trough through the apertures into the sump where it is picked up by the right hand pump and elevated into the oil tank where it is precipitated on to the oil and during such precipitation and rest in the tank allowed to cool. The arcuate trough ensures that a constant amount of oil shall always reside beneath the fly-wheels and on account of its arcuate character when the engine is inclined, as for instance, when the motor cycle is ascending or descending a hill, the oil in the trough simply moves along that member, but is in no way increased or decreased in its relationship to the dipper.

Dated this 28th day of January, 1924.

LEWIS WM. GOOLD, C.I.Mech.E.,
Fellow of the Chartered Institute of Patent Agents,
Agent for the Applicants,
5, Corporation Street, Birmingham.

COMPLETE SPECIFICATION.

A New or Improved Lubricating System or Apparatus for Internal-combustion Engines.

We, A. J. STEVENS & COMPANY (1914), LIMITED, a British company, of Graiseley House, Wolverhampton, and ALBERT JOHN STEVENS, a British subject, of the same address, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention has relation to lubricating systems for internal-combustion engines, more particularly those designed for motor cycles, and the invention has for its object to provide for the more positive and thorough lubrication of the operative parts of the engine, whereby its efficiency is increased under all working conditions.

The present invention consists in a lubricating system for an internal-combustion engine particularly such a one as is used upon a motor cycle, wherein a dual pumping system is provided comprising a common shaft geared at an

intermediate position on its length to the engine crank-shaft, and a pump at each extremity, one pump being adapted to convey oil from a container to an arcuate trough beneath the fly-wheel or crank-shaft from which it is elevated for lubrication purposes, as for instance, by a dipper on the fly-wheel, and the other pump being adapted to elevate oil back to the container from a sump placed beneath the trough and arranged to receive an overflow or excess of oil therefrom. The pumps may be accommodated in housings in or upon the crank or fly-wheel case of the engine from which they are adapted to be readily slid or detached for inspection or other purposes.

The trough may be constituted by two parallel upstanding webs or fins on the base of the crank-case proper and the sump by a downward box-like extension thereof which is open to the trough by crank-case slots.

In order that this invention may be clearly understood and readily carried into practice, reference may be had to the appended drawings, upon which:—

Figure 1 is a fragmentary perspective view illustrating the present lubricating system, and

Figure 2 a fragmentary perspective of a modification.

In a convenient embodiment of the present invention, as applied to an internal-combustion engine for a motor cycle, from which its application to any other similar internal-combustion engine will readily be understood, the crank case *a* of the engine has an annular wall conforming to the circular configuration of the fly-wheels *b*. Provided within the crank case, at its base, are two small upstanding webs a^1, disposed in parallel relationship to thereby constitute a shallow trough, as illustrated, the curvature of which conforms to that of the fly-wheels *b*. If desired, each web may be formed on its particular half of the crank case and on each outer side of this trough, which may be of a length somewhat more than a fifth part of the perimeter of the complete crank case, one, two or more apertures a^2 (see Figure 2) may be formed, which open into a sump *c* at the base of the crank case. In the apparatus shown in Figure 1, apertures such as a^2 (Figure 2) may be dispensed with the trough being completely open along its side to the sump, as shown. This sump *c* may be constituted by a box-like extension of the crank case which is closed by a suitable bottom plate. Provided upon the crank shaft where it projects from that part of the crank case housing the fly-wheels, is a worm *d* adapted to mesh with a worm-wheel d^1 on a small horizontal shaft d^2 provided beneath the crank-shaft. Pumps *e* and *f* of any suitable character adapted to propel oil have endlong slot and projection locking engagements with the extremities of this small horizontal shaft d^2 and each pump is itself adapted to have a sliding engagement with an extension not shown formed integral with the crank case proper, whereby said pumps are readily removed for inspection purposes. This extension of the crank case may house the timing gear and may be virtually the usual timing gear casing.

The pump *e* has one conduit *g* leading to the base of an oil tank *h*, which may be situated on any suitable part of the frame of the cycle, and a second conduit *i* which leads firstly down the face of the crank case proper, then horizontally beneath the trough, and opens into that member (as at i^1) substantially centrally of its width and at or about one extremity.

The pump *f* has a conduit *j* leading down the face of the crank case into the sump, and a second conduit *k* leading to the oil tank *h* and adapted to project above the level of the oil conveniently through the tank and precipitate oil on to that already in the tank. Such precipitation may be viewed through a suitable inspection glass or cover. Parts of these conduits leading to the pumps, and which connect with the oil tank are preferably provided in a plate or part which closes that extension of the crank case wherein the pumps and their driving mechanism are accommodated.

The pumps *e* and *f* may have a plain sliding connection with the crank case extension and their ports are brought into register with suitable ports connecting with the conduits *i*, *j* and with those conduits leading to the oil tank, so that the pumps can be readily removed without disassembling any of the conduits, for inspection purposes. The side walls of the trough are of uniform or substantially uniform depth or height throughout their length, whereby the depth of oil in the trough is always uniform or the same irrespective of any normal inclination in the plane of the fly-wheels to which the engine may be subjected.

A dipper or small projecting web *l* is provided upon one or both of the fly-wheels *b*. This dipper may be in the form of a small blade conical member or narrow concave web and is adapted to dip into the oil in the trough and cause a film of oil to be sprayed on to the cylinder wall. Obviously, instead of placing the dipper on the fly-wheels, in

some instances it may be necessary or advisable to place it upon a crank of the crank-shaft, or upon the big end of the connecting rod, the desideratum in each instance being to raise a film of oil in the arc of a circle towards the cylinder.

In the modification shown in Figure 2, the walls a^1 of the trough at their extremity, converge together as at a^3. This may occur at one or both extremities and is for the purpose of virtually closing the trough at its extremities although an opening a^4 may be left for the passage of the dipper l. The dipper l may take any one of a variety of shapes. It can be as illustrated or in the form of a small torpedo-shaped device carried by a small connecting arm which, by its stream-line character allows the oil in the trough to close quickly after its passage through the trough to ensure efficient oiling at all speeds.

In operation, upon the engine commencing to function, oil is pumped downwardly from the oil tank h by the pump e into the trough. This oil is sprayed by the dipper and its excess flows over the edges of the trough, as shown, through the apertures into the sump c where it is picked up by the pump f and elevated into the oil tank h where it is precipitated on to the oil and during such precipitation and rest in the tank allowed to cool. The arcuate trough ensures that a constant amount of oil shall always reside beneath the fly-wheels and on account of its arcuate character when the engine is inclined as for instance, when the motor cycle is ascending or descending a hill, the oil in the trough simply moves along that member, but is in no way increased or decreased in its relationship to the dipper.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A lubricating system for an internal-combustion engine particularly such a one as is used upon a motor cycle, wherein a dual pumping system is provided comprising a common shaft geared at an intermediate position on its length to the engine crank-shaft, and a pump at each extremity, one pump being adapted to convey oil from a container to an arcuate trough beneath the fly-wheel or crank-shaft from which it is elevated, as for instance, by a dipper on the fly-wheel, and the other pump being adapted to elevate oil back to the container from a sump placed beneath the trough and arranged to receive an overflow or excess of oil therefrom.

2. A lubricating system, as claimed in the preceding claim, wherein the pumps are accommodated in housings in or upon the crank or fly-wheel case of the engine from which they are adapted to be readily slid or detached for inspection or other purposes.

3. A lubricating system, as claimed in either of the foregoing claims, wherein the trough is constituted by two parallel upstanding webs or fins on the base of the crank-case proper and the sump by a downward box-like extension thereof which is open to the trough by crank-case slots.

4. A new or improved lubricating system or apparatus for internal-combustion engines, substantially as set forth and illustrated in the accompanying drawings.

Dated this 29th day of October, 1924.

LEWIS WM. GOOLD, C.I.Mech.E.,
Fellow of the Chartered Institute of Patent Agents,
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Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1925.

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Fig

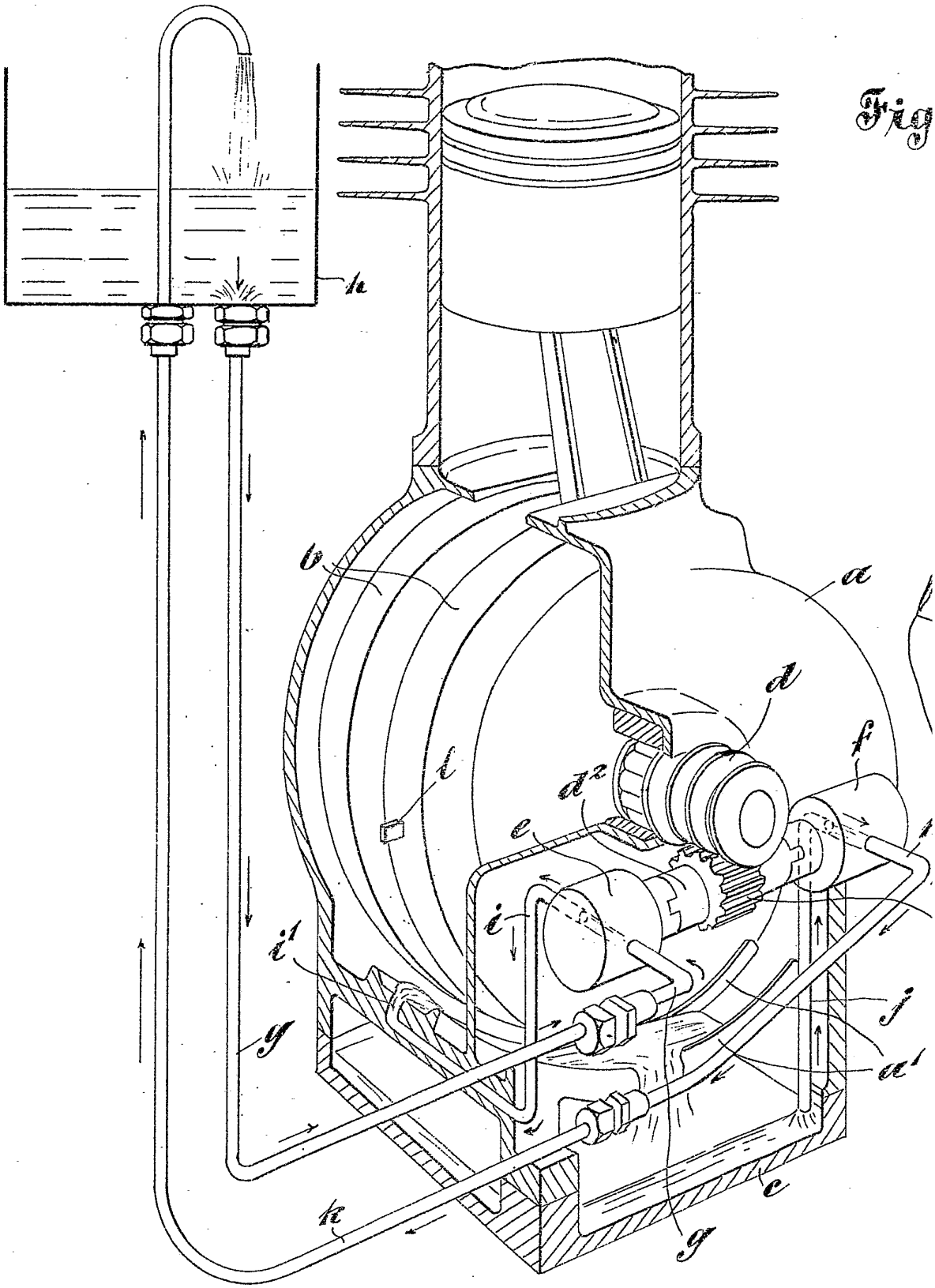


Fig. 1.

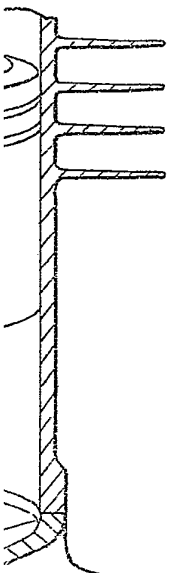
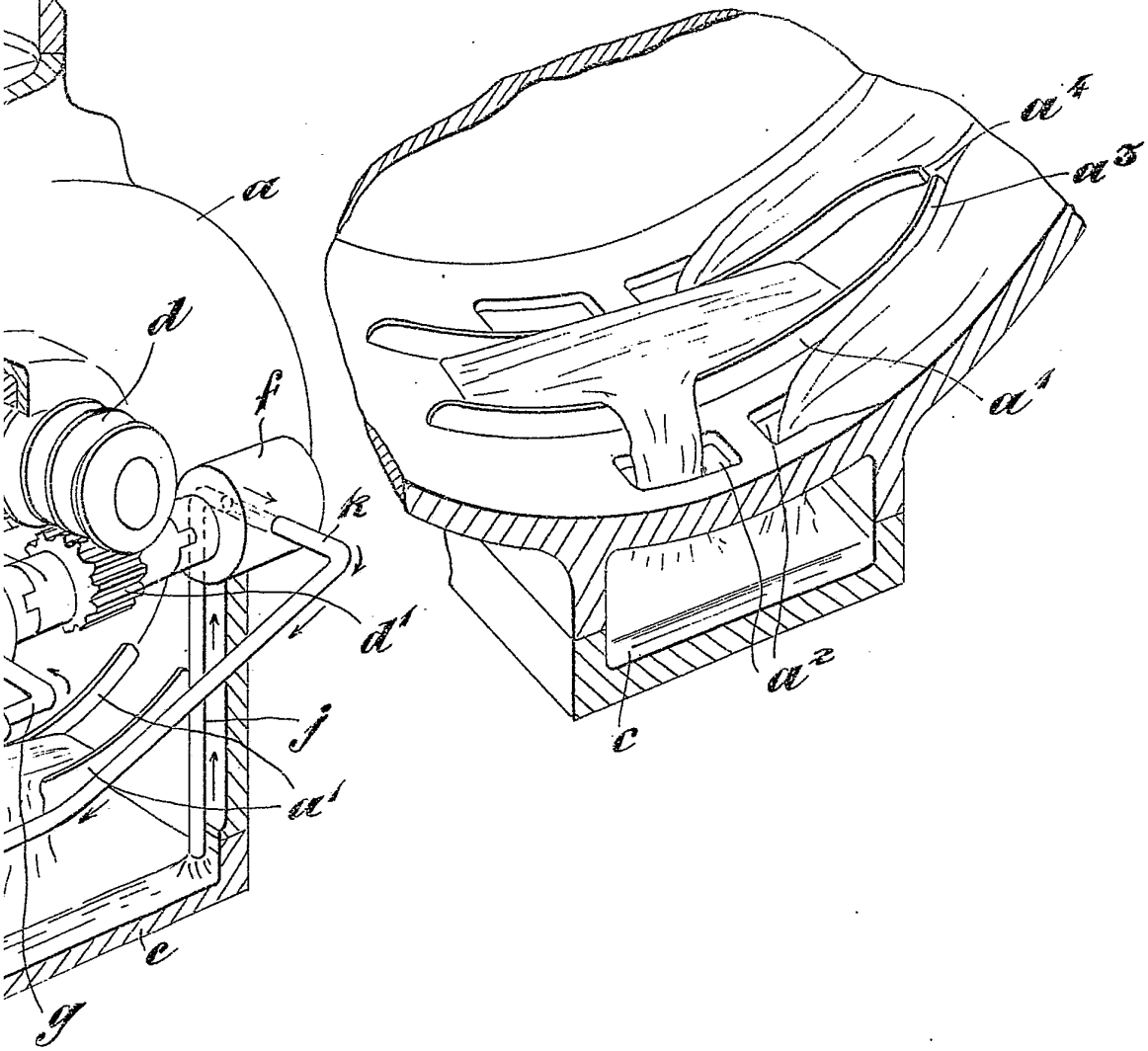


Fig. 2.



Malby & Sons, Photo-Litho

231,973 COMPLETE SPECIFICATION

1 SHEET

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Fig. 1.

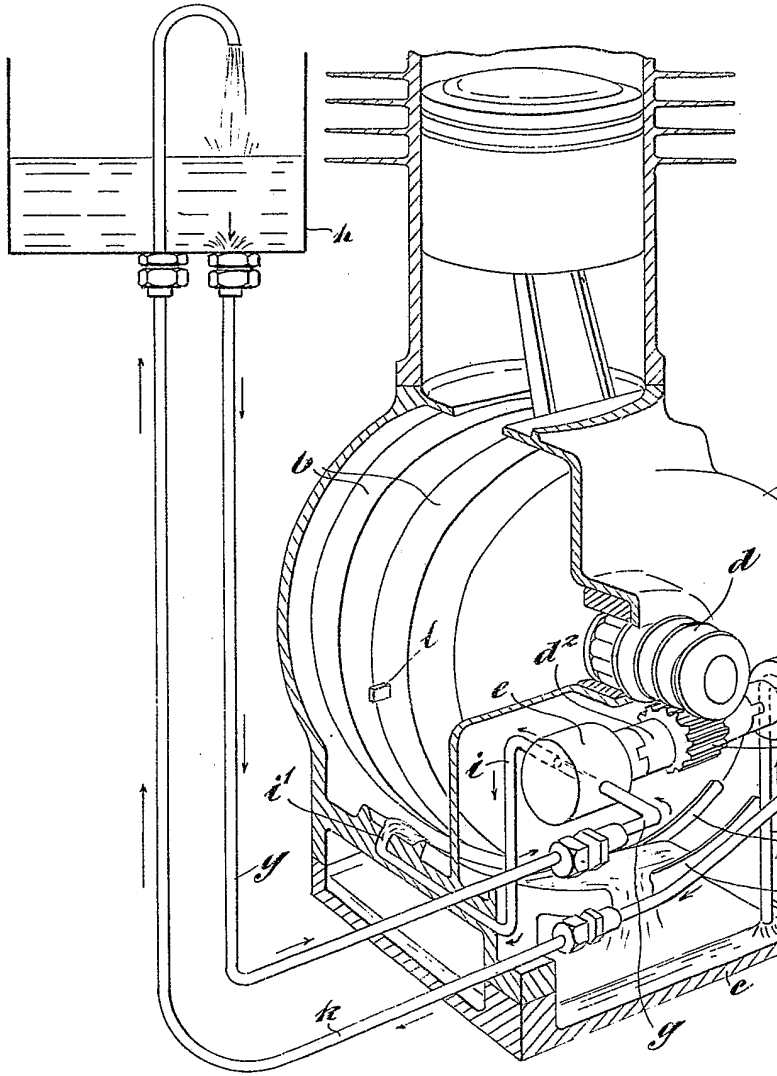
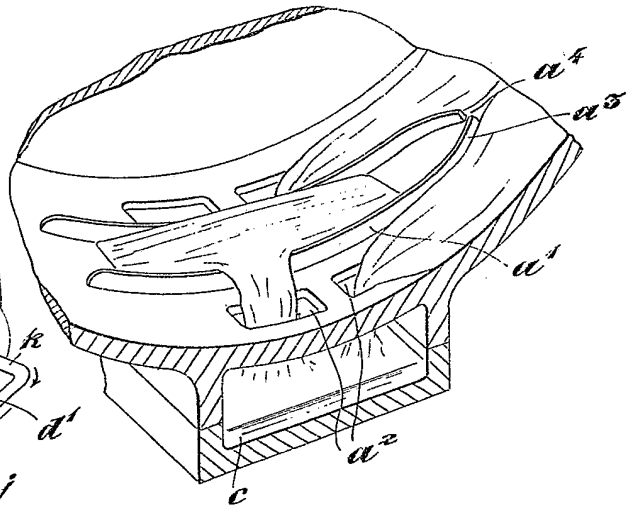


Fig. 2.



Malby&Sons, Photo-Litho

PATENT SPECIFICATION

Application Date: May 10, 1924. No. 11,571/24. **238,280**

Complete Left: Nov. 26, 1924.

Complete Accepted: Aug. 10, 1925.

PROVISIONAL SPECIFICATION.

Improvements in or relating to Knee Grips for Motor Cycles and the like.

We, A. J. STEVENS & Co. (1914) LIMITED, of Graiseley House, Wolverhampton, a British company, and ALBERT JOHN STEVENS, of the same address, a British subject, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in or relating to knee grips for motor cycles and the like, of the type in which flexible pads constituting the grips are secured in pairs to the sides of the fuel tank.

According to the present invention the flexible pad, advantageously in the form of a hollow rubber shell having a filling of sponge or cellular rubber, is attached to the fuel tank by engagement with a flanged metal ring or annulus permanently secured to the tank. The pad may engage within the flanged metal ring, in which case it may be secured therein either by a dovetail formation of the pad and flange, or by engagement between a series of apertures provided in the flange and a corresponding series of external projections provided on the pad, or by clinching engagement with the pad of a series of teeth or tongues provided in the material of the flange. Alternatively the pad may have an external engagement with the flanged metal ring or annulus, in cooperation with a metal clip member embracing and gripping the engaging edge of the pad, the engagement in this case being further secured either by a curved or grooved formation of the flange and clip, or by a curved or grooved formation of the flange in cooperation with an enlargement or swelling on the engaging edge of the pad, or by a dovetail formation of the flange and clip and of the engaging edge of the pad.

In a convenient embodiment of the invention, a flexible pad is provided in the form of a closed hollow rubber shell having a core or filling of sponge or cellular rubber, the pad as thus constructed being of elliptical or other suitable shape, having tapering or dovetail sides, and having substantially flat faces preferably tapering slightly in the direction of the length of the pad. This flexible pad is adapted for detachable dovetail engagement within a flanged metal ring or annulus which is soldered or otherwise permanently secured to the sides of the fuel tank, this flanged ring or annulus being of elliptical or other shape corresponding to that of the pad, and having an outwardly projecting peripheral flange of a depth approximately equal to one-half the thickness of the pad, and of internal dimensions and inclination corresponding to the external dimensions and inclination of the dovetail sides of the pad. This dovetailed flexible pad is simply sprung into the complementary fixed ring, within which it is securely but detachably held by the flexibility of the dovetail joint.

In a modified embodiment, the flexible pad and the flanged metal ring or annulus are of similar construction, except that the engagement is of a right-angle instead of a dovetail character, and in this case the engaging edge of the pad is provided with a circumferentially spaced series of moulded projections of rectangular or other form, adapted to be sprung into locking engagement with a corresponding series of apertures pressed from or otherwise provided in the flange of the ring member.

In a further modification, the flexible pad and the flanged metal ring or annulus are again of similar construc-

tion, except that the engagement is of a right-angle instead of a dovetail character, and in this case the flange of the ring member is provided with a circumferentially spaced series of apertures adapted for accommodation of screws which bind into the material of the engaging edge of the pad.

In a further modification, the flexible pad and the flanged ring or annulus are again of similar construction, except that the engagement is of a right-angle instead of a dovetail character, and in this case the flange of the ring member is provided with a circumferentially spaced series of tongues or teeth stamped out of the material of the flange, or projecting from its outer edge, which tongues or teeth are adapted to be clinched into the material of the engaging edge of the pad.

In a further modification, the flexible pad is provided in the form of an open or cup-shaped hollow rubber shell having a core or filling of sponge or cellular rubber, the shell of the pad being in this case adapted for external engagement with the flanged metal ring or annulus, in cooperation with an annular outer metal clip member embracing and gripping the engaging edge of the pad. The flange of the ring member may be of substantially right-angled form, with both the flange and the outer clip of a grooved or channel shaped cross-section, to thereby press the engaging edge of the shell of the pad into a correspondingly curved formation and ensure the necessary lock. Alternatively the flange of the ring member may be of substantially right-angled form, with the flange of a grooved or channel shaped cross-section and the outer clip of a flat right-angled form, this channel shaped flange and flat clip cooperating with an internal peripheral swelling on the engaging edge of the shell of the pad and thereby ensuring the necessary lock. As a further alternative the flange of the ring member may be of an outwardly inclined flat form, with the outer clip of a right-angled flat form, the flange and clip in this case cooperating with a dovetail enlargement on the engaging edge of the shell of the pad, and thereby ensuring the necessary lock.

Dated this 9th day of May, 1924.

LEWIS WM. GOOLD, C.I.Mech.E.,
Fellow of the Chartered Institute of Patent Agents,
Agent for the Applicants,
5, Corporation Street, Birmingham.

COMPLETE SPECIFICATION.

Improvements in or relating to Knee Grips for Motor Cycles and the like.

We, A. J. STEVENS & Co. (1914) LIMITED, of Graiseley House, Wolverhampton, a British company, and ALBERT JOHN STEVENS, of the same address, a British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises certain improvements in or relating to knee grips for motor cycles and the like, of the type in which flexible pads constituting the grips are secured in pairs to opposite sides of the fuel tank.

According to the present invention the flexible pad is attached to the fuel tank by engagement with a metal ring or annulus permanently secured to or formed integral with the tank. The pad is preferably engageable within the metal ring or annulus, in which case it may be frictionally secured therein for example by a dovetail formation of the pad and ring, or it may be secured by engagement of a series of external projections provided on the pad with a corresponding series of apertures provided in the ring, or by means of screws, or by clinching engagement with the pad of a series of teeth or tongues provided in the material of the ring. Alternatively the pad may have an external engagement with the metal ring or annulus, in cooperation with a metal clip member embracing and gripping the engaging edge of the pad, the engagement in this case being further secured either by a curved or grooved formation of the ring and clip, or by a curved or grooved formation of the ring in co-operation with an enlargement or swelling on the engaging edge of the pad, or by a dovetail formation of the ring and clip and of the engaging edge of the pad.

In order that this invention may be clearly understood and readily carried into practice, reference may be had to the appended explanatory sheets of drawings, upon which:—

Figure 1 is a side elevation, Figure 2 is a plan, and Figure 3 is a rear eleva-

tion, of a motor cycle fuel tank having a pair of knee grips applied in accordance with a preferred form of the invention.

Figure 4 is an end elevation in section of a flexible pad or grip and its mounting in accordance with the arrangement shown in Figures 1 to 3.

Figure 5 is a cross-section of a modified form of flexible pad or grip.

Figure 6 is a longitudinal section of a flexible pad or grip and its mounting in accordance with a further modified form of the invention.

Figure 7 is a similar view of a further modification.

Figures 8 and 9 are detail views of parts shown in Figure 7.

Figures 10 to 14 are views of further modifications.

In the preferred embodiment of the invention as illustrated in Figures 1 to 5, a flexible pad *a* is provided, either solid (Figure 4) or in the form of a closed hollow rubber shell having a core or filling of sponge or cellular rubber (Figure 5), the pad as thus constructed being of elliptical or other suitable shape, having substantially parallel sides a^1 and flat faces, preferably with a slight taper around the edge of the outer face. This flexible pad *a* is adapted for detachable frictional engagement within a metal ring or annulus *b* which is soldered or otherwise permanently secured to the side of the fuel tank *c*, this ring or annulus *b* being of elliptical or other shape corresponding to that of the pad, and projecting outwardly so as to be of a depth approximately equal to one-half the thickness of the pad, and of internal dimensions corresponding to the external dimensions of the parallel sides of the pad. This flexible pad *a* is simply sprung into the complementary fixed ring or annulus *b*, within which it is securely but detachably held by the frictional grip of the ring or annulus, assisted if desired by a slightly inturned peripheral lip b^1 on the ring or annulus.

In a slightly modified embodiment (Figure 6), the flexible pad *a*, either solid or having a core or filling as already described, and preferably having flat faces tapering longitudinally of the pad, is formed with tapering or dovetail sides a^2, so as to be adapted for detachable frictional and dovetail engagement within the fixed metal ring or annulus *b*, which in this case is of correspondingly dovetailed form.

In a further modified embodiment (Figures 7 to 9), the flexible pad *a* and the metal ring or annulus *b* are of similar construction, except that the engagement is of a right-angle instead of a dovetail character, and in this case the engaging edge of the pad is provided with a circumferentially spaced series of moulded projections a^3 of rectangular or other form, adapted to be sprung into locking engagement with a corresponding series of apertures b^2 pressed from or otherwise provided in the ring member *b*.

In a further modification (Figure 10), the flexible pad *a* and the metal ring or annulus *b* are again of similar construction, except that the engagement is of a right-angle instead of a dovetail character, and in this case the ring member *b* is provided with a circumferentially spaced series of apertures adapted for accommodation of screws b^3 which bind into the material of the engaging edge of the pad.

In a further modification (Figure 11), the flexible pad *a* and the metal ring or annulus *b* are again of similar construction, except that the engagement is of a right-angle instead of a dovetail character, and in this case the ring member *b* is provided with a circumferentially spaced series of tongues or teeth b^4 stamped out of the material of the ring, or projecting from its outer edge, which tongues or teeth b^4 are adapted to be clinched into the material of the engaging edge of the pad.

In a further modification (Figures 12 to 14), the flexible pad *a* is provided in the form of an open or cup-shaped hollow rubber shell having a core or filling of sponge or cellular rubber, the shell of the pad being in this case adapted for external engagement with the metal ring or annulus *b*, in co-operation with an annular outer metal clip member *d* embracing and gripping the engaging edge of the pad. The ring member may project in substantially right-angled form, with both the ring *b* and the outer clip *d* of a grooved or channel-shaped cross-section (Figure 12), to thereby press the engaging edge of the shell of the pad into a correspondingly curved formation and ensure the necessary lock. Alternatively (Figure 13) the ring member may project in substantially right-angled form, with the ring of a grooved or channel-shaped cross-section and the outer clip of a flat right-angled form, this channel-shaped ring *b* and flat clip *d* co-operating with an internal peripheral swelling a^4 on the engaging edge of the shell of the pad and thereby ensuring the necessary lock. As a further alternative (Figure 14) the ring member may be of an outwardly inclined flat form, with the outer clip of a right-angled flat form, the ring *b* and clip *d* in this case

co-operating with a dovetail enlargement a^5 on the engaging edge of the shell of the pad, and thereby ensuring the necessary lock.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Knee grips for motor cycles and the like, of the type in which flexible pads constituting the grips are secured in pairs to opposite sides of the fuel tank, wherein the flexible pad is attached to the fuel tank by engagement with a metal ring or annulus permanently secured to or formed integral with the tank.

2. Knee grips for motor cycles and the like, of the type in which flexible pads constituting the grips are secured in pairs to opposite sides of the fuel tank, wherein the flexible pad is attached to the fuel tank by being laterally engageable with a socket provided at the tank side.

3. A knee grip as claimed in Claim 1, wherein the flexible pad is engageable within the metal ring or annulus.

4. A knee grip as claimed in Claims 2 or 3, wherein the engagement of the pad is of a simple frictional character.

5. A knee grip as claimed in Claim 3, wherein the internal engagement is of a frictional character assisted by a slight inturning of the peripheral lip of the ring or annulus.

6. A knee grip as claimed in Claims 2 or 3, wherein the engagement of the pad is of a frictional and dovetail character.

7. A knee grip having an engagement of the flexible pad as claimed in Claim 3, and having supplementary fastening connections between the flexible pad and the metal ring or annulus.

8. A knee grip as claimed in Claim 1, wherein the flexible pad is adapted for an external engagement with the metal ring or annulus, in cooperation with a metal clip member embracing and gripping the engaging edge of the pad.

9. Knee grips for motor cycles and the like, substantially as herein described and illustrated.

Dated this 22nd day of November, 1924.

LEWIS W. GOOLD, C.I.Mech.E.,
Fellow of the Chartered Institute of Patent Agents,
Agent for the Applicants,
5, Corporation Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1925.

Fig. 1.

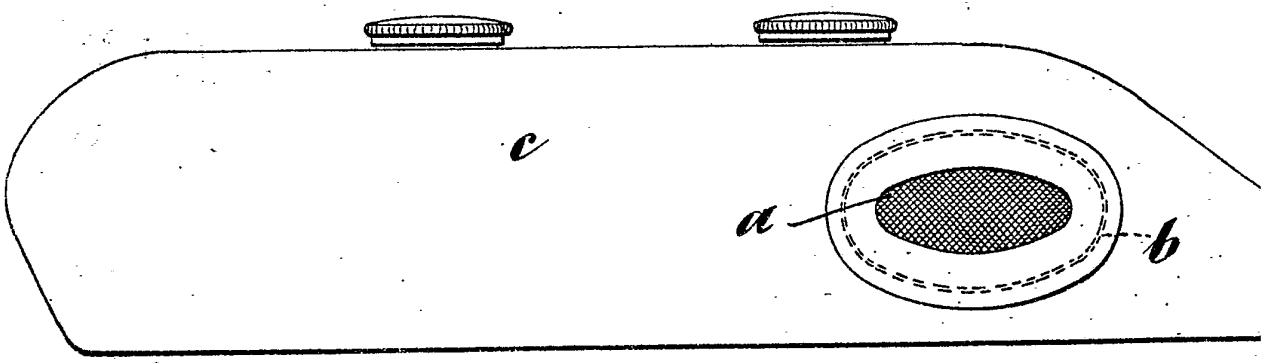


Fig. 2.

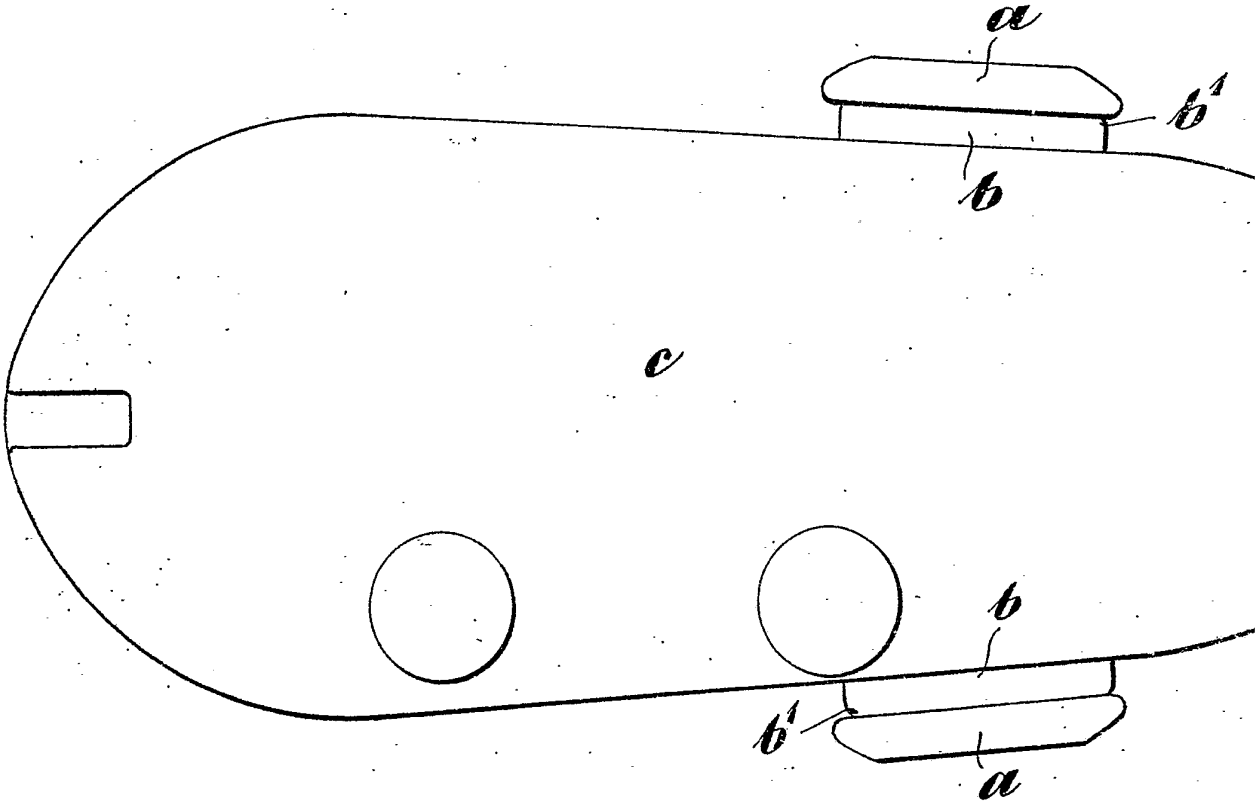


Fig. 3.

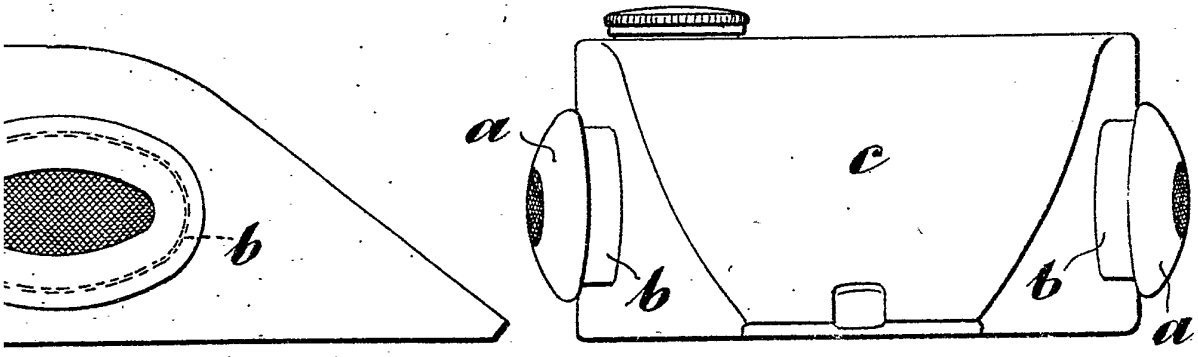


Fig. 4.

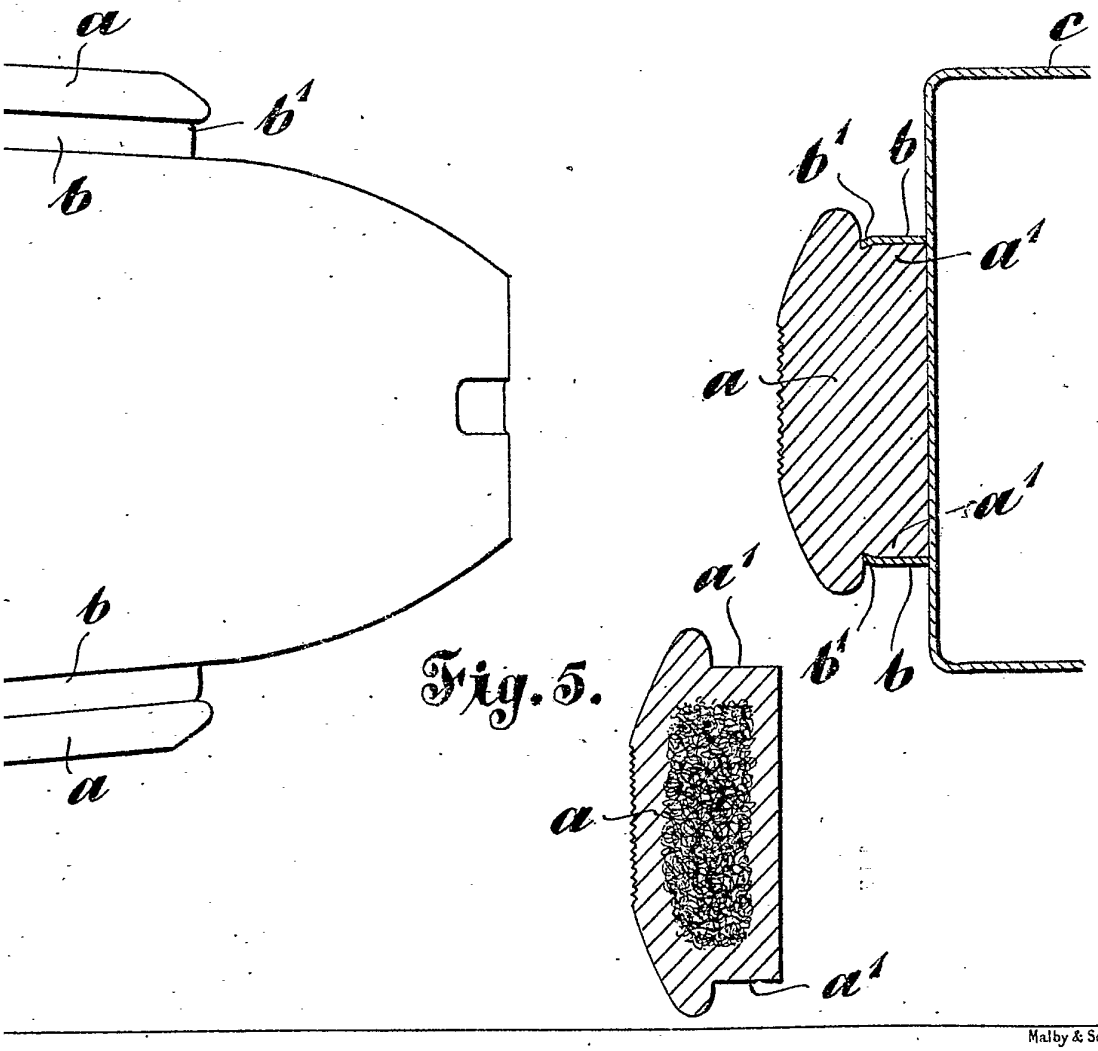


Fig. 5.

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[This Drawing is a reproduction of the Original on a reduced scale]

Fig. 1.

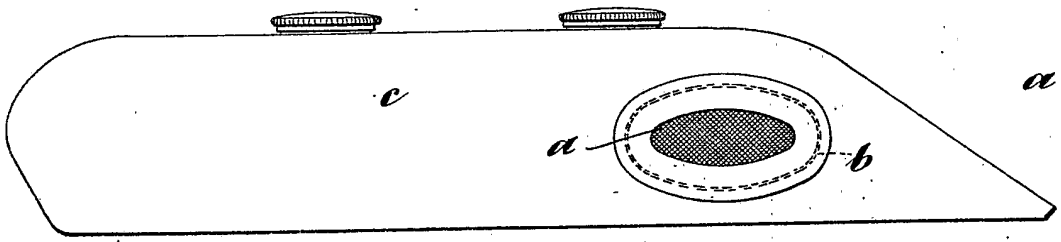

Fig. 3.

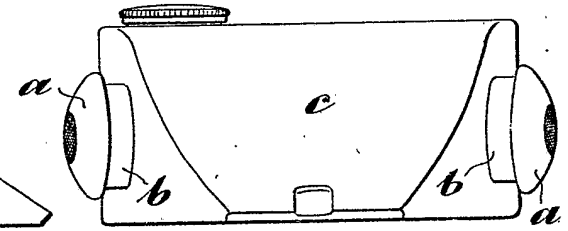

Fig. 2.

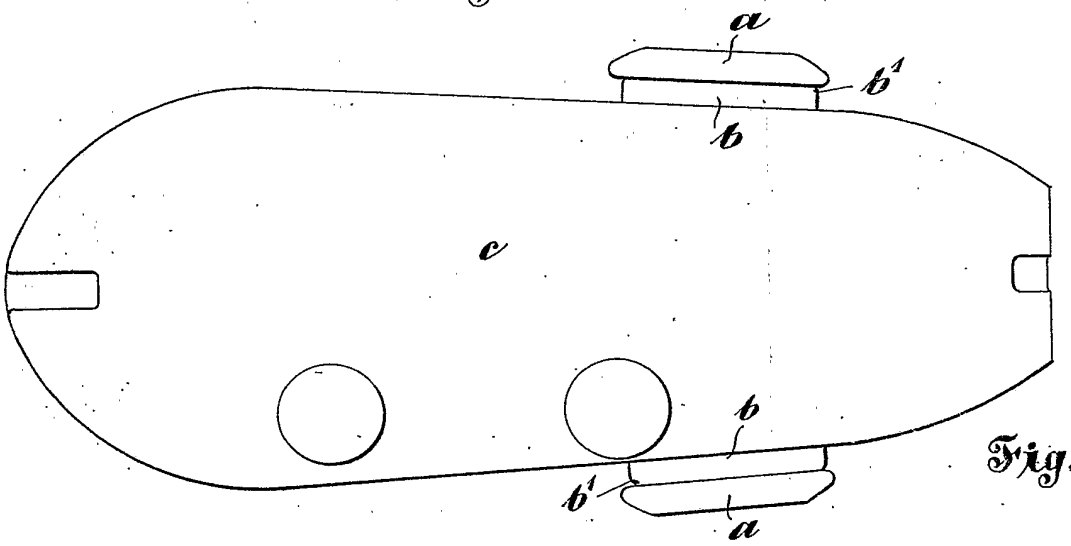

Fig. 4.

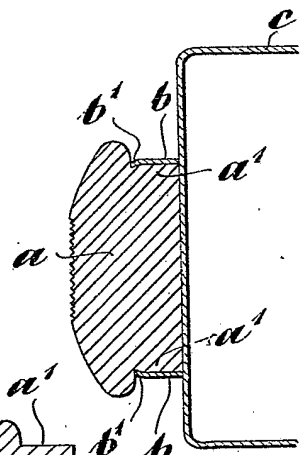

Fig. 5.

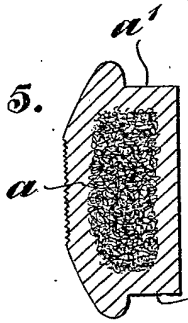

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Fig. 6

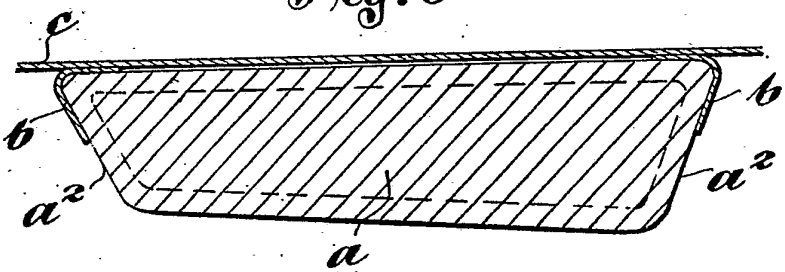

Fig. 7.

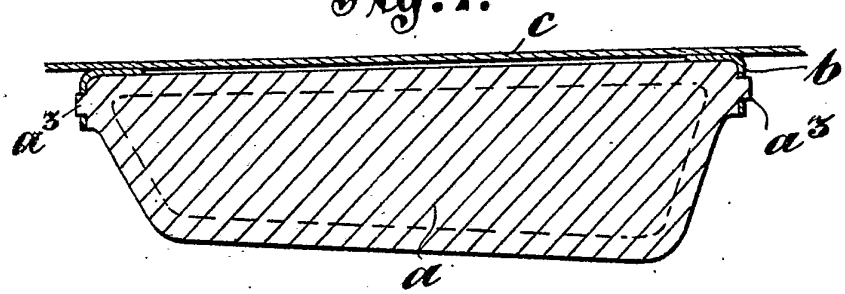

Fig. 8.

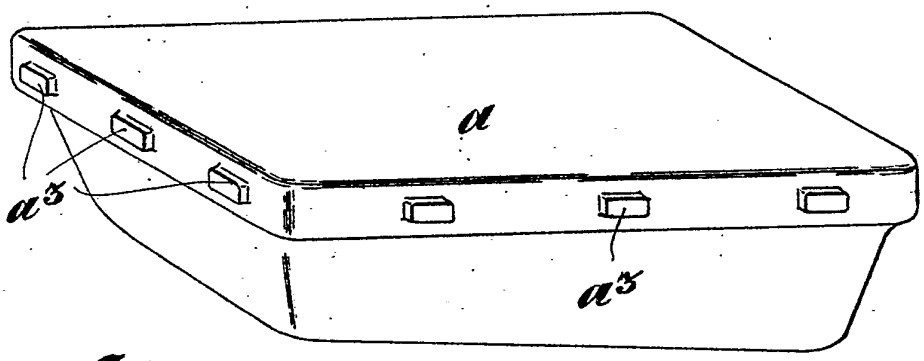

Fig. 9.

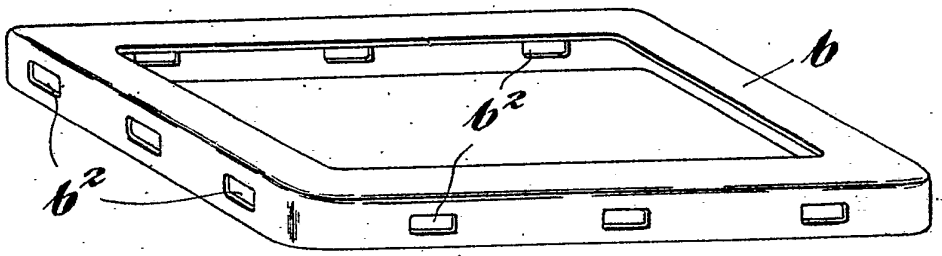

Fig. 10.

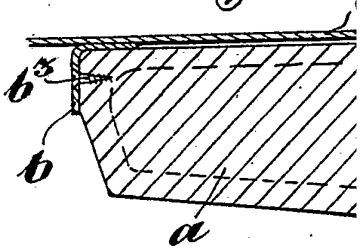

Fig. 10.

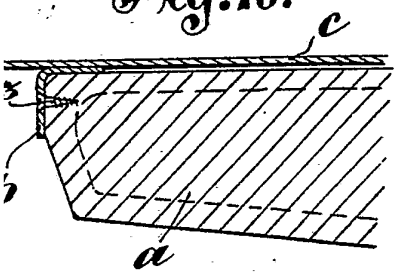

Fig. 11.

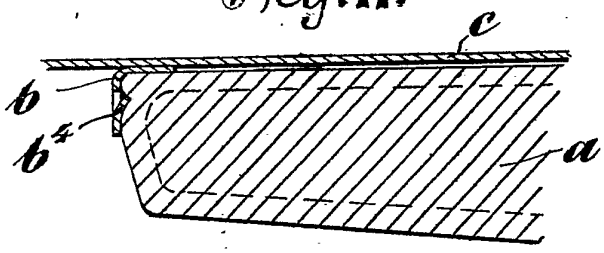

Fig. 12.

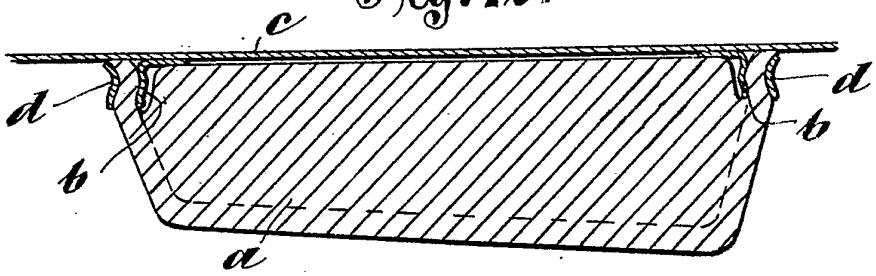

Fig. 13.

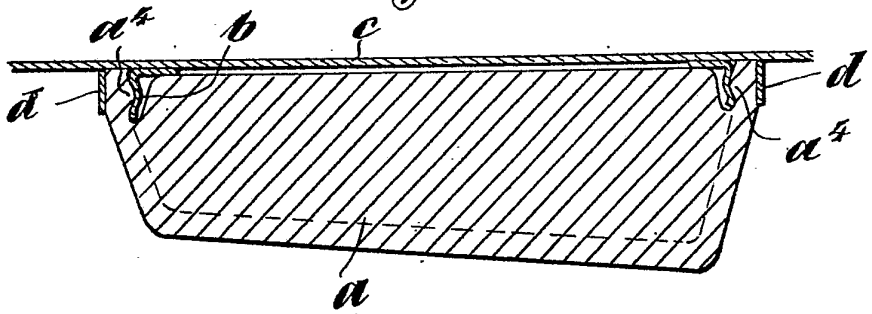

Fig. 14.

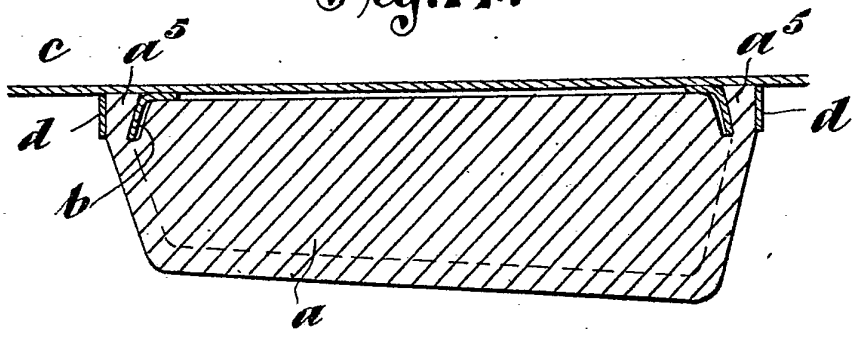

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Fig. 6

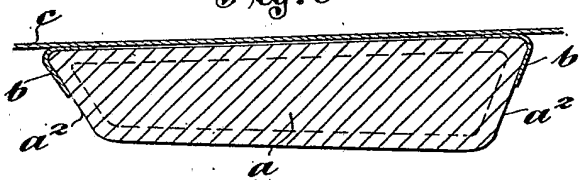


Fig. 10.

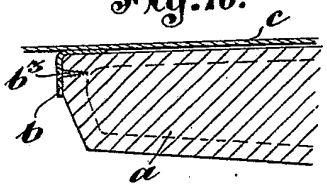


Fig. 11.

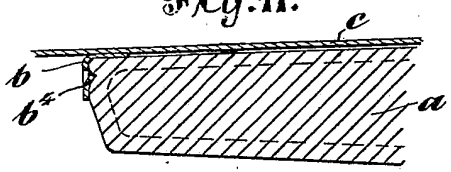


Fig. 7.

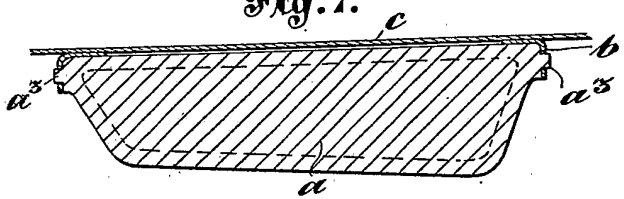
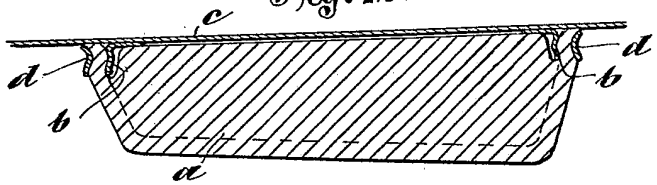


Fig. 12.



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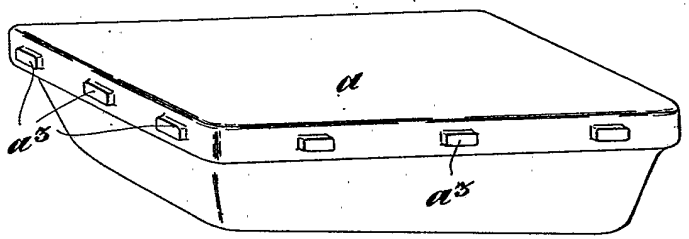


Fig. 13.

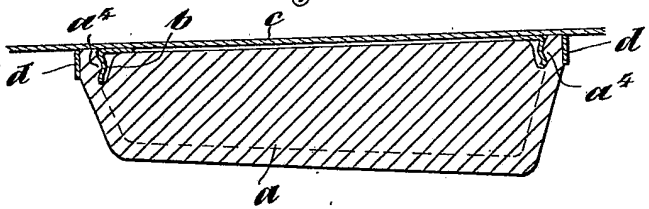


Fig. 9.

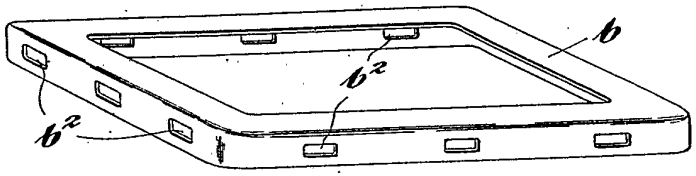
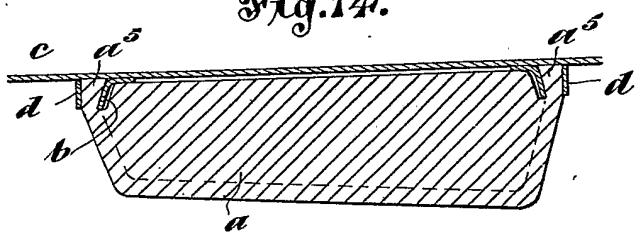


Fig. 14.



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PATENT SPECIFICATION

Application Date: Oct. 21, 1924. No. 24,978/24. 244,555

" " Nov. 28, 1924. No. 28,518/24.

One Complete Left: July 20, 1925.

Complete Accepted: Dec. 24, 1925.

PROVISIONAL SPECIFICATION.

No. 24,978, A.D. 1924.

Improvements in or relating to Side Car or like Wheeled Carrier Attachments to Motor Cycles.

We, A. J. STEVENS & COMPANY (1914) LIMITED, of Graiseley House, Penn Road, Wolverhampton, a British company, and CHARLES WILLIAM HAYWARD, of Walsall Street, Wolverhampton, a British subject, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in or relating to side cars or like wheeled carrier attachments to motor cycles, and it has for its object an improved construction of chassis, which is cheap to produce and readily assembled.

By the present improvements, the chassis members are connected together in such a manner that the need for brazing is in the main obviated, or entirely obviated. The chassis is also so constructed that it may be packed in a small space when in a disassembled condition, the parts being readily assembled when unpacked.

According to this invention, the side car wheel axle is mounted in a bracket which is fixed on the end of a transverse axle tube. This bracket forms a platform for attaching a C-spring which supports the rear of the side car body. A similar bracket, without the extension for carrying the wheel axle, is secured to the other end of the axle tube, a C-spring being similarly carried by this bracket. These two brackets are fixed to forwardly directed tubular members, conveniently by means of a screwed pin and nut clamping device. In the preferred form, the said brackets are fixed on the ends of the axle tube by means of each end of the tube fitting into a split socket in the respective brackets. Lugs on each side of the split socket pass downwardly below the axle tube, and a pin brazed or screwed in the end of each longitudinal member of the chassis passes through perforations in the said lugs for receiving a spring washer and clamping nut. When this nut therefore is screwed up, the axle tube is clamped in the bracket socket, whilst the ends of the longitudinal members are tightly fixed also to the bracket. The bracket if desired may be permanently fixed to the end of the longitudinal member or to the end of the axle tube, but it is preferred to fix the brackets as described, in order to obviate the need for brazing, and in order to provide a joint which can be readily assembled after the chassis has left the works. Each C-spring is clamped on the platform of the bracket by means of two U-bolts which engage in semi-circular grooves on the bracket, and pass through perforations in a clamping plate superimposing the C-springs.

The longitudinal members conveniently comprise the limbs of a tube bent into a substantially U-shaped form, the front of the tube at the centre of the bend having means incorporated for fixing a spiral spring, which resiliently supports the front of the side car body from the chassis. A torque tube is fixed at one end to the centre of the axle bar, the other end being fixed to the motor cycle frame in the usual manner. The front end of the chassis is also connected to the motor cycle frame by means of a cross tube, and such tube is fixed to the front of the chassis by means or clips, such clips conveniently comprising two brackets each having two recesses for

[*Price* 1/-]

Price 4s 6d

Price 25p

engaging the two tubes, a clamping bolt passing through the two brackets and between the two tubes.

A chassis thus constructed is extremely cheap to manufacture as brazed joints are entirely, or in the main, eliminated. The strength or safety of the chassis is not however impaired as it will be noted that the torque tube tends to pull the said brackets against the ends of the said U-shaped tube. Again as the brackets are carried on the end of the U-tube, such U-tube will tend to hold the brackets on the ends of the axle bar. Moreover the brackets are connected to the side car body by the C-springs. The chassis can also be assembled for connection to the left or right hand side of the machine.

Dated this 20th day of October, 1924.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

PROVISIONAL SPECIFICATION.

No. 28,518, A.D. 1924.

Improvements in or relating to Side Car or like Wheeled Carrier Attachments to Motor Cycles.

We, CHARLES WILLIAM HAYWARD, of Walsall Street, Wolverhampton, a British subject, and A. J. STEVENS & COMPANY (1914) LIMITED, of Graiseley House, Penn Road, Wolverhampton, a British company, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in or relating to side cars or like wheeled carrier attachments to motor cycles, and it has for its object an improved construction of chassis, which is cheap to produce and readily assembled. This invention comprises an improvement in or modification of the invention set forth in the Specification accompanying my Application for Patent No. 24,978/1924, whereby the chassis members are connected together in such a manner that the need for brazing is in the main obviated, or entirely obviated, the chassis being also so constructed that it may be packed in a small space when in a disassembled condition, the parts being readily assembled when unpacked.

According to this invention, the side car wheel axle is mounted in a bracket which is fixed on the end of two transverse axle tubes. This bracket preferably also forms a platform for attaching a C-spring which supports the rear of the side car body. A similar bracket is secured to the other ends of the axle tubes, a C-spring being similarly carried by this bracket. These two brackets are also fixed to forwardly directed tubular members conveniently by means of a screwed pin and a nut clamping device. In the preferred form, the said brackets have an elongated hole or opening for receiving the said two transverse axle tubes which are disposed one above the other. Circular holes are formed in the opposite walls of the elongated recess, and cylindrical hollow plugs are passed through each hole, the ends of each plug being recessed or tapered on opposite sides for bearing against the adjacent faces of the said two transverse tubes. A screwed pin on the end of the said forwardly directed members passes through these two hollow plugs, and a collar on the pin is adapted to bear on one plug, whilst a spring washer and nut threaded over the end of the screwed pin is adapted to bear on the other hollow plug. When this latter nut, therefore, is tightened up, the two hollow plugs separate the two transverse tubes to bind the same in the bracket, whilst at the same time the forwardly directed tubular member is firmly secured to the bracket. The said clamping nut therefore fixes the bracket to both the transverse tubes and the forwardly directed tube. The said screwed pin may be fixed in the said forwardly directed tubular member in any desired manner. For instance the pin may be screwed therein. Or again an inner tube may be fixed in the end of the forwardly directed tubular member, the inner end of such tube having preferably two saw cuts therein on diametrically opposite sides. The bore at the split end of this tube is also tapered, and the said screwed pin, which is to be fixed to the end of the forwardly directed tubular member, has a tapered end for engaging the tapered bore of the split tube, so that when the pin is moved axially, such pin wedges itself in the split tube which is itself wedged in the outer tubular member. The screwed pins can of course be brazed in the ends of the forwardly directed tubular members. Each C-spring is clamped on the platform of the bracket by means of two U-bolts which engage

in semi-circular grooves on the bracket, and pass through perforations in a clamping plate superimposing the C-springs.

The said forwardly directed tubular members or longitudinal members conveniently comprise the limbs of a tube bent into a substantially U-shaped form. Brackets are clipped to the side limbs of this U-shaped tube near the front end for mounting C-springs which support the front end of the side car body. These brackets conveniently comprise two saddle piece which fit above and below the tube, the saddle pieces having grooves in the side for receiving a U-bolt. The ends of this U-bolt pass through holes in a clamping plate, and nuts screwed on the ends of the bolt are adapted to fix the C-spring to the upper saddle piece and also to clamp the two saddle pieces to the tube. A torque tube is fixed at one end to the centre of the axle tubes, the other end being fixed to the motor cycle frame in the usual manner; this torque tube is fixed to the end of a bolt which passes through a clip comprising two brackets which have recesses for engaging the two tubes. The front end of the chassis is connected to the motor cycle frame by means of a cross tube, and such tube is fixed to the front transverse tubular portion of the chassis by means of clips, such clips conveniently comprising two brackets which have recesses for engaging the two tubes, and a clamping bolt which is fixed through the two brackets between the two tubes.

A chassis thus constructed is extremely cheap to manufacture as brazed joints are entirely, or in the main, eliminated. The strength or safety of the chassis is not however impaired as it will be noted that the torque tube tends to pull the said brackets against the ends of the said U-shaped tube. Again as the brackets are carried on the ends of the U-tube, such U-tube will tend to hold the brackets on the ends of the axle tubes. Moreover the brackets are connected to the side car body by the C-springs. The chassis can also be assembled to either the left or right hand side of the motor cycle, as the brackets on each end of the transverse axle tubes can either support the wheel spindle or be utilised for receiving the link connected to the motor cycle frame.

Dated this 27th day of November, 1924.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

COMPLETE SPECIFICATION.

Improvements in or relating to Side Car or like Wheeled Carrier Attachments to Motor Cycles.

We, A. J. STEVENS & COMPANY (1914) LIMITED, of Graiseley House, Penn Road, Wolverhampton, a British company, and CHARLES WILLIAM HAYWARD, of Walsall Street, Wolverhampton, a British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises certain improvements in or relating to side cars or like wheeled carrier attachments to motor cycles, and it has for its object an improved construction of chassis, which is cheap to produce and readily assembled.

According to the present improvements, a side car chassis for motor cycles comprises forwardly directed side tubes and a rear axle tube or member, each end of which tube is connected to the respective side tubes by means of a bracket on which is mounted a wheel axle or cycle frame connecting tube, such bracket being clamped in position on the respective side tube and axle tube or member by a single fixing nut or like screw device. The bracket has a socket for receiving a single tube or member (or forwardly directed side member) which is gripped in the socket when the forwardly directed side member (or axle tube) is clamped to the bracket. The bracket may have a socket for receiving two tubes forming the axle member which are clamped therein by means of wedge sleeves, a pin carried by the respective side tube passing through the bracket and wedge sleeves for the purpose of fixing the axle tube and forwardly directed side tube to the bracket when a nut on the end of the screwed pin is tightened thereon. The forwardly directed side tubes may form the limbs of a U-shaped tube, the rear of the limbs of which are connected to the axle tube by means of brackets. The said brackets may support the rear C-springs. The C-spring may be fixed to the bracket fixed on the chassis by means of a U-bolt engaging a groove in the bracket. By this invention also the C-spring is fixed to the chassis by means of a split clip comprising two saddle pieces or clip members which are clamped around a

tube and also have springs fixed thereto by means of U-bolts which engage in side grooves in the saddle pieces. By this invention also a side car chassis for motor cycles comprises a number of tubular members which are jointed together by means of brackets or clips each comprising a split socket having lugs on each side of the split, the socket engaging one tube to be connected, whilst the lugs engage over a pin fixed to the end of the other tube to be connected, the parts being so arranged that when the said lugs on the brackets or clips are engaged on the respective pins and the nuts tightened on the pins, the chassis is correctly assembled.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a side elevation of a portion of a side car chassis.

Figure 2 is a front view of Figure 1.

Figure 3 is a plan view.

Figure 4 is a side elevation of a portion of a modified form of chassis.

Figure 5 is a plan view of Figure 4.

Figure 6 is a cross sectional view and Figure 7 a side elevation, of the brackets shown by Figures 4 and 5.

Figure 8 is a rear view of a portion of a further modified form of chassis.

Figure 9 is a plan view of a portion of the chassis shown by Figure 8, and

Figure 10 is a side view of the wheel carrying bracket shown by Figures 8 and 9.

According to this invention, the side car wheel axle 1 is mounted in a bracket 2 which is fixed on the end of the axle tube 3. This bracket 2 forms a platform for attaching a C-spring 4 which supports the rear of the side car body. A similar bracket 2 is secured to the other end of the axle tube 3, a C-spring 6 and cycle frame connecting member 7 being similarly carried by this bracket. These two brackets 2 are fixed to forwardly directed tubular members 8 by means of a screwed pin and nut clamping device. In the preferred form, the said brackets 2 are fixed on the ends of the axle tube 3 by means of each end of the tube fitting into a split socket 9 in the respective brackets. Lugs 10 on each side of the split socket pass downwardly below the axle tube, and a pin 11 brazed, screwed or clamped in the end of each member 8 passes through perforations in the said lugs 10 for receiving a clamping nut 12. When this nut therefore is screwed up, the axle tube 3 is clamped in the socket 9, whilst the ends of the members 8 are tightly fixed also to the bracket. Each C-spring 4 and 6 is clamped on the platform of the bracket by means of two U-bolts 13 which engage in semi-circular grooves 14 on the bracket, and pass through perforations in a clamping plate 15 superimposed upon the C-springs.

The members 8 conveniently comprise the limbs of a tube bent into a substantially U-shaped form, the front transverse portion of the tube, at the centre of the bend, having means incorporated for fixing a spiral spring 16 which resiliently supports the front of the side car body from the chassis. A torque tube 17 is fixed at one end to the centre of the axle bar 3, the other end being fixed to the motor cycle frame in the usual manner. The front end of the chassis is also connected to the motor cycle frame by means of a cross tube 18, and such tube is fixed to the front of the U-tube by means of clips, such clips conveniently comprising two brackets 19 and 20, each having two recesses for engaging the two tubes, a clamping bolt 21 passing through the two brackets and between the two tubes. The cross tube 18 can be adjusted both transversely and radially in the clips, whilst the clips can themselves be adjusted on the U-tube, thus enabling the cross tube 18 to be connected to various types and sizes of motor cycle frames.

According to the modification shown by Figures 4, 5, 6 and 7, the brackets 22, corresponding to the aforementioned brackets 2, have an elongated hole 23 or opening for receiving the two transverse axle tubes 24 which are disposed one above the other. Circular holes are formed in the opposite walls of the elongated recess, and cylindrical hollow plugs 25 are passed through each hole, the ends of each plug being recessed or tapered at 26, on opposite sides, for bearing against the adjacent faces of the said two transverse tubes. A screwed pin 11 (see also Figure 1) on the end of the said forwardly directed members 8 passes through these two hollow plugs 25, and a collar 27 on the pin is adapted to bear on one plug, whilst the nut 28 is adapted to bear on the other hollow plug. When this latter nut, therefore, is tightened up, the two hollow plugs separate the two transverse tubes to bind the same in the bracket 22, whilst at the same time the member 8 is firmly secured to the bracket. The screwed pin 11 may be fixed in the said member 8 in any desired manner. An inner tube 29 (see Figure 1) may be fixed in the end of the member 8, the inner end of such tube having preferably two saw cuts 30 therein on diametrically opposite sides. The bore at the split end of this tube is also tapered, and the said

screwed pin 11 has a tapered end 31, for engaging the split tube 29, so that when the pin is moved axially, such pin wedges itself in the split tube which is itself wedged in the member 8. Brackets for supporting C-springs in the modification shown in Figures 4 to 7 comprise two saddle pieces or clip members 32 which fit around the tube 8, the saddle pieces having grooves in the side for receiving a U-bolt. The torque tube is fixed to the end of a bolt which passes through a clip comprising two brackets which have recesses for engaging the two tubes.

The mudguard 33 is supported entirely by the C-spring 4 and is not therefore attached to the side car body. Conveniently the mudguard is connected at two places to the upstanding end 34 of the cross member 35 to which the side car body is fixed. The mudguard is connected to the upstanding end 34 by means of the bolt 36 at one part, and at the other part by means of the clip 37 which is clipped to the bar 38 and to the pin 39 which pin connects the C-spring 4 to the transverse member 35.

According to a further modified form shown by Figures 8, 9, and 10, the bracket 40 (corresponding to the bracket 2 shown by Figures 1 and 2) has the split socket 41 clamped on to the forwardly directed side member 42 whilst the axle tube 43 is fixed to the bracket by means of a pin fixed on the end thereof and passing through the lugs 44, the arrangement being similar to the modification shown by Figures 1 and 2 with the exception that the split socket is clamped on the longitudinal side member instead of on the axle tube. This arrangement enables the longitudinal tube 42 to project rearwardly beyond the axle tube 43 for fixing the end of the frame 45 thereto. This frame 45 is fixed to the longitudinal member 42 by means of the split clips 46 which are clamped on the tube 42 and are connected to the ends of the frame 45 by means of the nuts 47 engaging a screwed pin fixed to the ends of the frame 45 and passing through the lugs 48 on the split clip 46. In this modification the C-spring is not fixed direct to the bracket 40 but to a split clip 49 comprising saddle pieces 32 as previously described. The member 45 carries the bearing 45^a for the outer end of the wheel axle.

In lieu of the longitudinal members forming the side limbs of the U-shaped tube the front transverse bar of the chassis may be formed separate and the front and side tubes may be connected at the front corner by means of split clips similar to 46.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A side car chassis for motor cycles comprising forwardly directed side tubes and a rear axle tube or member each end of which tube is connected to the respective side tube by means of a bracket on which is mounted a wheel axle or cycle frame connecting tube, and which bracket is clamped in position on the respective side tube and axle tube or member by a single fixing nut or like screw device.

2. A side car chassis as set forth in the 1st claim in which the bracket has a socket for receiving a single axle tube or member (or forwardly directed side member) which is gripped in the socket when the forwardly directed side member (or axle tube) is clamped to the bracket.

3. A side car chassis as set forth in the 2nd claim in which the bracket comprises a split socket for receiving the axle bar (or forwardly directed side tube) which is clamped in such socket by a pin and nut on the end of the respective forwardly directed side member (or axle tube), which pin passes through lugs on the socket.

4. A side car chassis as set forth in the 2nd claim in which the bracket has a socket for receiving two tubes forming the axle member which are clamped therein by means of wedge sleeves, a pin carried by the respective side tube passing through the bracket and wedge sleeves for the purpose of fixing the axle tube and the forwardly directed side tube to the bracket when a nut on the end of the screwed pin is tightened thereon.

5. A side car chassis as set forth in the preceding claims in which the forwardly directed side tubes form the limbs of a U-shaped tube, the rear of the limbs of which are connected to the axle tube by means of brackets.

6. A side car chassis for motor cycles as set forth in the preceding claims, in which the brackets support the rear C-springs.

7. A side car chassis as set forth in the 3rd and 4th claims in which a pin is secured to the forwardly directed side tube or axle tube by means of a conical head on the said pin expanding a slotted tube in the interior of the said side tube.

8. A side car chassis as set forth in the preceding claims in which a C-spring is fixed to the bracket fixed on the chassis, by means of a U-bolt engaging in a groove in the bracket.

9. A side car chassis for motor cycles

in which a C-spring is fixed to the chassis by means of a split clip comprising two saddle pieces or clip members which are clamped around a tube, and also have the springs fixed thereto, by means of U-bolts which engage in side grooves in the saddle pieces.

10. A side car chassis for motor cycles comprising a number of tubular members which are jointed together by means of brackets or clips each comprising a split socket having lugs on each side of the split, the socket engaging one tube to be connected whilst the lugs engage over a pin fixed to the end of the other tube to be connected, the parts being so arranged that when the said lugs on the brackets or clips are engaged on the respective pins and the nuts tightened thereon the chassis is correctly assembled.

11. A side car chassis for motor cycles, substantially as herein set forth and illustrated.

Dated this 17th day of July, 1925.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1926.

SHEET 1

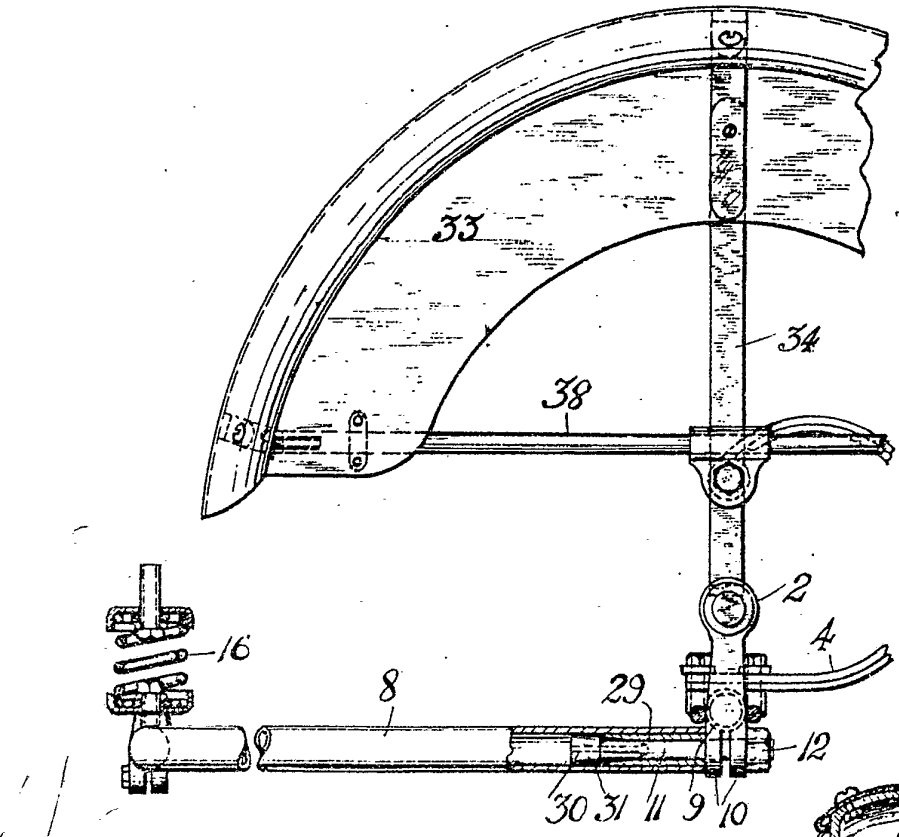


Fig. 1.

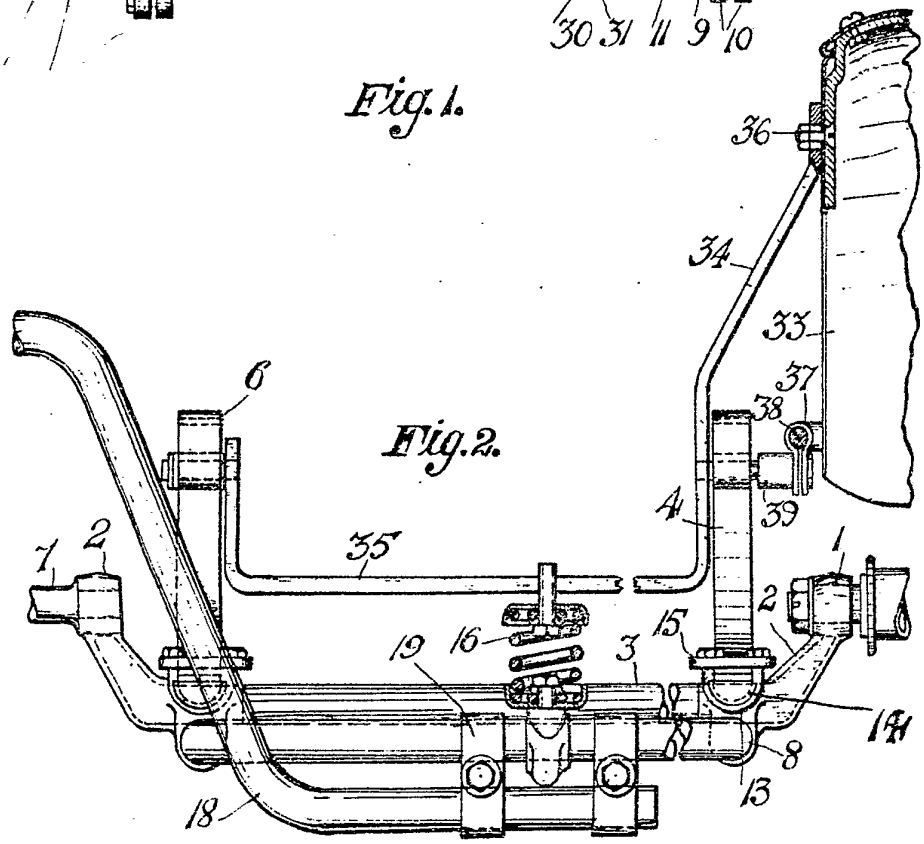


Fig. 2.

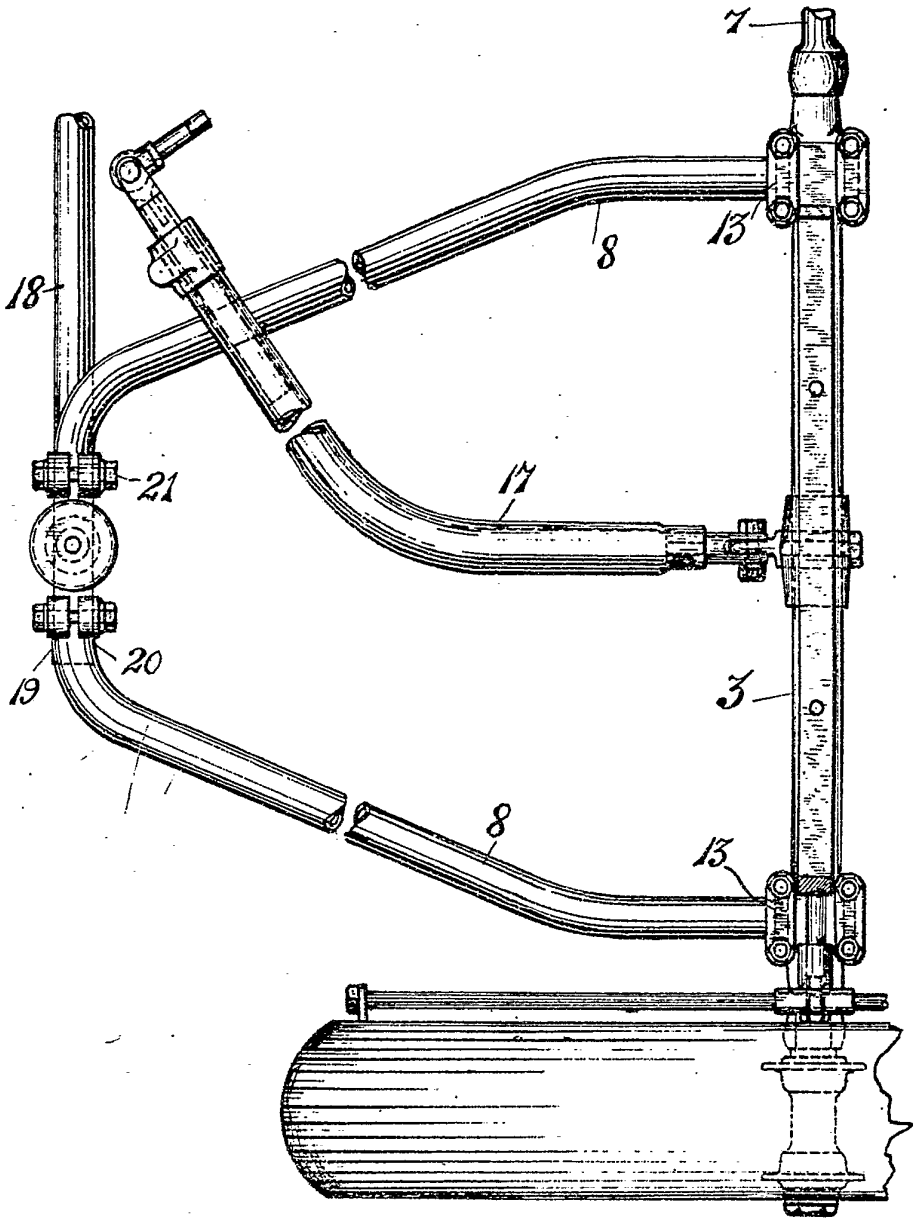


Fig. 3.

Charles & Read Ltd. Photo Litho.

[This Drawing is a reproduction of the Original on a reduced scale.]

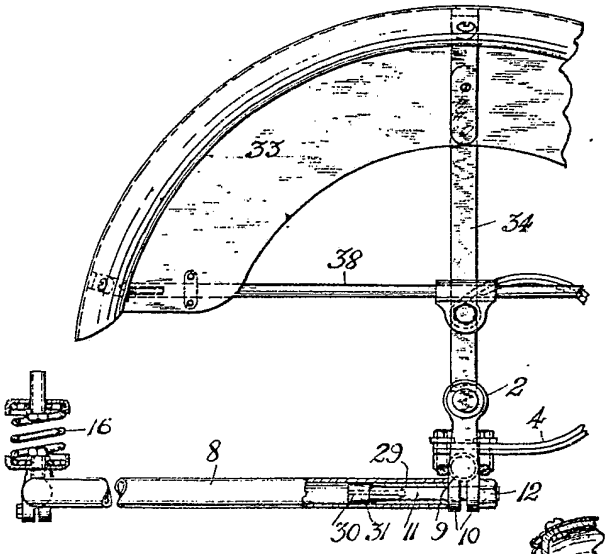


Fig. 1.

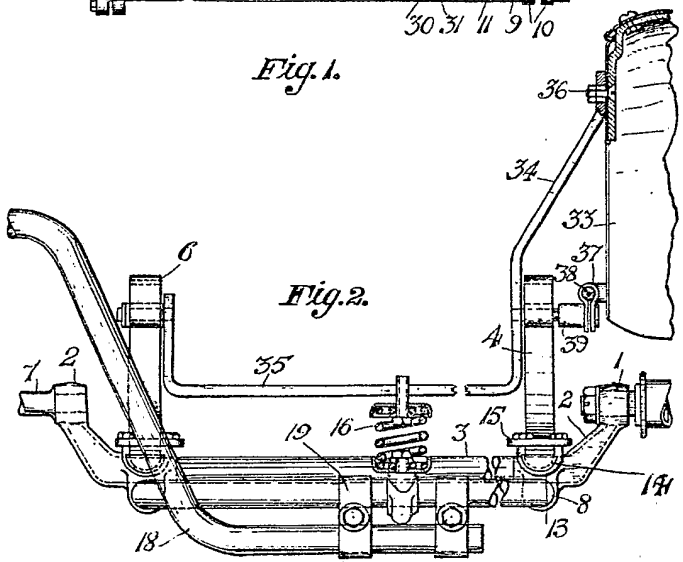


Fig. 2.

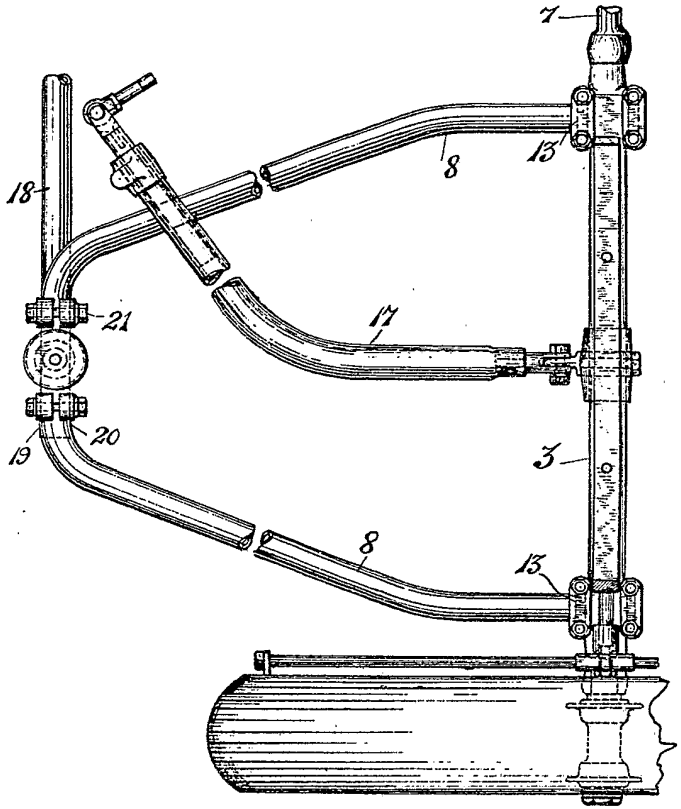


Fig. 3.

Charles & Read Ltd. Photo Litho.

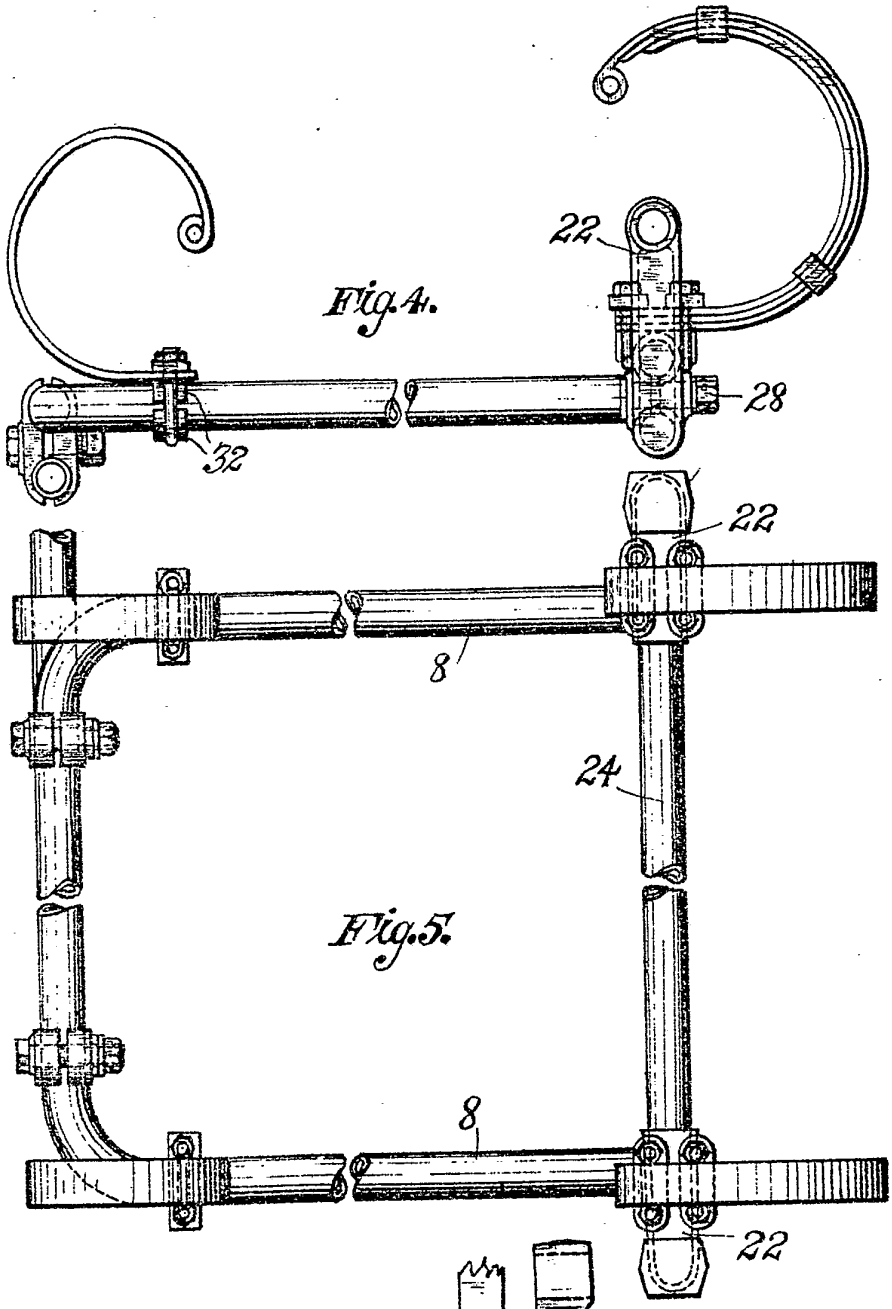


Fig. 4.

Fig. 5.

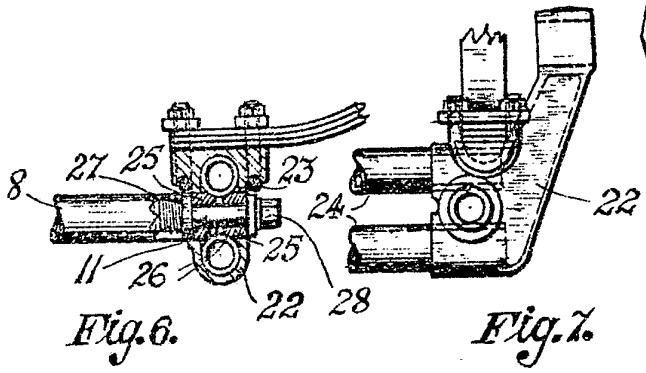


Fig. 6.

Fig. 7.

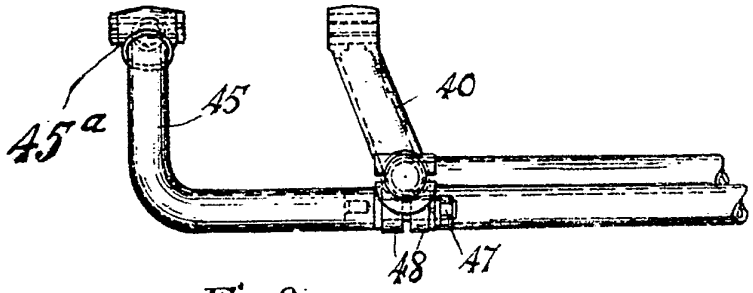


Fig. 8.

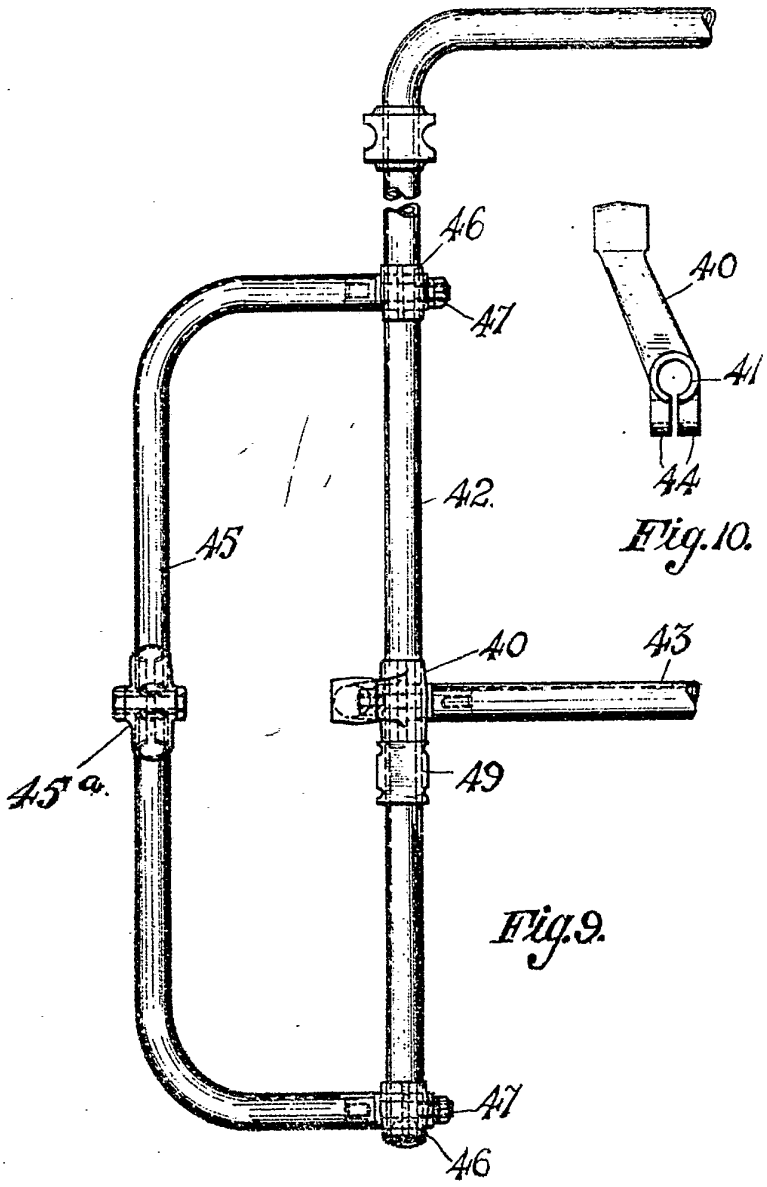


Fig. 9.

Fig. 10.

Charles & Read Ltd. Photo Litho.

[This Drawing is a reproduction of the Original on a reduced scale]

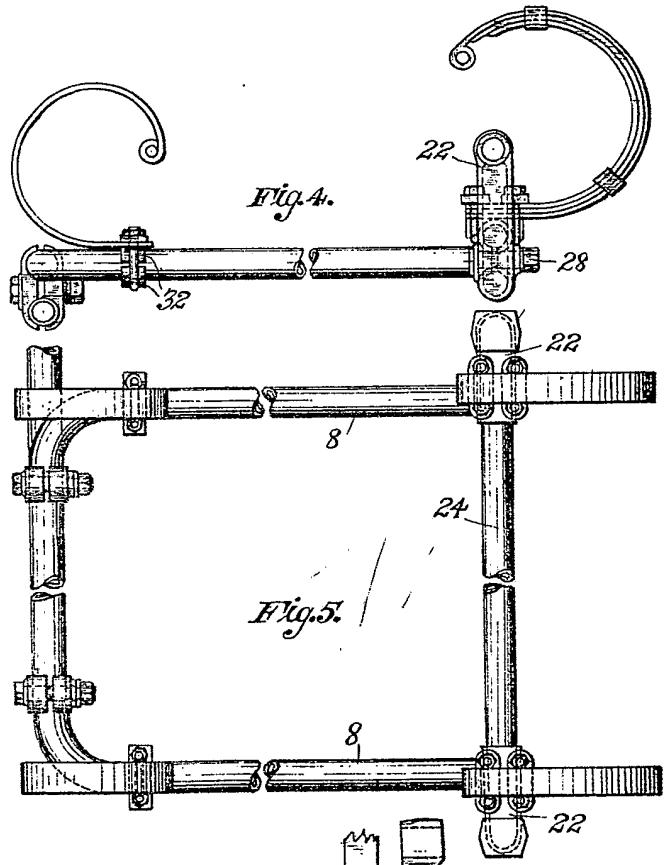


Fig. 4.

Fig. 5.

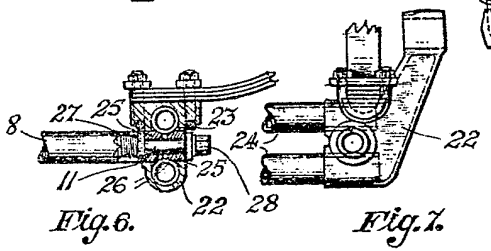


Fig. 6.

Fig. 7.

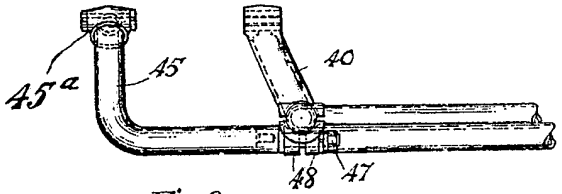


Fig. 8.

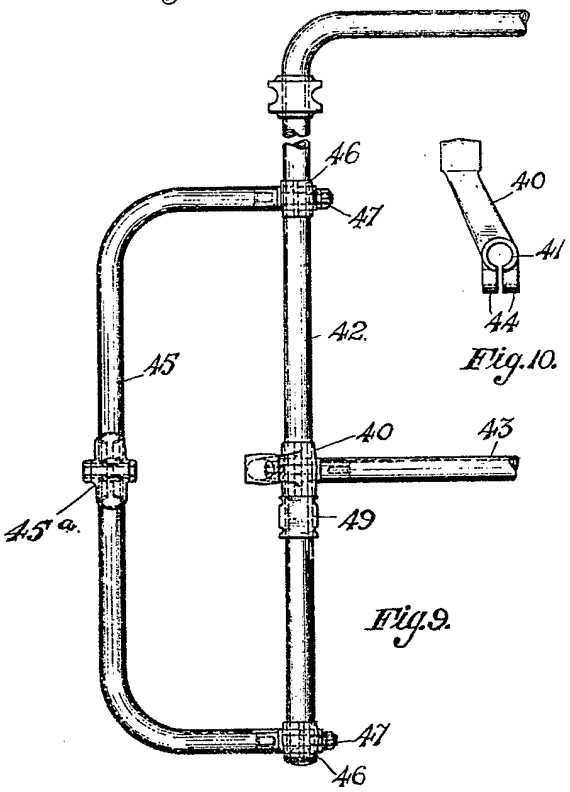


Fig. 10.

Fig. 9.

Charles & Read Ltd. Photo Litho.

PATENT SPECIFICATION

Application Date: March 13, 1925. No. 6862/25. **251,062**

Complete Left: Dec. 14, 1925.

Complete Accepted: April 29, 1926.

PROVISIONAL SPECIFICATION.

Improvements in or relating to Packing Devices.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British company, of Graiseley House, Penn Road, Wolverhampton, and CHARLES WILLIAM HAYWARD, a British subject, of Walsall Street, Wolverhampton, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in packing devices, and particularly relates to means for packing motor cycles and the like for transport purposes. Heretofore it has been usual to pack motor cycles or other articles in packing cases or packing material which can only be used once, and this has therefore involved a considerable expenditure of time and cost of packing material; and this invention has for its object to enable the article to be packed with great rapidity, whilst at the same time ensuring that the article is efficiently protected.

According to the present improvements, the packing device comprises a flexible member having padding or protective material carried thereby, and such flexible member is adapted to be wrapped or folded round the article to be packed. The flexible member is preferably constructed of fabric and has padding permanently fixed thereto at places where the cover fits over parts which are required to be protected against blows or other damaging conditions. The flexible cover is conveniently cut and shaped so that it will readily fit the article to be packed. The cover is conveniently fixed in position by means of straps or like fastenings.

According to one form of the invention, a packing device is adapted to protect a motor cycle such as for transit by rail. The cover is formed of water-proof fabric lined with strong calico or the like. The rear of the cover is cut to shape and padded on the inside to form a protection for the end, top, and the two sides of the rear of the motor cycle. A padded wall thus passes down the rear of the carrier of the motor cycle to cover substantially the full depth of the rear mudguard, whilst a padded wall passes horizontally over the carrier and rear portion of the cycle. Two pads pass at right angles from the sides of these pads and protect the sides of the rear of the motor cycle. An unpadded part of the cover passes from these top and side pads and terminates in a padded front which is adapted to fold round the petrol tank at the front of the cycle. The two edges of this portion of the cover projecting from the rear padded portion are adapted to be strapped together underneath the engine and mechanism of the motor cycle. Flaps projecting from the said forward padded portion are adapted to pass round the front of the motor cycle frame, and are connected together by straps and buckles. A flap is attached to this cover behind the padded portion, and such flap extends forwardly and has two laterally projecting arms for receiving the handle bars. These arms are split and are connected together at the division by means of straps and buckles to enable such arms to envelop the handle bars. This flap is carried beyond the laterally projecting arms and terminates in the padded curved portion which is adapted to fit over the front mudguard, side flaps on this forward portion being connected to the front wheel bracket at a point where the front mudguard stays are connected thereto.

With the aforedescribed construction substantially the whole of the motor cycle is enclosed in the cover, and the parts which are likely to be damaged are protected by pads. The cycle is also enclosed in a water-proof covering, and is therefore protected against rain or

[*Price* 1/-]

damp. The motor cycle is also free to be wheeled about, thereby considerably facilitating handling during transport. The rear stand is also free to be raised or lowered.

As the cover is specially shaped for fitting on the motor cycle the motor cycle can be packed for transport in a very short time. Again as the parts to be protected are covered by padding fixed to the cover it is always ensured that the motor cycle will be properly packed, thus avoiding the need of skilled packers. The covers can be readily folded up for return, thereby enabling the same to be used continuously. A strap is conveniently used for passing around the centre of the cover, and this strap, which is permanently fixed in position, can be utilised for holding the cover in the folded position when being returned.

In lieu of the cover being in one piece it may be in two or more pieces. Whilst the particular embodiment described is suitable for motor cycles, the packing cover may be designed for any other suitable article.

Dated this 9th day of March, 1925.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants.
3, New Street, Birmingham,

COMPLETE SPECIFICATION.

Improvements in or relating to Packing Devices.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British company, of Graiseley House, Penn Road, Wolverhampton, and CHARLES WILLIAM HAYWARD, a British subject, of Walsall Street, Wolverhampton, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to packing devices for cycles of the type comprising a cover of textile material or the like which is placed over the cycle, whilst allowing the wheels to run on the ground and the cycle to be steered; and this invention has for its object a packing device for motor cycles whereby the motor cycle may be prepared for transit with great rapidity, whilst at the same time ensuring that the motor cycle will be efficiently protected.

According to the present improvements, the packing device comprises a padded cover which covers the portion of the cycle behind the front fork, and also comprises a flap or part which is fixed to the said cover and which passes over the handle bar and fits over the front mudguard, the flap being so fixed that the front wheel can be steered. The said flap is also shaped to cover the handle bar. The packing device, according to this invention, also comprises a padded cover which is shaped to fit the rear of the motor cycle and which is folded and fastened around the front of the cycle behind the front fork, the front mudguard and handle bar being covered by an independent or substantially independent member so that the front wheel will be steered with the packing device in position, and the arrangement being such that the covering for the front mudguard and handle bar moves independently of the cover of the motor cycle located to the rear of the front fork. The cover is secured in position conveniently by means of a strap fixed to the cover, such strap being adapted to pass around the middle of the motor cycle, and such strap being also utilised for binding the packing cover in a folded position when removed from the cycle. The cover is conveniently formed of an outer layer of waterproof fabric and an inner layer of strong calico or the like between which is fixed a layer of felt or like padding material, the cover being shaped to fit over the rear of the cycle and being extra padded at the rear, and the cover also passing over the petrol tank and down each side, such sides being fastened together at the front of the frame behind the front fork, and being also extra padded on each side; an extra padded cover which passes over the front mudguard, and has extensions to fit around the handle bar.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a view of the cover laid flat with the exception of the shaped part which fits over the rear of the motor cycle and the portion of the shaped pocket which fits over the front mudguard, and

Figure 2 is a view showing the cover applied to a motor cycle.

According to one form of the invention a packing device is adapted to protect a

motor cycle such as for transit by rail. The cover 1 is formed of an outer layer of water-proof fabric lined with strong calico or the like, and preferably also having a thickness of padding between these two layers. The rear of the cover is cut to shape and extra padded on the inside at 2 and 3 to form a protection for the end, top, and the two sides of the rear of the motor cycle, the part 2 passing over the luggage carrier and down each side, whilst the part 3 protects the rear of the frame and the rear mudguard. This rear portion of the cover 1 having the padded part 2 and 3 is tailored or shaped to fit the rear portion of the motor cycle by merely sliding the same thereon. The front part of the cover is extra padded at 4 and 5 to fit against the side of the tank at the front of the motor cycle. The two longitudinal edges 6 and 7 of the cover are strapped preferably underneath the engine and mechanism of the motor cycle by the strap 16. The flap 8 is passed round the front of the motor cycle and connected by straps and buckles to the edge 9. A flap 10 is attached to the cover at 11 and such flap extends forwardly and has two laterally projecting arms 12 for passing around the handle bars. These arms are split and are connected together at the division by means of straps and buckles or the like to enable such arms to envelop the handle bars. This flap 10 is carried beyond the laterally projecting arms and terminates in the padded curved portion 13 which is adapted to fit over the front mudguard, the side flaps 14 on this forward portion 13 being connected by straps to the front wheel bracket at a point where the front mudguard stays are connected thereto.

With the aforedescribed construction substantially the whole of the motor cycle is enclosed in the cover, and the parts which are likely to be damaged or receive blows or knocks are protected by padded parts. The cycle is also enclosed in a water-proof covering, and is therefore protected against rain or damp. The motor cycle is also free to be wheeled about, thereby considerably facilitating handling during transport. The usual rear stand 15 is also free to be raised or lowered.

As the cover is specially shaped for fitting on the motor cycle the motor cycle can be packed for transport in a very short time. Again as the parts to be protected are covered by padding fixed to the cover it is always ensured that the motor cycle will be properly packed, thus avoiding the need of skilled packers. The covers can be readily folded up for return, thereby enabling the same to be used continuously. A strap 16 is conveniently used for passing around the centre of the cover, and this strap, which is permanently fixed in position, can be utilised for holding the cover in the folded position when being returned.

In lieu of the cover being in one piece it may be in two or more pieces.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A packing device for motor cycles comprising a padded cover which covers the portion of the cycle behind the front fork, and a flap part fixed to said cover which passes over the handle bar and fits over the front mudguard, the flap being so fixed that the front wheel can be steered.

2. A packing device as set forth in the 1st claim in which the flap is shaped to cover the handle bar.

3. A packing device for motor cycles comprising a padded cover which is shaped to fit the rear of the motor cycle and which is folded and fastened around the front of the cycle behind the front fork, and in which the front mudguard and handle bar are covered by an independent or substantially independent member so that the handle and front wheel can be turned to steer the motor cycle with the packing device in position.

4. A packing device as set forth in the preceding claims in which a strap fixed to the cover passes around the middle of the cycle to hold the cover in position, which strap is utilised for binding the packing cover in the folded position.

5. A packing device for motor cycles comprising a cover formed of an outer layer of waterproof fabric, and an inner layer of strong calico or the like between which is preferably placed a layer of felt or like padding material, the cover being shaped to fit the rear of the cycle and being extra padded at the rear, and the cover also passing over the petrol tank or top horizontal bar of the frame and hanging down each side, and such sides being connected at the front of the frame behind the front fork and also being extra padded on each side at the front end of the tank, and also comprising a shaped extra padded cover for the front mudguard which cover has extensions to fit around the handle bar.

6. A packing device substantially as herein set forth or illustrated.

Dated this 8th day of March, 1926.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants.
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1926.

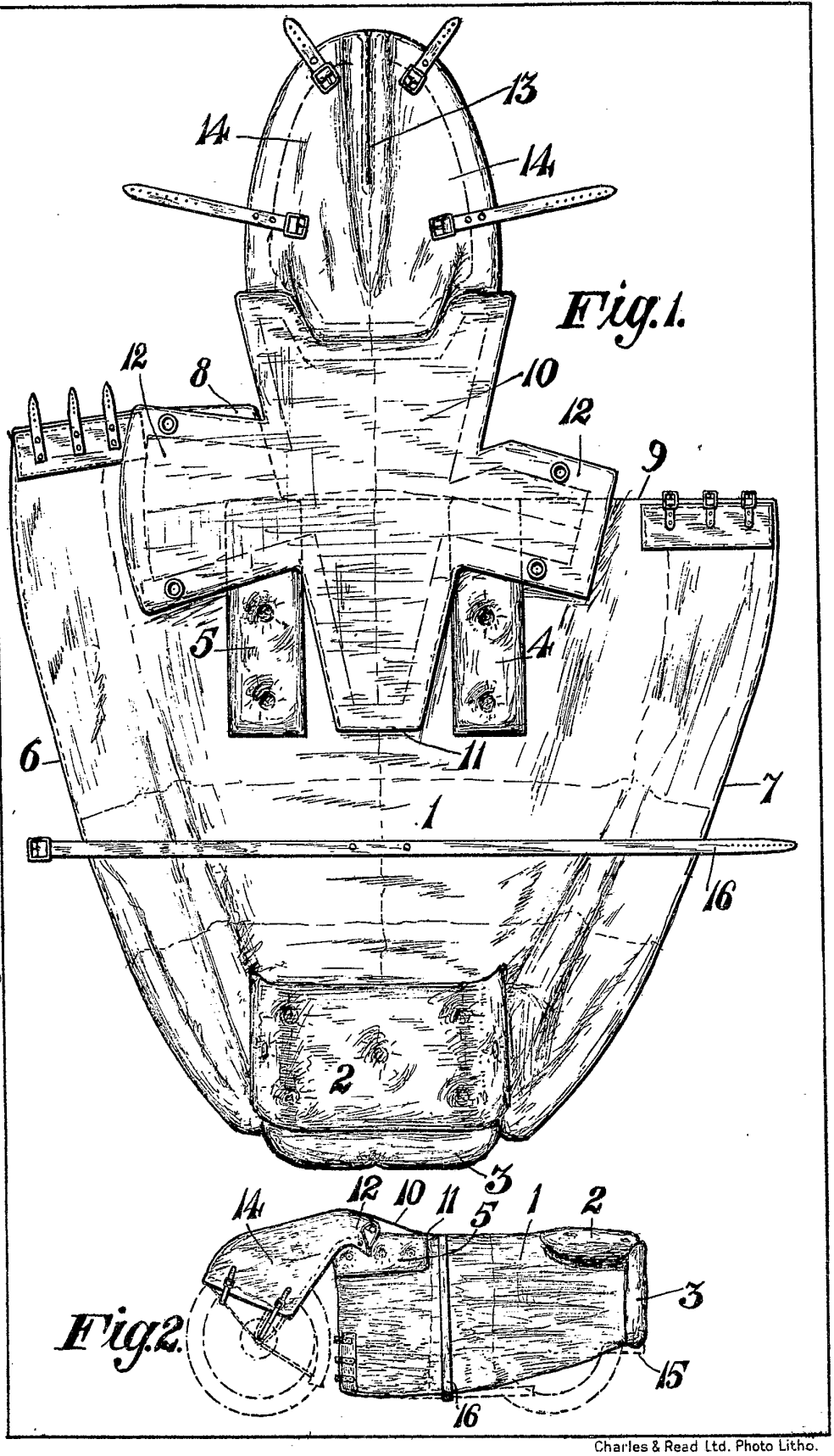


Fig. 1.

Fig. 2.

Charles & Read Ltd. Photo Litho.

PATENT SPECIFICATION

Application Date: Jan. 30, 1926. No. 2732/26. **262,981**

Complete Left: Oct. 28, 1926.

Complete Accepted: Dec. 23, 1926.

PROVISIONAL SPECIFICATION.

Improvements in or relating to Gear Control or Operating Mechanisms for Motor Cycles and the like.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British company, of Graiseley House, Wolverhampton, and ALBERT JOHN STEVENS, a British subject, of the same address, do hereby declare the nature of this invention to be as follows:—

The present invention has relation to gear control or operating mechanisms for motor cycles and the like, more particularly those of the type wherein a lever pivoted to a quadrant or frame is adapted to operate in an elongated slot or "gate" of such quadrant or frame and be retained in lateral notches or slots by spring provision.

The present invention has for its object to provide a pivotal spring mounting for the handle in a device of the type aforesaid which is more generally efficient than that hitherto proposed, and also lessens cost of production.

According to the present invention, the lever is pivoted or fulcrummed on a pin carried by the bracket and a spring incorporated between the head or enlargement of such pin and the adjacent bearing part of the lever whereby the latter is not only capable of a plain pivotal movement but is also capable of a slight lateral rocking movement against the action of the spring, which latter movement permits of the engagement and retention of the lever with the lateral slots and notches in the "gate" or elongated slot. Conveniently the spring is of helical formation or in the nature of a spring washer and is enclosed in a cavity in the bearing part of the lever, which cavity is closed by the head of the screw.

In a convenient embodiment of the present invention we employ a quadrant or frame of well-known construction having an upper lateral arcuate flange part longitudinally slotted and laterally notched for the reception of the operating lever. At or about the apex or lower part of the quadrant plate we attach a pin which involves a uniform or cylindrical body part, a reduced shank or extremity passed through an aperture in the quadrant plate, being locked by a nut on the opposite side of such plate, and a terminal head or enlargement at the opposite or outer extremity of the pin. The operating lever is preferably cast in one piece. It involves a boss part of substantially oval or elongated formation when viewed in elevation, and a double or differential diameter bore passing therethrough. The smaller dimension of this bore is adapted to fit loosely upon the uniform body part of the pin, whilst the larger dimension part of the bore which is closed by the head of the pin constitutes a cavity for a flat section helical spring or spring washer bearing in one instance against the head of the pin and in the other instance against that face of the bearing part of the lever constituted between the two bores. From the bearing part the lever extends upwardly through the elongated notched slot to a suitable handle and downwardly for a suitable distance to a position where it is adapted to be connected to suitable linkage for controlling the gears. The handle part, where it co-operates with the notched slot in the quadrant has a square formation thereon for engaging the lateral notches.

In operation the lever is initially rocked laterally against the action of the spring and is then moved through the

[Price 1/-]

elongated slot to the desired position and allowed to automatically engage with a fresh notch and be retained by the said spring provision. In the lateral operation of the lever the oval shaped boss at one extremity or the other, according to the direction of rocking movement of the lever, fulcrums upon the face of the quadrant plate against the action of the spring.

Dated this 29th day of January, 1926.

LEWIS WM. GOOLD,
Chartered Patent Agent,
Agent for the Applicants,
5, Corporation Street, Birmingham.

COMPLETE SPECIFICATION.

Improvements in or relating to Gear Control or Operating Mechanisms for Motor Cycles and the like.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British company, of Graiseley House, Wolverhampton, and ALBERT JOHN STEVENS, a British subject, of the same address, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention has relation to gear control or operating mechanism for motor cycles and the like, more particularly the type of mechanism wherein a lever pivoted to a quadrant or bracket is adapted to operate in an elongated slot or "gate" mechanism of such quadrant or frame and be retained in lateral notches or slots by spring provision.

According to the present invention we provide gear control or operating mechanism for a motor cycle or the like, of the type hereinbefore referred to, wherein the lever is loosely pivoted or fulcrumed on a pin or shaft carried by the quadrant or frame, and a spring is enclosed in its entirety within a cavity associated with the bearing part of the lever, which cavity is closed by a head or enlargement on the said pin or shaft, the spring being adapted to act upon the base of the cavity and the head or enlargement of the pin or shaft.

In order that this invention may be clearly understood and readily carried into practice, reference may be had to the appended explanatory sheet of drawings, upon which:—

Figure 1 is an elevational view of gear control or operating mechanism constructed according to the present invention.

Figure 2 is a plan view of the mechanism illustrated in Figure 1, partly in section.

Figure 3 is an end elevation of the mechanism shown in Figure 1, and

Figure 4 a fragmentary plan view corresponding to the Figure 2, illustrating the actuation of the mechanism.

In a convenient embodiment of the present invention we employ a quadrant or bracket a of well known construction having an upper lateral arcuate flange part a^1 longitudinally slotted and laterally notched for the reception of the operating lever (as shown particularly in Figures 2 and 3). At or about the apex or lower part of the quadrant plate a we attach a pin or shaft b which involves a uniform or cylindrical body part, indicated by the reference letter b, a reduced shank or extremity b^1 passed through an aperture in the quadrant plate, being locked by a nut b^2 on the opposite side of such plate, and a terminal head or enlargement b^3 at the opposite or outer extremity of the pin. The operating lever c is preferably cast in one piece. It involves a boss part c^1 of substantially oval or elongated formation when viewed in elevation, and a double or differential diameter bore c^2 c^3 passing therethrough. The smaller dimension c^2 of this bore is adapted to fit loosely upon the uniform body part b of the pin, whilst the larger dimension part c^3 of the bore which is closed by the head of the pin b^3 constitutes a cavity for a flat section helical spring or spring washer d bearing in one instance against the head b^3 of the pin and in the other instance against the base of the bore c^3 (as shown). From the bearing part the lever c extends upwardly through the elongated notched slot to a suitable handle c^4 and downwardly for a suitable distance to a position c^5 where it is adapted to be connected to suitable linkage for controlling the gears. The handle part, where it co-operates with the notched slot in the quadrant has a square formation c^6 thereon for engaging the lateral notches. The boss part c^1 is provided with a flat face c^7 adapted to co-operate with a corresponding flat facial part of the bracket a (see particularly

Figures 2 and 4). Normally when these flat faces are superficially engaged, the lever *c* is laterally notched and retained (see particularly Figure 2).

In operation, when it is desired to change gear the lever is initially rocked laterally, the extremity of the flat face c^7 taking a fulcrum upon the quadrant or bracket *a* against the action of the spring *d* (see particularly Figure 4). In this condition, the lever may be made to traverse the communicating slots of the slot or gate mechanism until it is opposite the desired notch, when the spring *d* will automatically engage said lever and notch.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Gear control or operating mechanism for a motor cycle or the like, of the type hereinbefore referred to, wherein the lever is loosely pivoted or fulcrumed on a pin or shaft carried by the quadrant or frame, and a spring is enclosed in its entirety within a cavity associated with the bearing part of the lever, which cavity is closed by a head or enlargement on the said pin or shaft, the spring being adapted to act upon the base of the cavity and the head or enlargement of the pin or shaft, substantially as herein set forth.

2. Gear control or operating mechanism for a motor cycle or the like, substantially as herein set forth and illustrated.

Dated this 23rd day of October, 1926.

LEWIS W. GOOLD,
Chartered Patent Agent,
Agent for the Applicants,
5, Corporation Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1927.

Fig. 1.

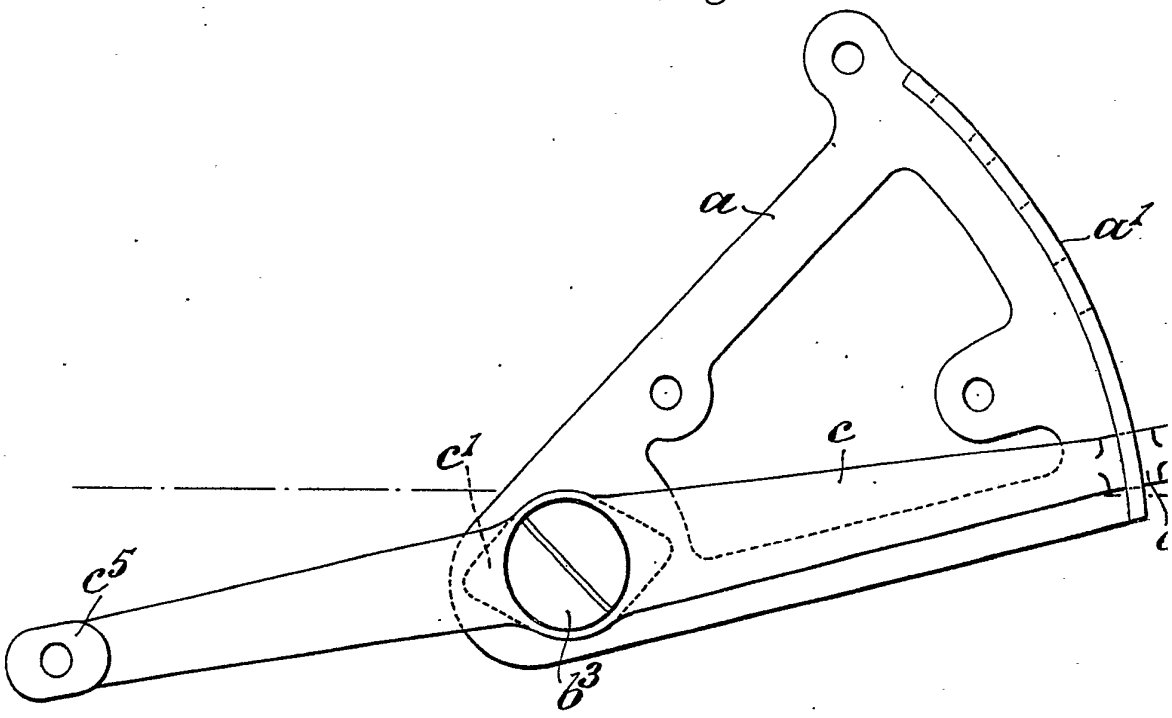


Fig. 2.

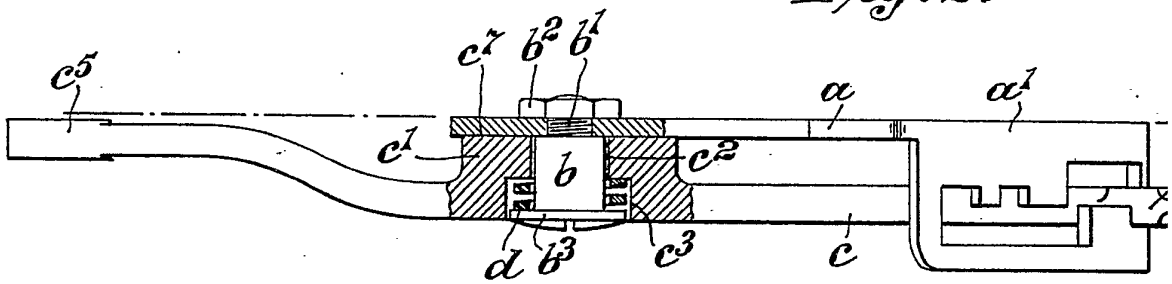


Fig. 3.

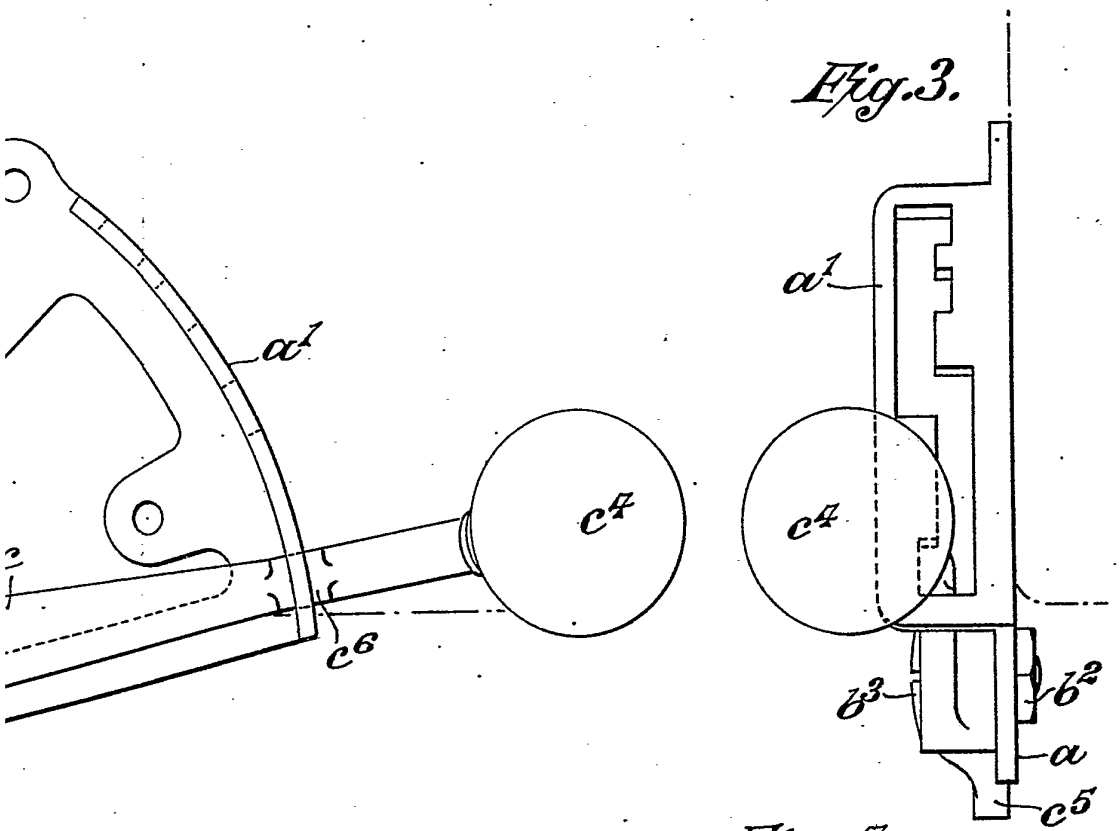


Fig. 4.

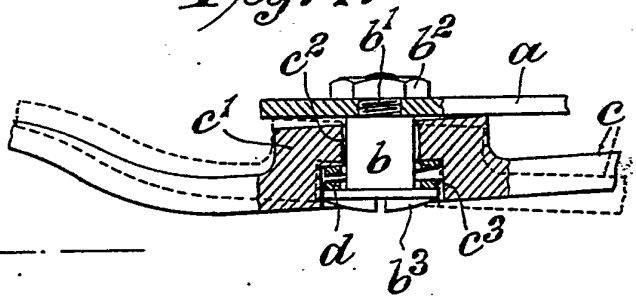
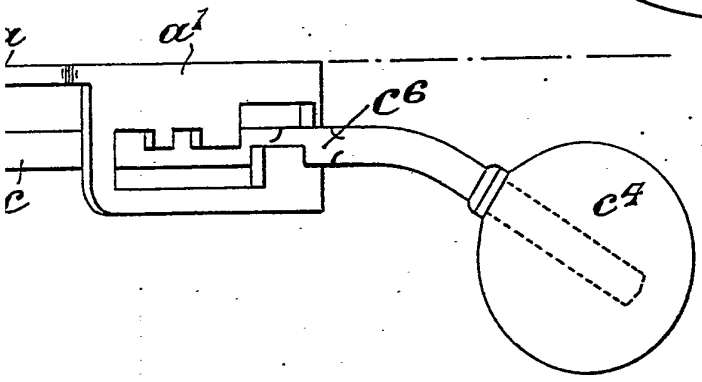


Fig. 2.



Charles & Read Ltd. Photo Litho.

[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

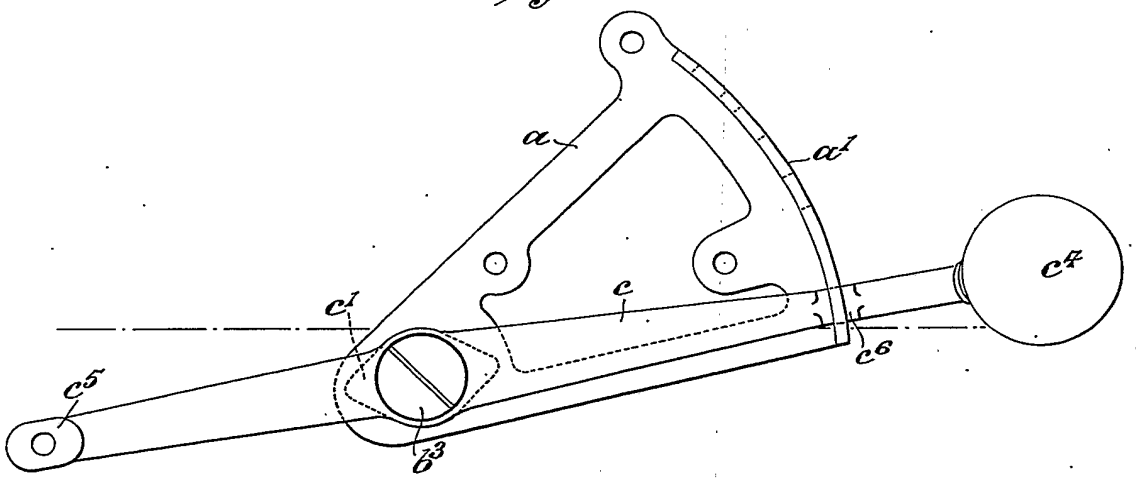


Fig. 3.

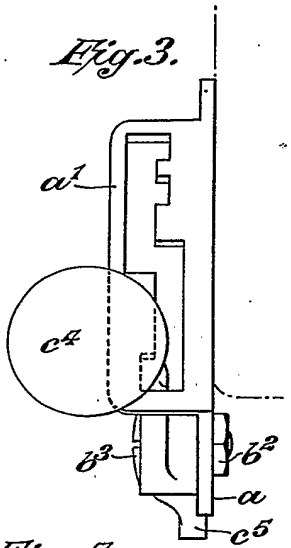


Fig. 4.

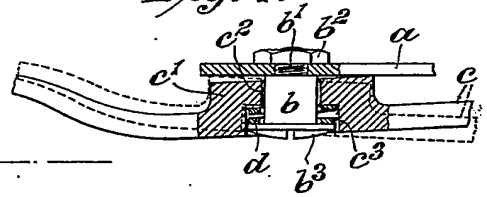
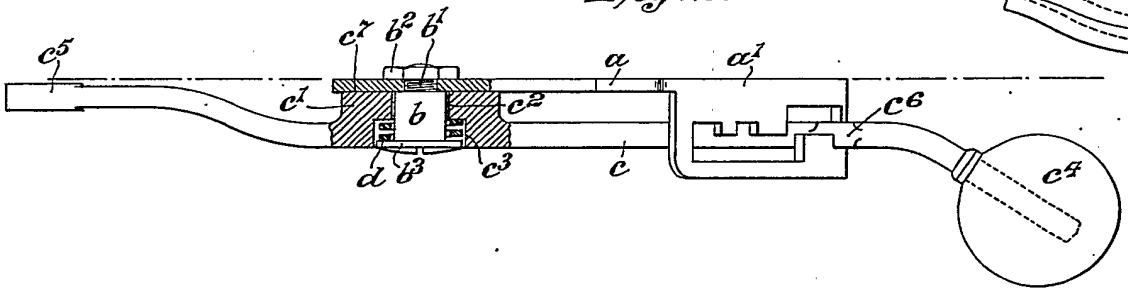


Fig. 2.



Charles & Read Ltd. Photo Litho.

PATENT SPECIFICATION

Application Date: Nov. 6, 1925. No. 27,906/25. **263,978**

Complete Left: July 17, 1926.

Complete Accepted: Jan. 13, 1927.

PROVISIONAL SPECIFICATION.

Means for Checking the Alignment of the Back Wheel of a Motor Cycle or the like.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British company, and HARRY STEVENS, a British subject, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention to be as follows:—

This invention relates to checking the alignment of the back wheel of a motor cycle or the like, and it has for its object extremely simple means for this purpose for use particularly after the motor cycle or the like has passed into use.

According to the present improvements, a gauge, which may be formed of one or more parts is set for use in relation to the wheel and a suitable part of the machine frame so that the alignment may be accurately checked at any time. The gauge or one of the gauge parts may be adjustable so that the setting for each particular machine may be quickly obtained.

According to the preferred form of this invention, a gauge is formed in two component parts, one of which is fixed to the chain stay of the motor cycle. This latter part comprises a clip which encircles the chain stay, the ends of which are bent to form flanges between which a gauge plate is fixed. This gauge plate has two slots therein through which bolts are passed for adjustably fixing the gauge plate to the clip and for fixing the clip to the chain stay. The other component part of the gauge comprises a plate which fits over the rim of the wheel from the inside, one side of the gauge passing around the side of the rim, whilst the other side of the gauge extends laterally and has a straight edge for testing against the straight edge of the said gauge plate carried by the chain stay. The gauge plate carried by the chain stay is accurately positioned in relation to the centre line of the forked chain stays by means of a gauge which locates the centre line from the longitudinal tube of the bottom bracket and the centre of the distance between the ends of the chain stays, the said gauge plate being set at a predetermined distance from this centre locating gauge.

The said component parts of the gauge are supplied with each machine, and therefore the alignment of the rear wheel can be checked by merely applying the gauge plate to the rim of the wheel and testing against the gauge plate fixed to the chain stay as a standard fitting.

Dated this 5th day of November, 1925.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

COMPLETE SPECIFICATION.

Means for Checking the Alignment of the Back Wheel of a Motor Cycle or the like.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British company, and HARRY STEVENS, a British subject, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention and in what manner

the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to checking the alignment of the back wheel of a motor cycle or the like, and it has for its object extremely simple means for this purpose for use particularly after the motor cycle or the like has passed into use.

According to the present improvements, means for checking the alignment of the back wheel of a motor cycle or the like comprises a gauge, which is applied to the wheel rim for testing against an edge on or fixed in relation to the machine frame, so that the alignment may be accurately checked at any time. The gauge or one of the gauge parts may be adjustable so that the setting for each particular machine may be quickly obtained.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a plan view of a gauge constructed according to this invention.

Figure 2 is a sectional end elevation of the gauge shown by Figure 1, the section being taken on line *x x* of Figure 1, and

Figure 3 is a perspective view of the rear of a motor cycle illustrating the method of checking the alignment of the rear wheel of a motor cycle.

According to the preferred form of this invention, a gauge is formed in two component parts, one of which is fixed to the chain stay of the motor cycle. This latter part comprises a clip 1, which encircles the chain stay 2, the ends of which are bent to form flanges 3 between which a gauge plate 4 is fixed. This gauge plate 4 has two slots 5 therein through which bolts 6 are passed for adjustably fixing the gauge plate 4 to the clip 1 and for fixing the clip 1 to the chain stay 2. The other component part of the gauge comprises a plate 7 which fits over the rim 8 of the wheel from the inside, one side of the gauge passing around the side of the rim, whilst the other side of the gauge extends laterally and has a straight edge for testing against the straight edge of the said gauge plate 4 carried by the chain stay 2. The gauge plate carried by the chain stay is accurately positioned in relation to the centre line of the forked chain stays by means of a gauge which locates the centre line from the longitudinal tube of the bottom bracket and the centre of the distance between the ends of the chain stays, the said gauge plate being set at a predetermined distance from this centre locating gauge.

The said component parts of the gauge are supplied with each machine, and therefore the alignment of the rear wheel can be checked by merely applying the gauge plate 7 to the rim 8 of the wheel and testing against the gauge plate 4 fixed to the chain stay 2 as a standard fitting.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Means for checking the alignment of the back wheel of a motor cycle or the like, comprising a gauge which is applied to the rim of the wheel for testing against an edge on or fixed in relation to the cycle or like frame, whereby the alignment of the wheel may be tested after the machine has passed into use.

2. Means for checking the alignment of the back wheel of a motor cycle or the like, comprising a gauge plate fixed to the chain stay of the motor cycle and a gauge plate which fits against the rim of the rear wheel and has an edge, for testing against the gauge plate fixed to the chain stay, at the outer end.

3. Means for checking the alignment of the back wheel of a motor cycle or the like as set forth in Claim 2 in which the gauge plate fixed to the chain stay is adjustably mounted between flanges formed on a clip fixed to the chain stay.

4. Means for checking the alignment of the back wheel of a motor cycle substantially as herein set forth and illustrated.

Dated this 16th day of July, 1926.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

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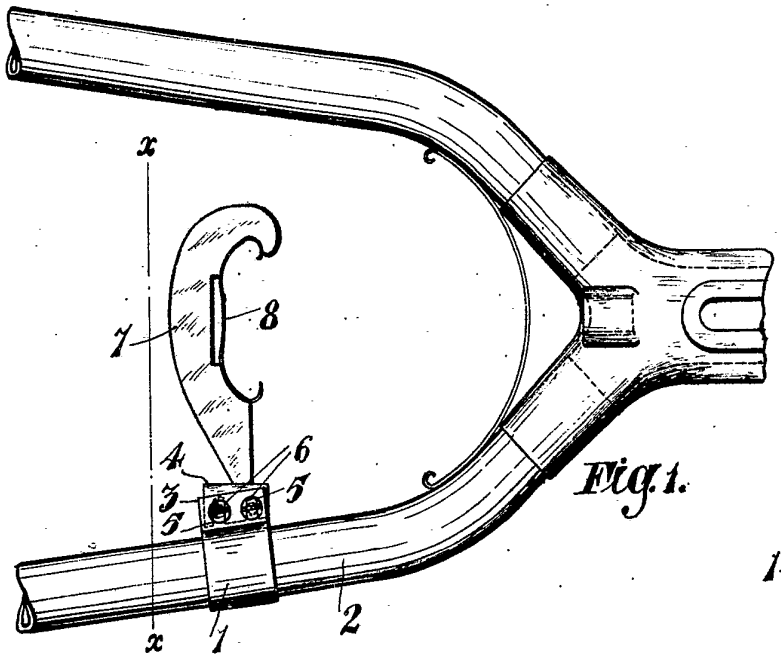


Fig. 1.

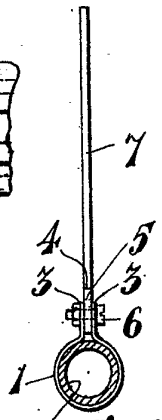


Fig. 2.

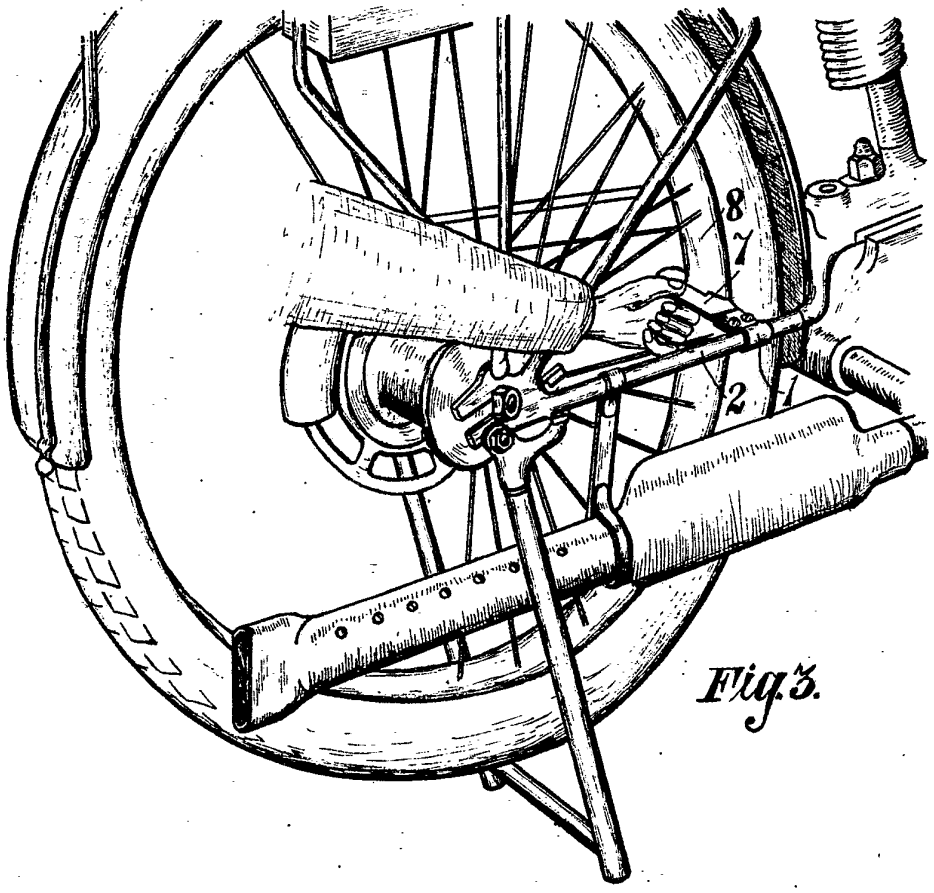


Fig. 3.

Charles & Read Ltd. Photo Litho.

PATENT SPECIFICATION

Application Date: Feb. 24, 1926. No. 5207/26. 267,693

Complete Left: Nov. 24, 1926.

Complete Accepted: March 24, 1927.

PROVISIONAL SPECIFICATION.

Improvements in Wheeled Carrier Attachments for Motor Cycles.

We, CHARLES WILLIAM HAYWARD, British subject, of Walsall Street, Wolverhampton, and A. J. STEVENS & COMPANY (1914) LIMITED, of Graiseley House, Penn Road, Wolverhampton, a British company, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in wheeled carrier attachments for motor cycles, and it has for its object improved means for spring supporting the wheel and body from the chassis.

According to the present improvements, the road wheel is mounted on an arm of a bracket rotatably mounted on the chassis, such bracket being under the control of a spring. This spring conveniently takes the form of a leaf spring, one end of which is fixed to the bracket, whilst the other end is slidably mounted, preferably, between two rollers carried by a fitting fixed to the chassis. The side car body is spring supported by means of two leaf springs which are connected together at one end, the other end of one spring being fixed to the chassis, whilst the other end of the second spring is fixed to the side car body or fitting supporting the side car body.

According to a convenient embodiment of this invention, a corner fitting connecting the rear transverse tube of the chassis to the longitudinal side tube has fixed thereto one end of a laminated leaf spring. The other end of this laminated leaf spring has a second laminated leaf spring fixed thereto, and the other end of this second laminated leaf spring is connected to the side limb of a U-shaped member to which the side car body is bolted. The first mentioned laminated leaf spring fixed to the said corner fitting passes from the corner bracket in a horizontal direction, and then curves upwardly and is again bent so that the other end of the spring passes in a substantially horizontal direction. The second mentioned leaf spring is substantially a quarter eliptic leaf spring. With this construction the first mentioned leaf spring absorbs lesser shocks, whilst the second mentioned leaf spring enables greater shocks to be absorbed.

A spindle is fixed inside the end of the rear transverse tube, conveniently, by forming the corner fitting, fixing the longitudinal tube to the said rear transverse tube, as a split bracket or clamp, a fixing pin also passing through the said bracket and rear transverse tube into the spindle. The wheel-carrying bracket is rotatably mounted on this spindle on ball bearings, and such bracket carries an arm to which the wheel spindle is fixed, such arm normally lying in an upwardly and inclined forward direction to efficiently absorb blows given to the road wheel. A laminated leaf spring is fixed to the bottom of this bracket and the forward end of the spring passes between two rollers mounted on a fitting fixed to the chassis. Blows given to the wheel will cause the bracket to move on the ball bearing against the controlling influence of the leaf spring. By thus springing the road wheel and side car body very rough roads may be traversed without liability of damage caused by excessive vibration.

Dated this 22nd day of February, 1926.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

[Price 1/-]

COMPLETE SPECIFICATION.

Improvements in Wheeled Carrier Attachments for Motor Cycles.

We, CHARLES WILLIAM HAYWARD, British subject, of Walsall Street, Wolverhampton, and A. J. STEVENS & COMPANY (1914) LIMITED, of Graiseley House, Penn Road, Wolverhampton, a British company, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to spring suspension devices, of the type comprising a bracket pivotally mounted on a frame and having an arm carrying a road wheel, a leaf spring being fixed, at one end, to the bracket, and being free to slide between rollers at the other end. This invention has for its object a wheeled carrier attachment or side car for motor cycles having spring suspension means particularly adapted for rough roads.

According to the present improvements the side car chassis comprises a frame, a bracket rotatably mounted on the frame, an arm on the bracket carrying the road wheel axle or spindle and projecting upwardly and forwardly of the pivot axis of the bracket, and a leaf spring fixed to the underside of the bracket and also projecting forwardly of the bracket and slidably engaged at its forward end between rollers. The bracket is conveniently mounted on a spindle fixed in the end of a transverse tube of the chassis frame. The body suspension springs are fixed to the chassis independent of the said bracket. The side car body is spring supported preferably by means of two leaf springs which are connected together at one end, the other end of one spring being fixed to the chassis, whilst the other end of the second spring is fixed to the side car body, or fitting supporting the side car body.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a side view of the device constructed according to this invention for spring mounting the road wheel and side car body, the parts running longitudinally of the chassis and being turned on one side for convenience in illustration.

Figure 2 is a plan view of the parts shown by Figure 1, the body suspension being omitted.

Figure 3 is a section on line *a*—*b* of Figure 1, and

Figure 4 is an end elevation of the parts shown by Figure 1 and looking in the direction of the arrow X Figure 1.

According to a convenient embodiment of this invention, a corner fitting 1 connecting the rear transverse or axle tube 2 of the chassis to the longitudinal side tube 3 has fixed thereto one end of a laminated leaf spring 4. The other end of this laminated leaf spring 4 has a second laminated leaf spring 5 fixed thereto, and the other end of this second laminated leaf spring 5 is connected to the side limb 6 of a U-shaped member to which the side car body is bolted. The first mentioned laminated leaf spring 4 fixed to the said corner fitting 1 passes from the corner fitting in a horizontal direction, and then curves upwardly and is again bent so that the other end of the spring passes in a substantially horizontal direction. The second mentioned leaf spring 5 is substantially a quarter eliptic leaf spring. With this construction the first mentioned leaf spring 4 absorbs lesser shocks, whilst the second mentioned leaf spring 5 enables greater shocks to be absorbed.

A spindle 7 is fixed inside the end of the rear transverse tube 2 conveniently by forming the corner fitting 1 fixing the longitudinal tube 3 to the said rear transverse tube 2 as a split bracket or clamp, a fixing pin 8 also passing through the said bracket 1 and rear transverse tube 2 into the spindle 7. The wheel carrying bracket 9 is rotatably mounted on this spindle 7 on ball bearings 10, and such bracket 9 carries an arm 11 having a hole 11^a in which the wheel spindle 12 is fixed, such arm 11 normally lying in an upwardly and inclined forward direction to efficiently absorb blows given to the road wheel. A laminated leaf spring 13 is fixed to the bottom of this bracket 9 and the forward end of the spring 13 passes between two rollers 14 mounted on a fitting 15 fixed to the chassis. Blows given to the wheel will cause the bracket 9 to move on the ball bearings 10 against the controlling influence of the leaf spring

13. By thus springing the road wheel and side car body very rough roads may be traversed without liability of damage caused by excessive vibration.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A side car chassis comprising a frame, a bracket rotatably mounted on the frame, an arm on the bracket, carrying the road wheel axle or spindle and projecting upwardly and forwardly of the pivot axis of the bracket, and a leaf spring fixed to the underside of the bracket and projecting forwardly thereof and slidably engaged at its forward end between rollers.

2. A side car chassis as set forth in Claim 1, in which the bracket is mounted on a spindle fixed in the end of a transverse tube of the chassis frame.

3. A side car chassis as set forth in the preceding claims in which the spring suspension device supporting the side car body comprises two leaf springs which are connected together at one end, the other end of one spring being connected to the side car body or part fixed thereto, whilst the other end is connected to a fitting fixed to the chassis or fixed at the junction of the longitudinal and rear or axle tubes of the chassis.

4. A side car chassis for motor cycles, substantially as herein set forth and illustrated.

Dated this 21st day of February, 1927.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1927.

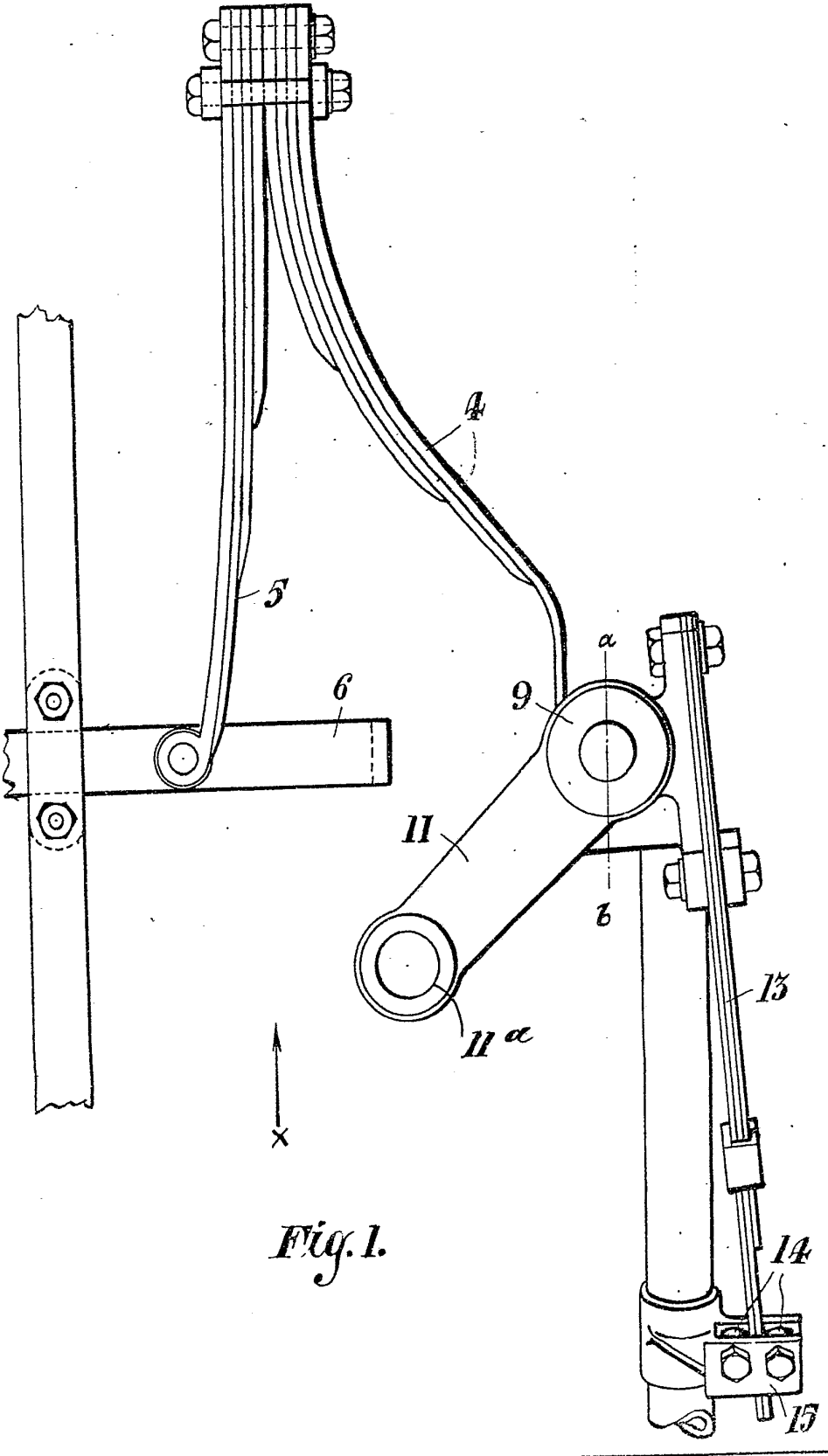


Fig. 1.

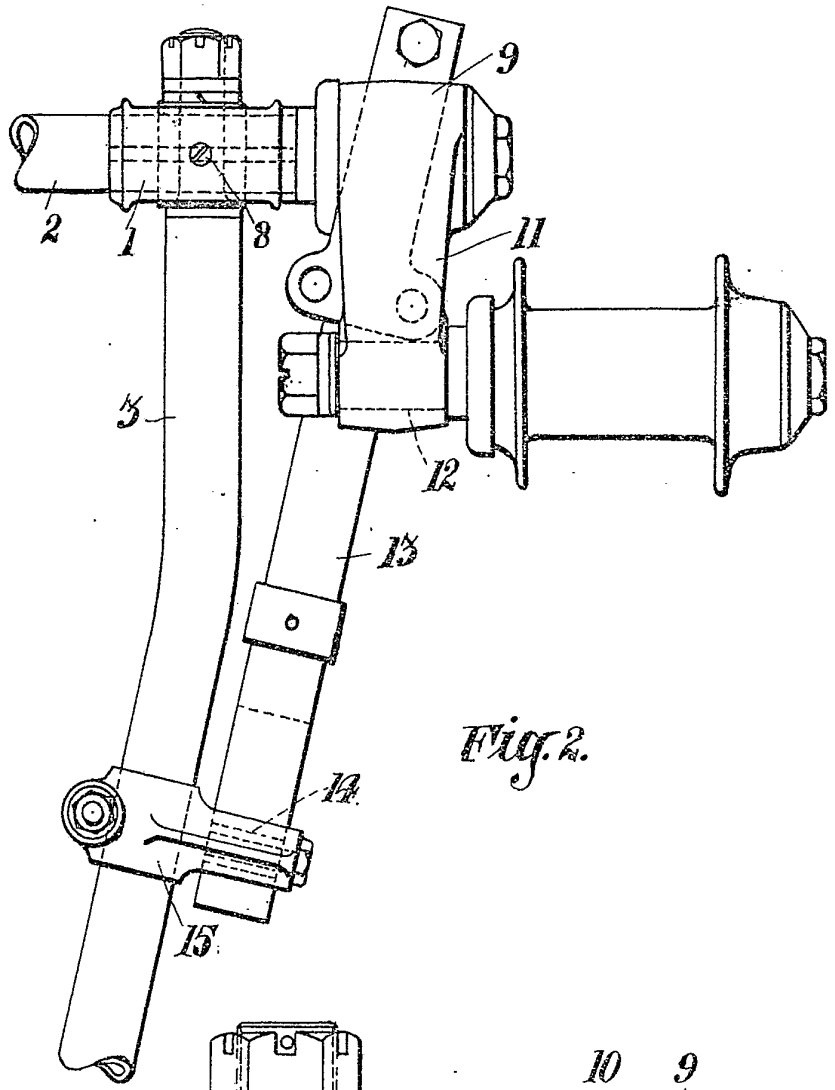


Fig. 2.

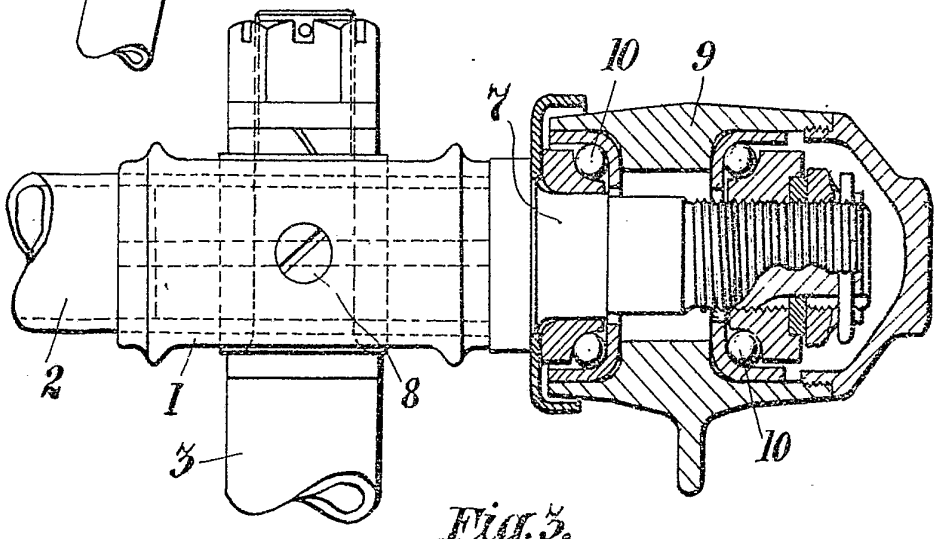


Fig. 3.

Charles & Read Ltd. Photo Litho

267,693 COMPLETE SPECIFICATION

3 SHEETS
SHEET 2

SHEET 1

[This Drawing is a reproduction of the Original on a reduced scale.]

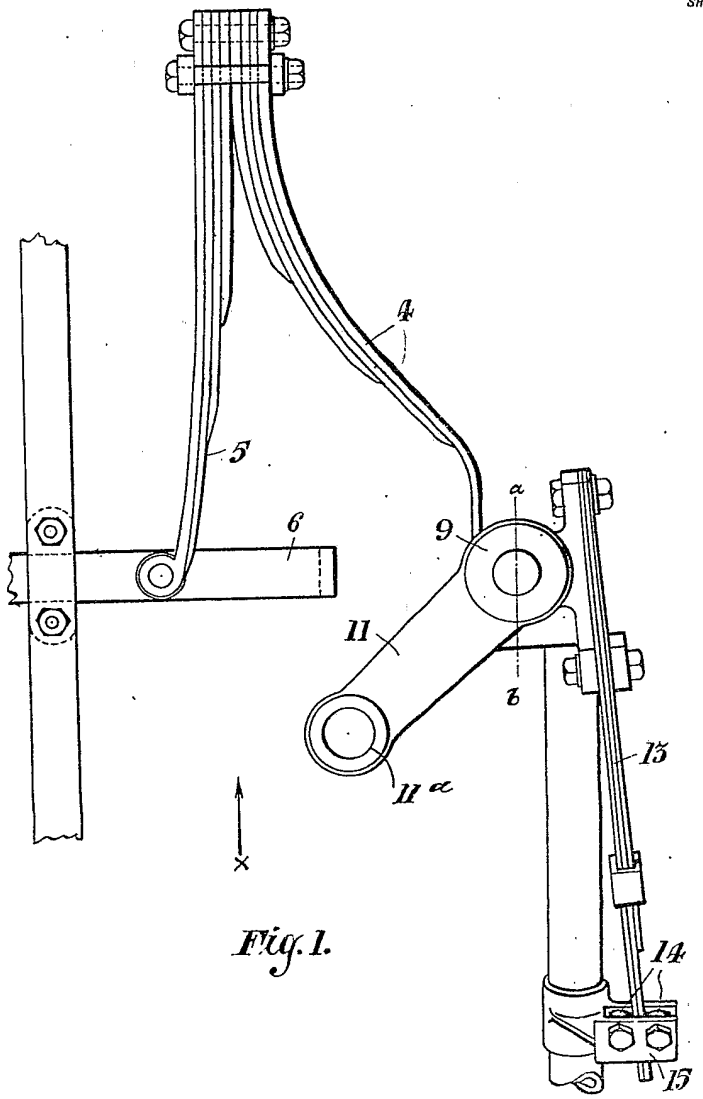


Fig. 1.

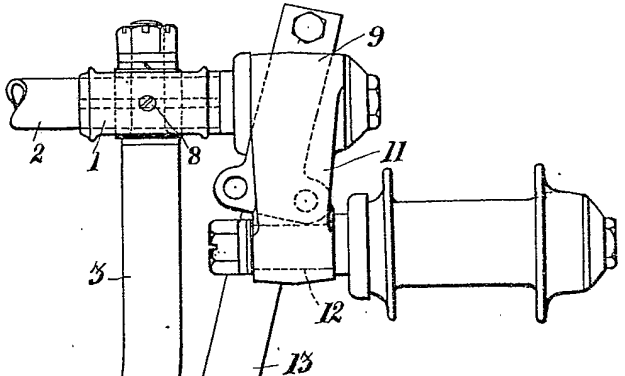


Fig. 2.

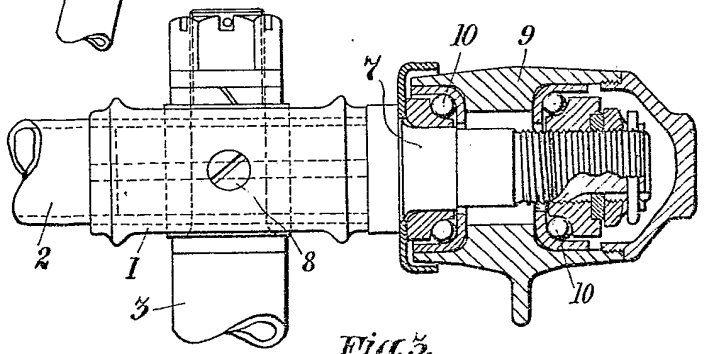


Fig. 3.

Charles & Read Ltd. Photo Litho

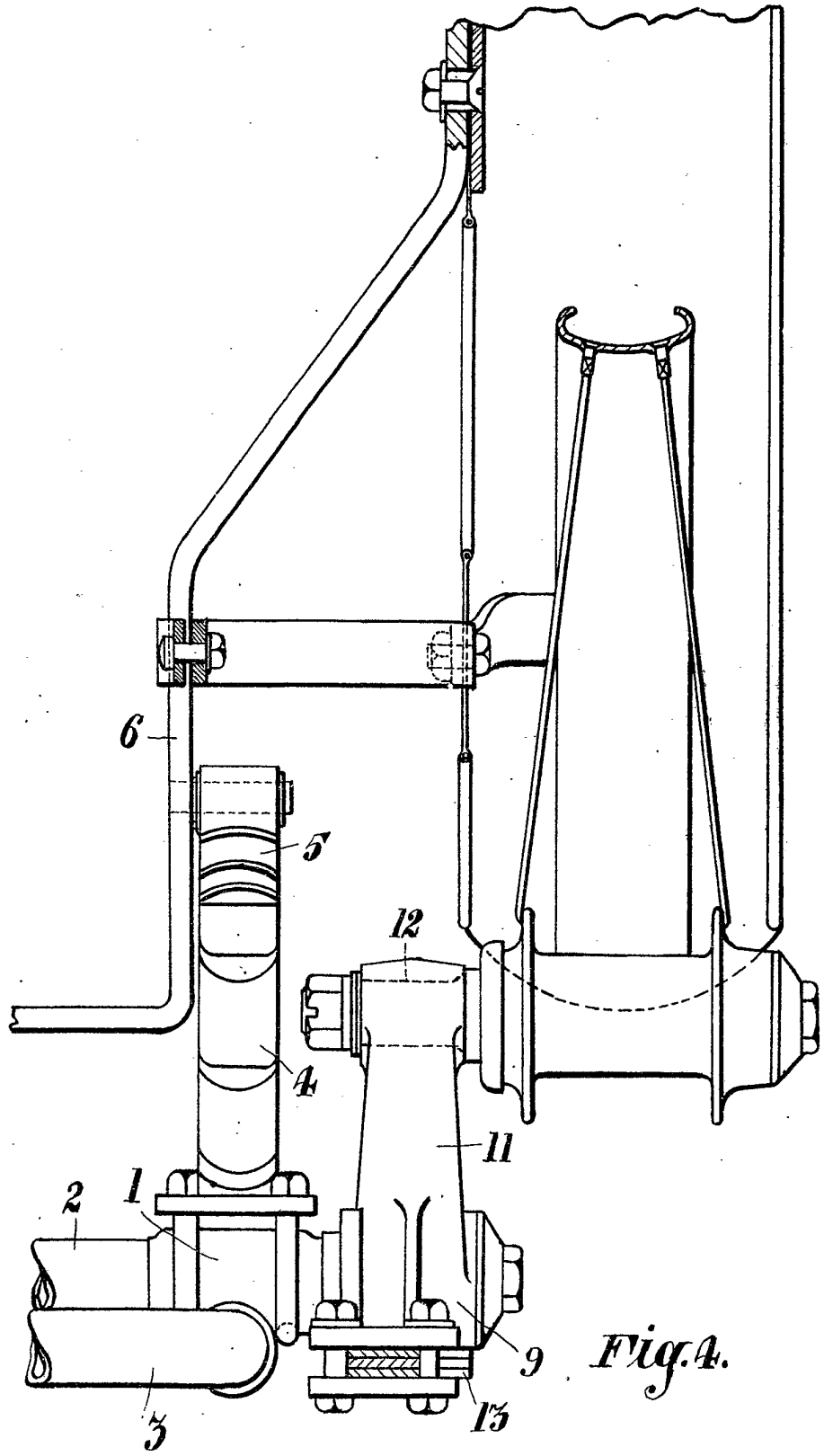


Fig. 4.

Charles & Read Ltd. Photo Litho.

PATENT SPECIFICATION

268,570

Application Date : May 19, 1926. No. 12,784/26.

Complete Left : Feb. 9, 1927.

Complete Accepted : April 7, 1927.

PROVISIONAL SPECIFICATION.

Improvements in or relating to the Valve Operating Mechanism of Internal-combustion Engines.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British company, of Graiseley House, Wolverhampton, ALBERT JOHN STEVENS, a British subject, of the same address, and HARRY STEVENS, a British subject, of the same address, do hereby declare the nature of this invention to be as follows :—

The present invention has relation to the valve operating mechanism of internal-combustion engines, more particularly the co-operation of the tappet rod with the valve rocker or valve stem itself, the present invention having for its object to eliminate wear or reduce wear to a minimum at this point in a particularly simple and effective manner.

According to the present invention the extreme operative end of the tappet rod is adapted to be reinforced by a block or member of a dead hard material, such as hardened steel, which block or member is adapted to be located by means of a cap or sleeve having an annular internal shoulder, and which is slid upon the extremity of the tappet rod so as to hold the block or member between the shoulder and the extreme end of the said tappet rod. The block or member may have a concavity on its exposed face, that is, its face removed from the extreme end of the tappet, such concavity being adapted to merge into a coned mouth part of the cap or sleeve and constituting a seating for a ball interposed between the present means and the rocker stud, or between said means and a rounded or other valve extremity. The block or member is conveniently in the nature of a solid cylindrical body adapted to have a sliding frictional fit within the cap or sleeve, and on account of its simple formation, is readily hardened.

[*Price* 1/-]

In a convenient embodiment of the present invention the block or member is in the form of a short solid cylinder having a central concavity at one extremity. This block or member is preferably of steel suitably treated so as to become dead hard. The cap or sleeve is in the nature of a tube or cylinder having an annular external flange part at one extremity for manipulative purposes, and an internal flange or shoulder part adjacent the other extremity. This internal shoulder is of abrupt formation on its inner face but the adjacent mouth is formed to a conical or tapering formation. The block or member is slid within the cap or sleeve, which may be of mild steel or other suitable metal, until it rests against the abrupt shoulder, the concavity being exposed outwardly and its wall merging into the conical wall aforesaid. This cap or sleeve is then frictionally slid on to the tappet rod proper until the block or member rests against the extreme end of the said tappet rod. A ball may be accommodated in the concavity, being interposed between the block or member and the stud on the rocker or the valve stem itself. Thus it will be seen that the block or member takes the direct thrust of the tappet rod, the cap or sleeve merely locating said block or member, and on account of the simple construction of the latter, it can be very easily and efficiently hardened. If desired, the cap or sleeve may be welded on to the tappet rod.

Dated this 18th day of May, 1926.

LEWIS W. GOOLD,
Chartered Patent Agent,
Agent for the Applicants,
5, Corporation Street, Birmingham.

COMPLETE SPECIFICATION.

Improvements in or relating to the Valve Operating Mechanism of Internal-combustion Engines.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British company, of Graiseley House, Wolverhampton, ALBERT JOHN STEVENS, a British subject, of the same address, and HARRY STEVENS, a British subject, of the same address, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention has relation to the valve operating mechanism of internal-combustion engines, more particularly the co-operation of the tappet rod with the valve rocker or valve stem itself, the present invention having for its object to eliminate wear or reduce wear to a minimum at this point in a particularly simple and effective manner.

According to the present invention the extreme operative end of the tappet or push rod is adapted to be reinforced by a block or member of a dead hard material such as hardened steel, which block or member is adapted to be located by means of an open ended cap or sleeve having an internal annular shoulder, and which is slid upon the extremity of the tappet rod so as to hold the block or member between the shoulder and the extreme end of the said tappet rod. The block or member may have a concavity on its exposed face, that is, its face removed from the extreme end of the tappet, such concavity being adapted to merge into a coned mouth part of the cap or sleeve and constituting a seating for the rocker stud or a ball interposed between the present means and the said rocker stud, or between said means and a rounded or other valve extremity. The block or member is conveniently in the nature of a solid cylindrical body adapted to have a sliding frictional fit within the cap or sleeve, and on account of its simple formation is readily hardened.

In order that this invention may be clearly understood and readily carried into practice, reference may be had to the appended explanatory sheet of drawings, upon which:—

Figure 1 illustrates valve-operating components of an internal combustion engine, incorporating reinforcement means or means for eliminating undue wear between the operative parts (in sectional elevation) constructed according to the present invention.

Figure 2 is an enlarged plan view of the reinforcement or wear eliminating means, and

Figure 3 is an enlarged sectional elevation illustrating more particularly the components of the present wear eliminating means, and the application thereto of a co-operative ball.

In a convenient embodiment of the present invention the block or member is in the form of a short solid cylinder a having a central concavity at one extremity. This block or member is preferably of steel suitably treated so as to become dead hard. The cap or sleeve is in the nature of a tube or cylinder b having an annular external flange part at one extremity for manipulative purposes, and an internal flange or shoulder part adjacent the other extremity. This internal shoulder is of abrupt formation on its inner face (as shown) but the adjacent mouth is formed to a conical or tapering formation (as at b^3). The block or member is slid within the cap or sleeve, which may be of mild steel or other suitable metal, until it rests against the abrupt shoulder b^2, the concavity a^1 being exposed outwardly and its wall merging into the conical wall aforesaid (see particularly Figure 3). This cap or sleeve is then frictionally slid on to the tappet rod proper c until the block or member a rests against the extreme end of the said tappet rod. A ball d (Figure 3) may be accommodated in the concavity, being interposed between the block or member a and the stud e^1 on the rocker e or the valve stem itself. As shown in Figure 1, the ball is dispensed with and the stud e^1 directly engages the block a. Thus it will be seen that the block or member a takes the direct thrust of the tappet rod, the cap or sleeve b merely locating said block or member, and on account of the simple construction of the latter, it can be very easily and efficiently hardened. Further, it can be readily replaced should occasion require. The cap or sleeve may if desired be welded on to the tappet rod.

Having now particularly described and ascertained the nature of our said inven-

tion and in what manner the same is to be performed, we declare that what we claim is:—

1. Valve-operating mechanism for an internal-combustion engine, wherein the extreme operative end of a tappet or push rod is adapted to be reinforced by a block or member of dead hard material such as hardened steel, which block or member is adapted to be located by means of an open-ended cap or sleeve having an internal annular shoulder, and which is slid upon the extremity of the tappet rod so as to hold the block or member between the shoulder and the extreme end of the said tappet rod.

2. Means for eliminating or reducing wear in the valve operating mechanism of an internal-combustion engine comprising an open-ended cap or sleeve adapted to be slid on to the extremity of a tappet or push rod, and a block or member of dead hard material such as hardened steel located or adapted to be located thereby against the extreme end of the tappet or push rod, for the purpose set forth.

3. Means for eliminating or reducing wear in the valve operating mechanism of an internal-combustion engine comprising in combination an open-ended cap or sleeve adapted to be slid on to the extremity of a tappet or push rod, an internal annular shoulder adjacent one extremity thereof, and a block or member of dead hard material such as hardened steel slid or adapted to be slid within the said cap or sleeve against the shoulder.

4. Mechanism or means according to any of the foregoing claims, wherein the block or member has a concavity on its exposed face or that face adjacent the shoulder, which concavity is adapted to merge into a coned mouth part of the cap or sleeve, substantially as and for the purpose set forth.

5. Mechanism or means according to any of the foregoing claims, wherein the block or member is in the nature of a solid cylindrical body adapted to have a sliding frictional fit within the cap or sleeve, and is provided with a concentric concavity at one extremity, substantially as herein set forth.

6. The combination with mechanism or means according to any of the preceding claims of a ball accommodated within the cap or sleeve and adapted to rest upon and co-operate with the block or member substantially as herein set forth.

7. Means for eliminating or reducing wear in valve operating mechanism for internal-combustion engines, substantially as herein set forth and illustrated.

8. Valve operating mechanism for internal-combustion engines, substantially as herein set forth and illustrated.

Dated this 4th day of February, 1927.

LEWIS W. GOOLD,
Chartered Patent Agent,
Agent for the Applicants,
5, Corporation Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1927.

Fig. 1.

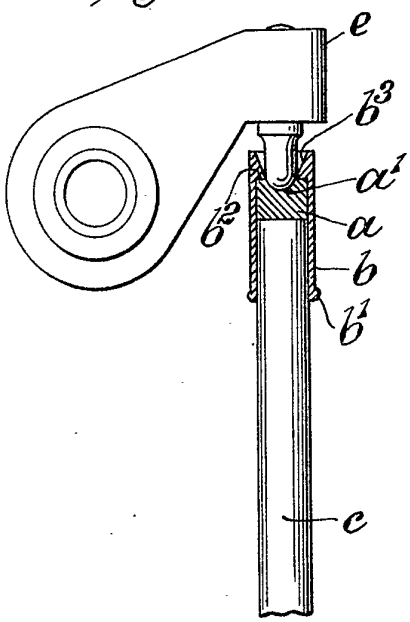


Fig. 3.

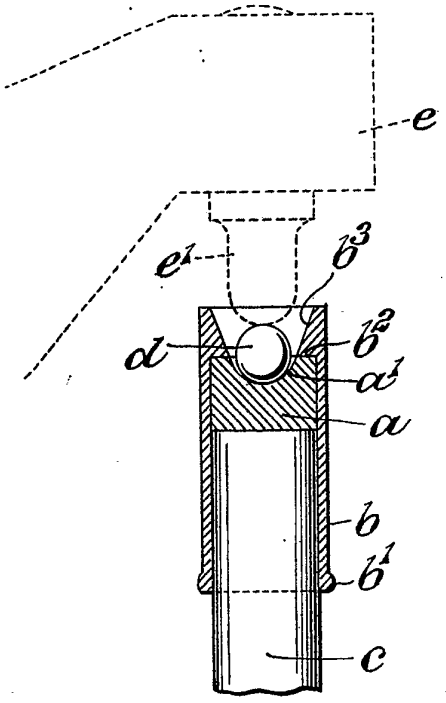
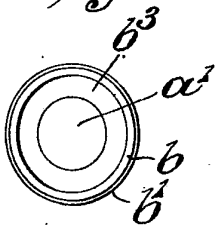


Fig. 2.



Charles & Read Ltd. Photo Litho.

PATENT SPECIFICATION

Application Date: March 29, 1927. No. 8553/27. 288,025

" " March 29, 1927. No. 8554/27.

One Complete Left: Oct. 19, 1927.

Complete Accepted: April 5, 1928.

PROVISIONAL SPECIFICATION.

No. 8553, A.D. 1927.

Improvements in or relating to Chain Driven Overhead Cam-shafts of Internal Combustion Engines.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British company, HARRY STEVENS and ALBERT JOHN STEVENS, British subjects, all of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention to be as follows:—

This invention relates to chain driven overhead cam-shafts of internal combustion engines, and it has for its object automatic lubrication of the driving mechanism.

According to the present improvements, oil is fed into the rocker box or other suitable part which forms an oil well from which the oil is caused to flow by way of a suitable guide channel or duct on to a chain sprocket or sprockets or other parts. The oil conveniently overflows from the rocker box and flows down the chain cover to a suitable delivery pocket or pockets directing the oil on to the part of the chain sprocket or sprockets lying inside the chain. The oil then passes to the bottom of the chain case and also lubricates toothed wheels driving the chain sprocket spindle. A channel passes from or near the bottom of the chain case into the crank chamber, to allow the oil to flow therein.

According to a convenient embodiment of this invention, the rocker box is provided with two overflow holes at one end which is in the form of a spigot for passing through a hole in the top of the chain cover, the overflow holes being located on diametrically opposite sides of the cam-shaft. A felt washer is placed between the rocker box and the chain cover. The edge of the hole in the wall of the chain cover is bevelled and the oil flows down on to this bevelled edge, which thus directs the oil to flow centrally therefrom and down the wall of the chain cover. A ledge or pocket is formed on the inside wall of the chain cover above the lower chain-sprocket, and a hole or holes is or are formed in the bottom of this pocket to direct the oil on the part of the sprocket lying inside the chain. The oil ultimately flows to the bottom of the chain cover and also serves to lubricate the toothed wheels on the crank-shaft and counter-shaft driving the chain sprocket. In the particular example the chain sprocket spindle is geared to the crank shaft to run at half speed. The oil fed through the chain cover is also adapted to lubricate the magneto chain drive. A hole is formed through from the chain case into the crank case to allow oil to pass through into the crank case and thus be continuously circulated.

Dated this 28th day of March, 1927.
J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

PROVISIONAL SPECIFICATION.

No. 8554, A.D. 1927.

Improvements in or relating to Chain Driven Overhead Cam-shafts of Internal Combustion Engines.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British company, HARRY STEVENS and ALBERT JOHN STEVENS, British subjects, all of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in or relating to chain driven overhead cam-shafts of internal combustion engines.

According to the present improvements the driven chain sprocket is mounted on a counter-shaft which is driven by spur

wheels from the crank-shaft, thereby enabling the speed of the chain to be reduced with a consequent increased efficiency of the chain drive. The counter-shaft is also fixed in position in such a manner that the chain case can be removed without disturbing the bearings for the counter-shaft. By this invention also the chain case is constructed and fitted in a special manner.

According to one construction the spindle for the driving chain sprockets is mounted at one end in a bearing fixed to the side of the crank case and at the other end in a spider arm fixed to projections cast on the side of the crank case. Conveniently three projections are provided which are arranged to clear the chain driving the cam shaft and the chain driving the magneto which are disposed at right angles to one another. The counter-shaft is geared to the crank-shaft by means of toothed wheels which have a ratio of two to one, thereby enabling the chains to run at half the speed that would be the case if the chain sprocket was mounted directly on the crank-shaft. The chain case is formed in two parts, one of which is adapted to fit over the projections aforesaid carrying the spider arm. For this purpose the outer faces of the projections are turned to lie in one surface of revolution and an opening in the crank-case is provided with a corresponding circular surface to fit thereover. The crank-case has a flanged surface against which the bottom portion of the said chain case part beds and to which it is fixed by means of studs. The crank-case is conveniently L-shaped so that it forms a cover both for a cam-shaft chain and a magneto-chain. The outer cover for the chain case is correspondingly shaped and is removably fixed in position. The oil pump on the outer side of this cover is connected to the counter-shaft so that the outer cover can be removed when disconnected from the inner chain cover.

Dated this 28th day of March, 1927.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

COMPLETE SPECIFICATION.

Improvements in or relating to Internal Combustion Engines having Chain-driven Overhead Cam-shafts.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British company, HARRY STEVENS and ALBERT JOHN STEVENS, British subjects, all of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to internal combustion engines having chain-driven overhead cam-shafts, and it has for its object improvements in or relating to the chain case and to the automatic lubrication of the driving mechanism.

According to the present improvements, the chain case is supported solely at its lower end by connection to the crank-case, and the upper end forms a joint with the rocker box. The chain case has an opening at its upper end for engaging over a projection or spigot on the rocker box, an oil seal at the joint being obtained without rigidly connecting the chain case to the rocker box. The edge of the opening in the chain case is bevelled so that the oil from the rocker box can drop thereon and be directed to flow centrally down the wall of the chain case. Means are provided, conveniently on the wall of the chain case, for directing oil on to the upper part of the chain sprocket driving the cam-shaft chain. Projections pass from the crank-case and the chain case has an opening which fits thereover, and the chain sprocket counter-shaft is mounted at one end in a spider or frame fixed to the said projections, whilst the other end is mounted in a bearing carried by the crank case. The bottom of the chain case also forms an oil sump for lubricating the chain driving mechanism and a passage is provided for the oil to overflow into the crank-case. The chain case is conveniently L-shaped so that both the chain driving the overhead cam-shaft and the chain driving the magneto are covered. The chain case is conveniently formed of two L-shaped castings, one of which forms the back of the case, whilst the other forms the front.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a side elevation of an internal combustion engine constructed according to this invention.

Figure 2 is a section on line *x x* of Figure 1.

Figure 3 is a side elevation of the crank-case.

Figure 4 is a plan view of one half of the crank-case.

Figure 5 is a face view of the inner part of the chain case, and

Figure 6 is a face view of the outer part of the chain case.

According to a convenient embodiment of this invention, the rocker box 1 is provided with overflow holes 2 and 2^a at one end which is in the form of a spigot 3 for passing through a hole 4 in the top of the chain cover 5, the overflow holes 2 being located on diametrically opposite sides of the spigot 3. The hole 2^a is at the bottom of the spigot and is elongated. An air vent 2^b is provided at the top of the spigot. A felt or like washer 7 is placed between the rocker box 1 and the chain cover 5. The edge of the hole in the wall of the chain cover is bevelled at 8 and the oil flows down on to this bevelled edge, which thus directs the oil to flow centrally therefrom and down the wall of the chain case or cover. A ledge or oil collecting pocket 9 is formed on the inside wall of the chain case or cover above the lower chain-sprocket 10, and a hole 11 or holes is or are provided in the lug or projection 19 forming the bottom of this pocket to direct the oil on the part of the sprocket 10 lying inside the chain. The oil ultimately flows to the bottom of the chain cover and also serves to lubricate the toothed wheels 13 and 14 on the crank-shaft 15 and counter-shaft 16, the latter having mounted thereon the chain sprocket 10 for driving the overhead cam-shaft and the chain sprocket 17 for driving the magneto. The oil fed through the chain cover is also adapted to lubricate the magneto chain drive. A hole 27 is formed through from the chain case into the crank case to allow oil to pass through into the crank case and thus be continuously circulated.

The spindle 16 is mounted at one end in a bearing 28 fixed to the side of the crank case and at the other end in a bearing carried by a spider arm 18 fixed to projections 19 cast on the side of the crank case. Conveniently three projections 19 are provided which are arranged to clear the chain 20 driving the cam-shaft and the chain 21 driving the magneto, which chains are disposed at right angles to one another. The counter-shaft 16 is geared to the crank-shaft 15 by means of the toothed wheels 13 and 14 which have a ratio of two to one, thereby enabling the chains to run at half the speed that would be the case if the chain sprockets were mounted directly on the crank-shaft. The chain case is formed in two parts, one part 5 of which is adapted to fit over the projections 19 aforesaid carrying the spider arm 18. For this purpose the outer faces of the projections are turned to lie in one surface of revolution and an opening 22 in the chain case is provided with corresponding circular surfaces 23 to fit thereover. The crank case has a flanged surface 24 against which the bottom portion of the said chain case part 5 beds, and to which it is fixed by means of studs 25. The chain case is conveniently L-shaped so that it forms a cover both for a cam-shaft chain and a magneto-chain. The outer cover 26 for the chain case is correspondingly shaped and is removably fixed in position. The oil pump which pumps oil from the crank case and circulates oil to the rocker box and other suitable parts and which is mounted on the outer side of this cover is connected to the counter-shaft so that the outer cover 26 can be removed when disconnected from the inner chain cover 5.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An internal-combustion engine having an overhead chain-driven cam-shaft, wherein a chain case is supported solely at its lower end by connection to the crank case and at the upper end forms a joint with the rocker box.

2. An internal-combustion engine having an overhead chain-driven cam-shaft as set forth in Claim 1, in which the chain case, at its lower end, is bolted to the crank case and at its upper end has an opening passing over a projection or spigot on the rocker box, means being provided for obtaining an oil seal at the joint of the chain case and rocker box without rigid connection.

3. An internal-combustion engine having an overhead chain-driven cam-shaft as set forth in the 2nd claim, in which the edge of the opening in the upper end of the chain case is bevelled to form a guide for directing oil from the rocker box centrally down the wall of the chain case.

4. An internal-combustion engine having an overhead chain-driven cam-shaft as set forth in Claim 1 in which means are provided for causing oil, flowing down the chain case, to be directed on the chain sprocket on the inside of the chain.

5. An internal-combustion engine having an overhead chain-driven cam-shaft as set forth in Claim 1, in which the crank case has projections over which

an opening in the chain case is engaged, and in which a spider or other frame is supported by the said projections, such frame carrying a bearing for supporting one end of the chain sprocket shaft, the other end of which is journalled in the side of the crank case.

6. An internal-combustion engine having an overhead chain-driven cam-shaft, as set forth in the preceding claims, in which the bottom of the chain case forms an oil sump for lubricating the chain driving gearing and from which a channel is provided for the passage of the oil to the crank case.

7. An internal-combustion engine having an overhead chain-driven cam-shaft as set forth in the preceding claims, in which the chain case is L-shaped so that a cover is provided both for the chain driving the overhead cam-shaft and the chain driving the magneto.

8. An internal-combustion engine having an overhead chain-driven cam-shaft as set forth in Claim 7, in which the L-shaped chain case is formed of two L-shaped castings forming respectively the back and front of the chain case.

9. An internal-combustion engine having an overhead chain-driven cam-shaft substantially as herein set forth or illustrated.

Dated this 18th day of October, 1927.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

[This Drawing is a reproduction of the Original on a reduced scale.]

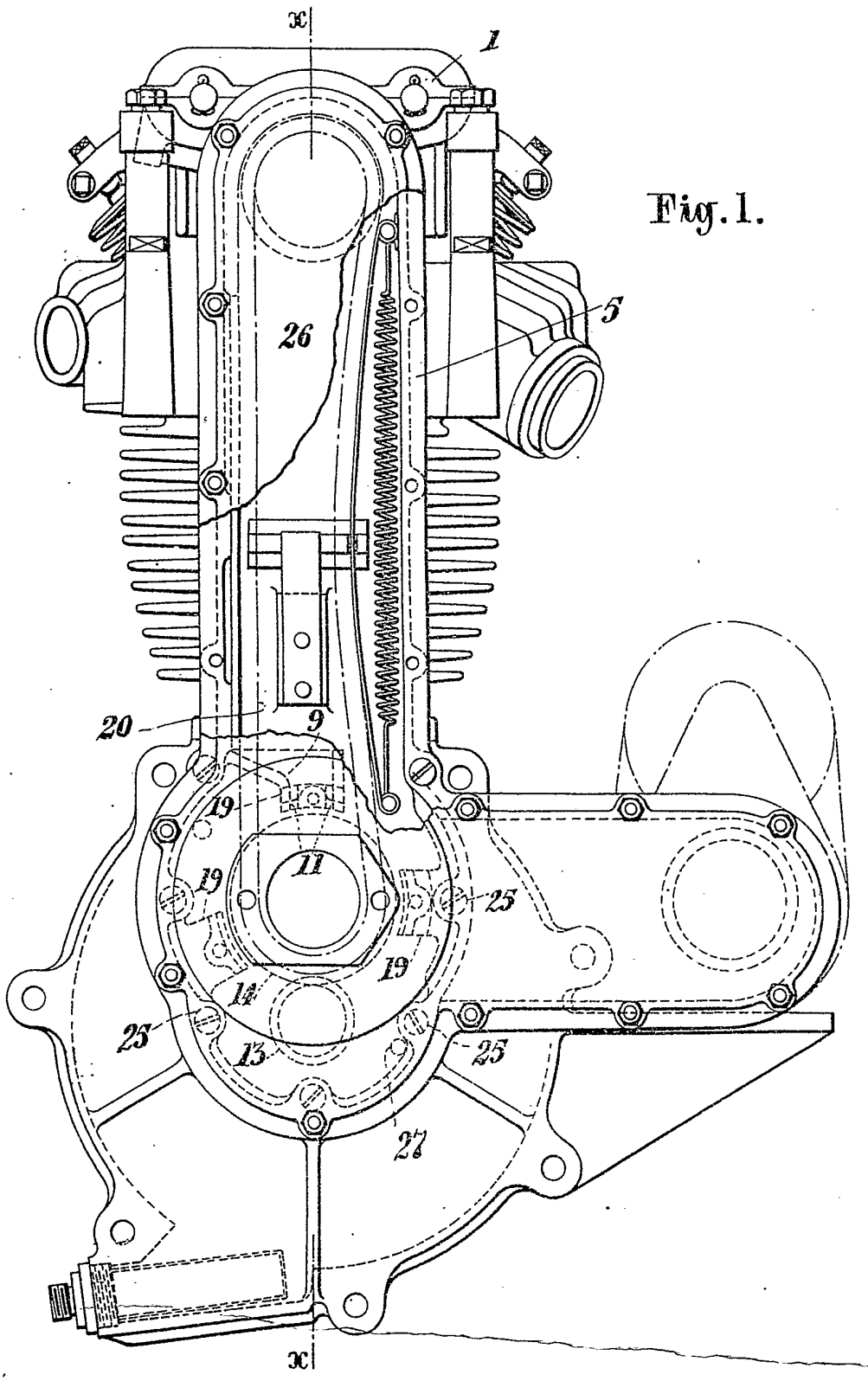


Fig. 1.

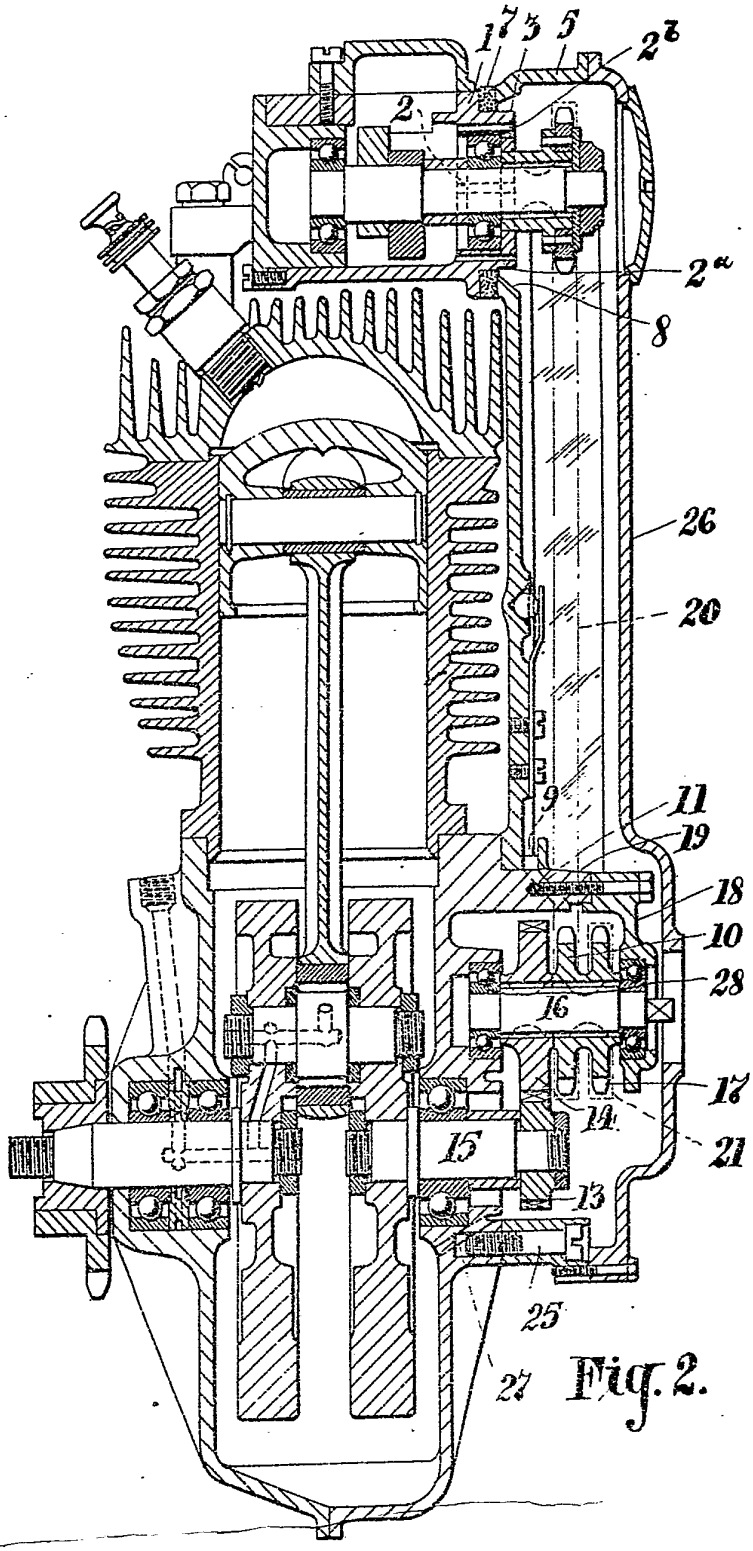


Fig. 2.

Charles & Read Ltd. Photo Litho.

[This Drawing is a reproduction of the Original on a reduced scale.]

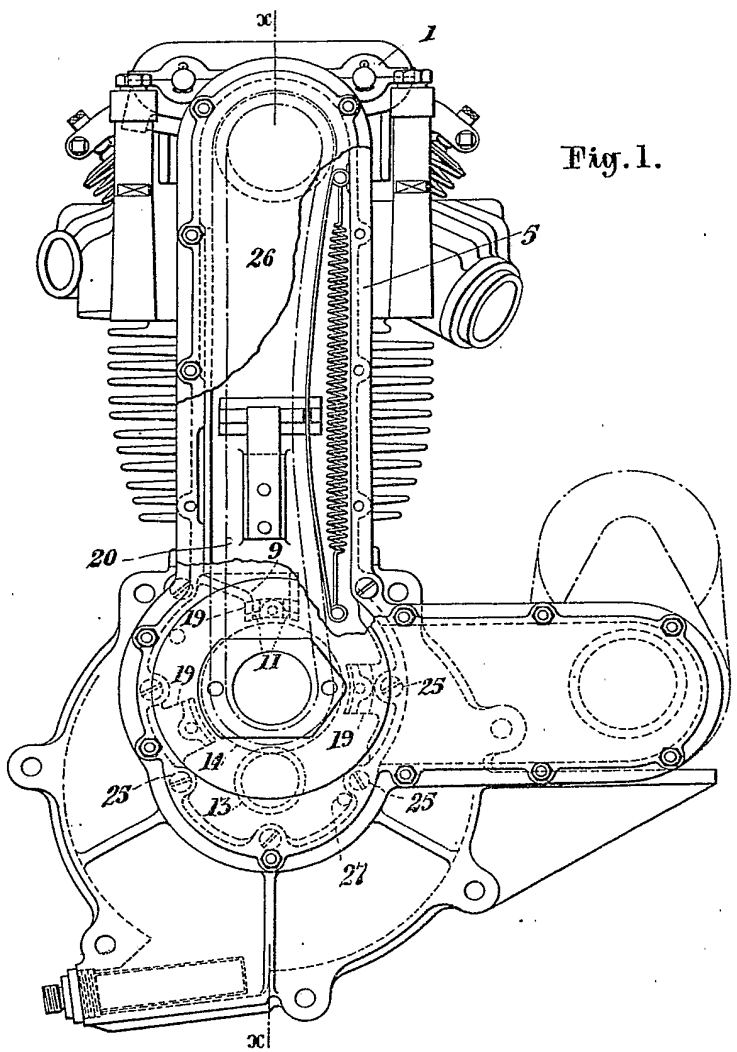


Fig. 1.

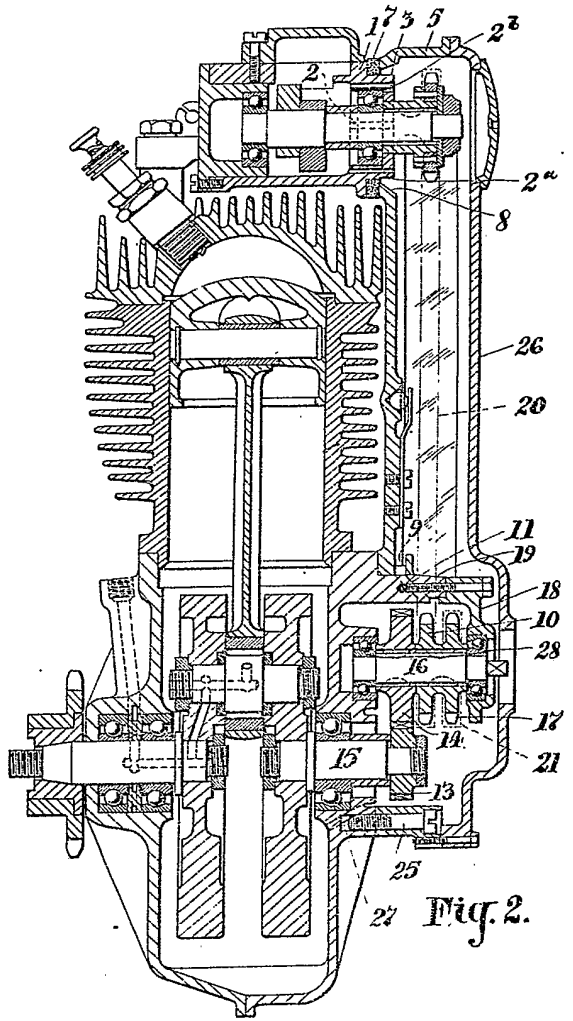
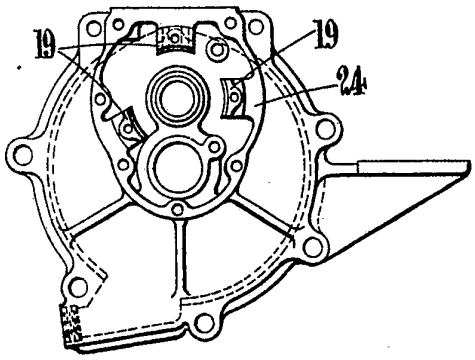


Fig. 2.

Charles & Read Ltd. Photo Litho.

Fig. 3.



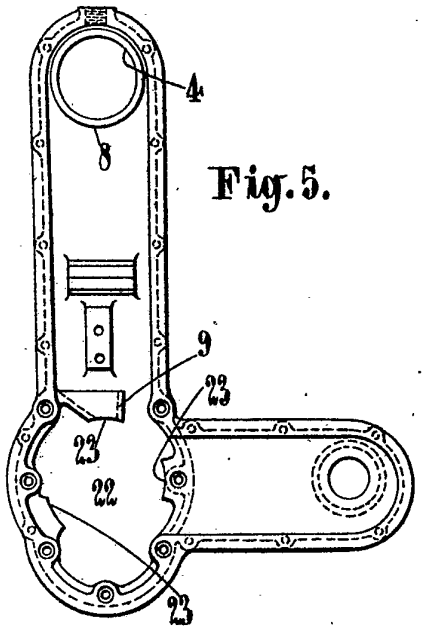


Fig. 5.

Fig. 4.

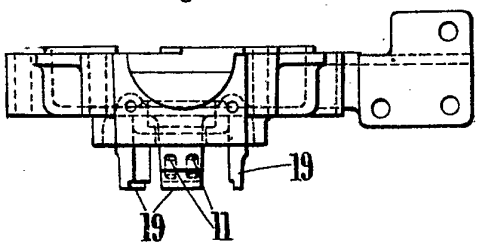
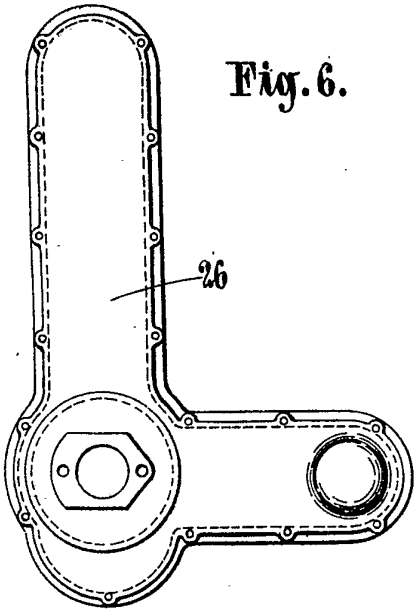


Fig. 6.



Charles & Read Ltd. Photo Litho.

PATENT SPECIFICATION

Application Date: June 5, 1928. No. 16,229/28. **313,738**

Complete Left: March 1, 1929.

Complete Accepted: June 20, 1929.

PROVISIONAL SPECIFICATION.

Improvements relating to the Lubrication of Internal Combustion Engines.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British Company, and ALBERT JOHN STEVENS, a British Subject, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention to be as follows:—

This invention relates to the lubrication of internal combustion engines, and particularly relates to the lubrication of the timing gear. This invention has for its object to provide a flow of oil on to the gears so that they are efficiently lubricated, whilst at the same time preventing oil being thrown outwardly for instance on to the tappet mechanism.

According to the present improvements, a guard or deflector is provided, and the oil is so supplied that under the influence of the guard and the rotating gear or gears, the oil is controlled to efficiently lubricate the gear or gears. The oil is directed by a pump on to the gear and the deflector prevents the oil being thrown out radially by centrifugal force, and the guard or deflector also redirects the oil back on to the gear.

According to a convenient embodiment as applied to the timing gear of an internal combustion engine, the timing gear cover is provided with a flange projecting from the inside face, such flange being formed of a double corrugation so that one corrugation or curved portion lies directly over one timing gear wheel, whilst the other corrugation or curved portion lies over the adjacent timing gear wheel. An oil passage is formed horizontally through a thickened or bossed portion on the upper side of the flange at the centre of the first corrugation or curved portion, and such oil passage leads to a passage which passes downwardly through the flange. The oil is thus fed directly to the teeth on the upper side of one timing wheel, and the oil is prevented from being thrown upwardly on to the tappet mechanism by the guard or deflector. In virtue of the rotation of the gear wheels and the shape of the deflector, the oil passes forward along the underside of the flange or deflector, so that the timing gear is also efficiently lubricated. Other parts of the driving mechanism enclosed in the timing gear cover are also efficiently lubricated, and the oil passes from the timing gear cover in the continuous circulating system. A feature of the invention lies in the fact that the tappet mechanism is maintained in a clean condition.

Dated this 29th day of May, 1928.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

COMPLETE SPECIFICATION.

Improvements relating to the Lubrication of Internal Combustion Engines.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British Company, and ALBERT JOHN STEVENS, a British Subject, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to the lubrication of the timing gear of internal combustion engines in a continuous circulating lubrication system. This invention has for its object to provide a flow of oil to the gears so that they are efficiently lubricated, whilst at the same time preventing oil being thrown outwardly for instance on to the tappet mechanism.

According to the present improvements, a guard or deflector is provided on the timing gear cover and is located over the timing gear, the oil being so supplied direct to the gear that under the influence of the guard and the rotating gear or gears, the oil is controlled to efficiently lubricate the gear or gears. The oil is

directed by a pump on to the gear and the deflector prevents the oil being thrown out radially by centrifugal force, and the guard or deflector also redirects the oil back on to the gear.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a face view of a timing gear cover, constructed according to this invention.

Figure 2 is a plan view.

Figure 3 is a section on line *x*—*x* of Figure 1, and,

Figure 4 is a section on line *y*—*y* of Figure 1.

According to a convenient embodiment, the timing gear cover 1 is provided with a flange 2 projecting from the inside face, such flange being formed of a double arched or corrugated configuration so that one corrugation or arched portion lies directly over one timing gear wheel, whilst the other corrugation or curved portion lies over the adjacent timing gear wheel. An oil passage 3 is formed horizontally through a thickened or bossed portion on the upper side of the flange at the centre of the first corrugation or curved portion, and such oil passage leads to a passage 4 which passes downwardly through the flange. The oil is thus fed directly to the teeth on the upper side of one timing wheel, and the oil is prevented from being thrown upwardly on to the tappet mechanism by the guard or deflector 2. In virtue of the rotation of the gear wheels and the shape of the deflector, the oil passes forward along the underside of the flange or deflector, so that the timing gear is thus efficiently lubricated. Other parts of the driving mechanism enclosed in the timing gear cover are also efficiently lubricated, and the oil passes from the timing gear cover in the continuous circulating system. A feature of the invention lies in the fact that the tappet mechanism is maintained in a clean condition.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

(1). Means for the lubrication of the timing gear wheel or wheels of an internal combustion engine in which a guard or deflector is provided on the timing gear cover and is located over the gear wheel or wheels, the oil being fed direct to the gear wheels.

(2). Means for lubrication of timing gear wheels as set forth in claim 1, in which the oil is fed through a duct in the guard or deflector to one of the gear wheels.

3). Means for lubrication of timing gear wheels as set forth in the preceding claims in which the guard or deflector is of a corrugated configuration, so that the oil is passed from one gear wheel to the succeeding gear wheel.

(4). Means for lubricating the timing gear wheels of an internal combustion engine, substantially as herein set forth or illustrated.

Dated this 23rd day of May, 1929.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1929

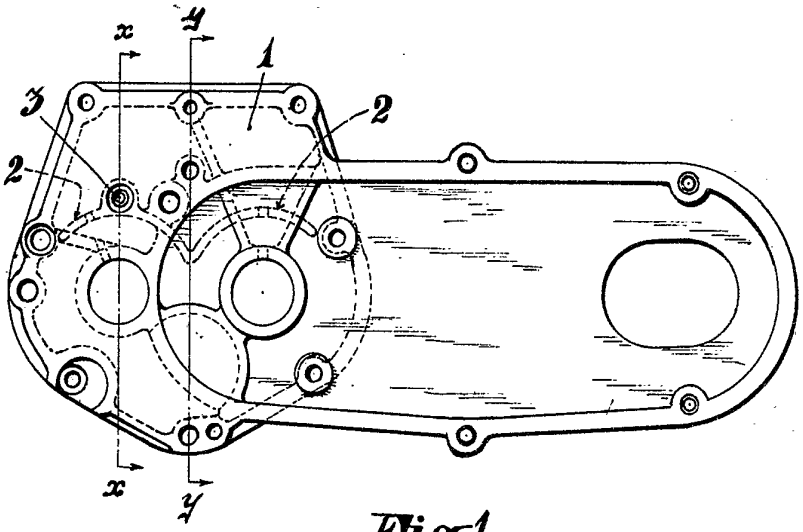


Fig. 1.

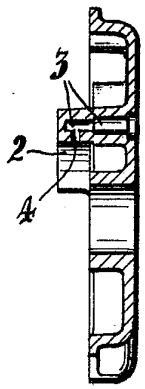


Fig. 3.

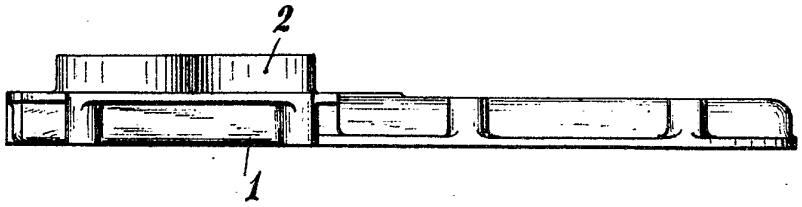


Fig. 2.

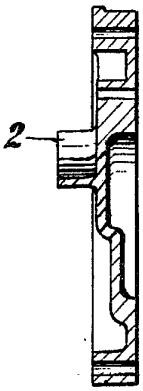


Fig. 4.

Charles & Read Ltd. Photo Litho.

PATENT SPECIFICATION

Application Date: June 5, 1928. No. 16,230/28. **318,566**

Complete Left: March 1, 1929.

Complete Accepted: Sept. 5, 1929.

PROVISIONAL SPECIFICATION.

Improvements in or relating to the Fitting of Speedometers on Motor Cycles.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British Company, and ALBERT JOHN STEVENS, a British Subject, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention to be as follows:—

This invention relates to the fitting of speedometers on motor cycles, and it has for its object an improved method of drive.

The flexible shaft is driven from the lay shaft of the gear box. For this purpose the end of the lay shaft passing through the ball bearing fitted to the side of the gear box, is slotted to form dog teeth. A bracket is fixed to the side of the case by set pins or the like, such bracket having a spigot for engaging in the hole in the side of the gear box case concentric with the lay shaft aforementioned. The bracket carries a spindle, one end of which engages the dog teeth on the end of the lay shaft, whilst the other end carries a gear wheel. This bracket has a sleeve projecting at right angles therefrom, such sleeve carrying a spindle having a gear wheel for engaging the gear wheel on the first mentioned spindle. The end of the flexible shaft is connected to the drive in the usual manner. The speedometer is therefore driven direct from the lay shaft of the gear box. A feature of this invention is present in that the flexible shaft can be placed in driving connection with the lay shaft by the provision of a very simple fitting which does not entail constructional alterations of the gear box.

Dated this 29th day of May, 1928.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

COMPLETE SPECIFICATION.

Improvements in or relating to the Fitting of Speedometers on Motor Cycles.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British Company, and ALBERT JOHN STEVENS, a British Subject, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to the means for driving the flexible shaft of a speedometer drive from the lay shaft of a gear box and for connecting the flexible shaft to such lay shaft. The invention also relates to speedometer drives in which a spindle is coupled by dog teeth or the like to the end of a gear box shaft. Heretofore a gear wheel of the gearing for driving the flexible shaft at the required speed has been fixed on the lay shaft of the gear box, and it has been proposed to connect by a dog tooth coupling a flexible shaft to the shaft of a distance register, itself coupled by a dog tooth coupling to the projecting end of the shaft of a gearbox, the casing of the register engaging directly the gearbox casing. The object of the present improvements, is to enable the speedometer drive to be an entirely separate unit, incorporating all the gear wheels for driving the flexible shaft at the required speed, and thereby obviating the need for special gears in the gear box dealing with the speedometer drive.

According to the present invention, a spindle is coupled to the end of the lay shaft and such spindle and all the gear wheels transmitting the drive therefrom to the flexible shaft are carried in a bracket on the end of the flexible shaft so that the means for coupling and driving the flexible shaft from the lay shaft are formed as an independent and self-contained unit. The bracket has the said spindle mounted therein in such a manner that it is coupled to the end of the lay

shaft when the bracket is fixed to the wall of the gear box, the said spindle being geared to a second spindle mounted in the bracket to which spindle the flexible shaft is connected. The end of the lay shaft is in alignment with an opening in the wall of the gear box and is provided with dog teeth for engaging with the first-mentioned spindle carried by the bracket. A spigot on the bracket engages a recess in the wall of the gear box concentric with the lay shaft. The speedometer and drive can thus be made entirely separate from the gear box, and can be supplied from a manufacturing source independent of the source manufacturing the gear box. The speedometer drive can also be supplied correctly adjusted before fitting to the gear box.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which :—

Figure 1 is an end view of a portion of a gear box to which the speedometer drive is fitted, and

Figure 2 is a section or line A.A. of Figure 1.

According to a convenient embodiment of this invention, the end of the lay shaft 1, passing through the ball bearing 2 fitted to the side 3 of the gear box, is slotted to form dog teeth 4. A bracket 5 is fixed to the side of the gear box by set pins or the like, such bracket having a spigot 6 for engaging in the hole 7 in the side of the gear box case and concentric with the lay shaft 1 aforementioned. The bracket 5 carries a spindle 8, one end of which engages the dog teeth 4 on the end of the lay shaft, whilst the other end carries a gear wheel 9. This bracket 5 has a sleeve 10 projecting at right angles therefrom, such sleeve carrying a spindle having a gear wheel for engaging the gear wheel 9 on the first mentioned spindle. The end of the flexible shaft is connected to the drive in the usual manner. The speedometer is therefore driven direct from the lay shaft of the gear box. A feature of this invention is present in that the flexible shaft can be placed in driving connection with the lay shaft by the provision of a very simple fitting which does not entail constructional alterations of the gear box, and enable the speedometer and drive to be supplied as a separate unit which can be fitted to a gear box with a minimum of trouble.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is :—

(1). Means for driving a speedometer from the gear box through the medium of a flexible shaft in driving connection with the lay shaft, characterised in that a spindle is coupled to the end of the lay shaft and such spindle and all the gear wheels transmitting the drive therefrom to the flexible shaft are carried in a bracket on the end of the flexible shaft so that the means for coupling and driving the flexible shaft from the lay shaft are formed as an independent and self-contained unit.

(2). Means for driving a speedometer as set forth in claim 1, in which the bracket has a spindle mounted therein which is coupled to the end of the lay shaft when the bracket is fixed to the wall of the gear box, the said spindle being geared to a second spindle mounted in the bracket to which spindle the flexible shaft is connected.

(3). Means for driving a speedometer as set forth in the preceding claims in which the end of the lay shaft is in alignment with an opening in the wall of the gear box and is provided with dog teeth for engaging with the spindle carried by the bracket, and in which a spigot on the bracket engages a recess in the wall of the gear box concentric with the lay shaft.

(4). Means for driving a speedometer from the lay shaft of a gear box, substantially as herein set forth and illustrated.

Dated this 28th day of May, 1929.

J. E. S. LOCKWOOD,
Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1929.

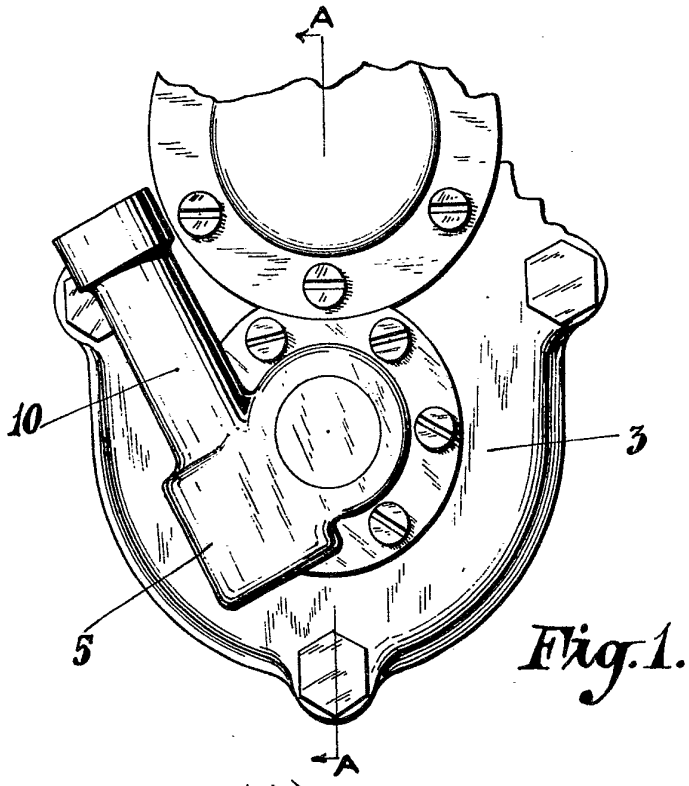


Fig. 1.

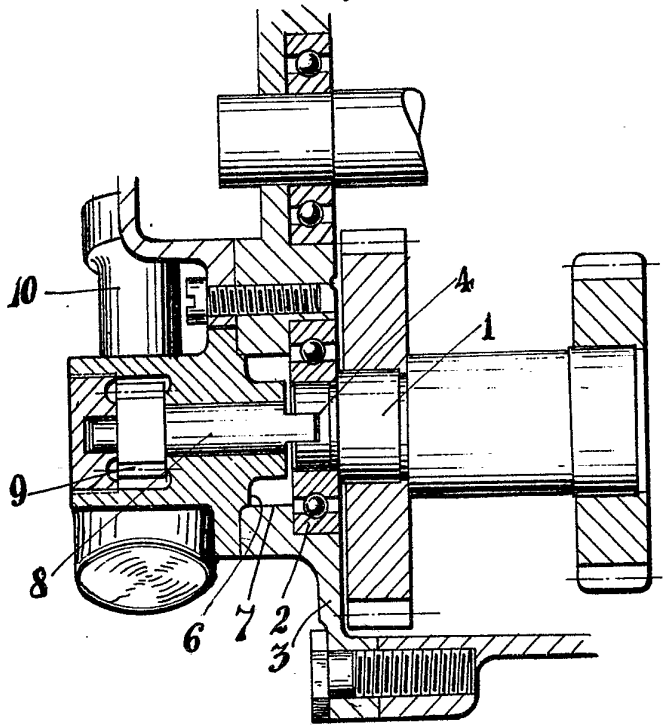


Fig. 2.

Charles & Read Ltd. Photo Litho.

Application Date: Aug. 29, 1928. No. 24,794/28. 320,469

Complete Left: May 27, 1929.

Complete Accepted: Oct. 17, 1929.

PROVISIONAL SPECIFICATION.

Improvements in Dampers for Steering Heads of Motor Cycles or the like.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British Company, and JOSEPH STEVENS, Junior, British Subject, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in or relating to dampers for use with steering heads of motor cycles or like devices in which a spindle or tubular member is rotatably mounted in relation to a concentric sleeve or column.

According to the present improvements, an internal friction member or pad or pads, adjustable from an outside control, are adapted to retard relative rotational movement. The friction pad or pads is or are preferably capable of a radial or expanding movement to provide for an adjustable pressure against the internal surface of the exterior concentric sleeve or column. The radial movement is also preferably effected by means of a wedge action which is controlled by means of a member which passes centrally down the inner sleeve.

The invention is particularly applicable for damping the steering of a motor cycle. In such an application two semi-circular pads are located between the fork stem and the ball head or sleeve which surrounds the fork stem. Each pad comprises a metal base plate covered by an anti-friction material such as "Ferodo" lining, and a peg is rivetted to the back of the pad. These pegs pass respectively through holes in diametrically opposite sides of the fork stem. These pegs serve to hold the pads in position and are also utilised for the purpose of expanding the pads. A plunger is slidably mounted inside the tubular fork stem, such plunger having longitudinally directed taper slots on opposite sides. This plunger is internally screw-threaded and receives the screwed end of a rod which extends upwardly to the top of the fork stem and has secured thereto a knurled head or nut. A spiral spring is carried on this rod, one end bearing against the top of the plunger, whilst the other end bears against a washer located above the top of the forked stem and upon which the base of the knurled nut bears. The pins aforementioned carried by the friction pads engage the taper slots in the plunger, and therefore when the knurled nut or head is rotated in one direction, the plunger is drawn upwardly to force the pegs outwardly, and compress the pads against the ball head. When the knurled nut or head is rotated in the reverse direction pressure on the pegs is released, the spring aforementioned assisting in the release movement of the plunger. The damping device above described enhances the appearance of the motor cycle and considerably reduces the need for extra fittings. A fine degree of adjustment of the damping action can be very readily and efficiently obtained.

Dated this 27th day of August, 1928.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

COMPLETE SPECIFICATION.

Improvements in Dampers for Steering Heads of Motor Cycles or the like.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British Company, and JOSEPH STEVENS, Junior, British Subject, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises certain improvements in or relating to dampers for use with steering heads of motor cycles

[Price 1/-]

or like devices, in which a spindle or tubular member is rotatably mounted in relation to a concentric sleeve or column.

According to the present improvements, a friction member or members is or are located between an inner tubular spindle or member and a concentric sleeve, and means are provided inside the tubular member or spindle for operating the friction member or members. The friction members are, in the hereinafter described embodiment, movable in a radial direction through the medium of projections on such members which pass through openings in the inner tubular spindle. The projections are moved radially by means of a wedge action, and conveniently engage longitudinal wedge slots in a slide member in the inner tubular spindle, which slide member is operated by a screw threaded rod. The rod passes to the outside of the steering head or inner tubular spindle and a spring is located between the slide and a head on the screw threaded rod.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a sectional elevation of a motor cycle steering head, and

Figure 2 is a section on line *x x* of Figure 1.

The invention is particularly applicable for damping the steering of a motor cycle. In such an application two semi-circular pads are located between the fork stem 2 and the ball head or sleeve 3 which surrounds the fork stem. Each pad comprises a metal base plate 4 covered by an anti-friction material 5, and a peg 6 is rivetted to the back of the pad. These pegs pass respectively through holes 7 in diametrically opposite sides of the fork stem. These pegs serve to hold the pads in position and are also utilised for the purpose of expanding the pads. A plunger 8 is slidably mounted inside the tubular fork stem, such plunger having longitudinally directed taper slots 9 on opposite sides. This plunger is internally screw-threaded and receives the screwed end of a rod 10 which extends upwardly to the top of the fork stem and has secured thereto a knurled head or nut 11. A spiral spring 12 is carried on this rod, one end bearing against the top of the plunger 8, whilst the other end bears against a washer 13 located above the top of the forked stem and upon which the base of the knurled nut 11 bears. The pins aforementioned carried by the friction pads engage the taper slots 9 in the plunger, and therefore when the knurled nut or head is rotated in one direction, the plunger is drawn upwardly to force the pegs outwardly, and compress the pads 5 against the ball head. When the knurled nut or head is rotated in the reverse direction pressure on the pegs is released, the spring aforementioned assisting in the release movement of the plunger. The damping device above described enhances the appearance of the motor cycle and considerably reduces the need for extra fittings. A fine degree of adjustment of the damping action can be very readily and efficiently obtained.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1) A damper or braking device for the steering heads of motor cycles or the like, in which a friction member or members is or are located between an inner tubular spindle or member and a concentric sleeve, and in which means are provided inside the tubular spindle or member for operating the friction member or members, substantially as set forth.

2) A damping or braking device for the steering heads of motor cycles or the like, as specified in claim 1, in which the friction members are movable in a radial direction through the medium of projections on such members which pass through openings in the inner tubular spindle.

3. A damping or braking device for the steering heads of motor cycles or the like, as specified in claim 2, in which the projections are moved radially by means of a wedge action.

4. A damping or braking device for the steering heads of motor cycles or the like, as specified in claim 3, in which pins on the friction member engage longitudinal wedge slots in a slide member in the inner tubular spindle and operated by a screw threaded rod.

5) A damping or braking device for the steering heads of motor cycles or the like, as specified in claim 4, in which a spring is located between the slide and the head of the screw threaded rod.

6) A damping or braking device for the steering heads of motor cycles or the like, substantially as herein set forth or illustrated.

Dated this 23 day of May, 1929.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1929

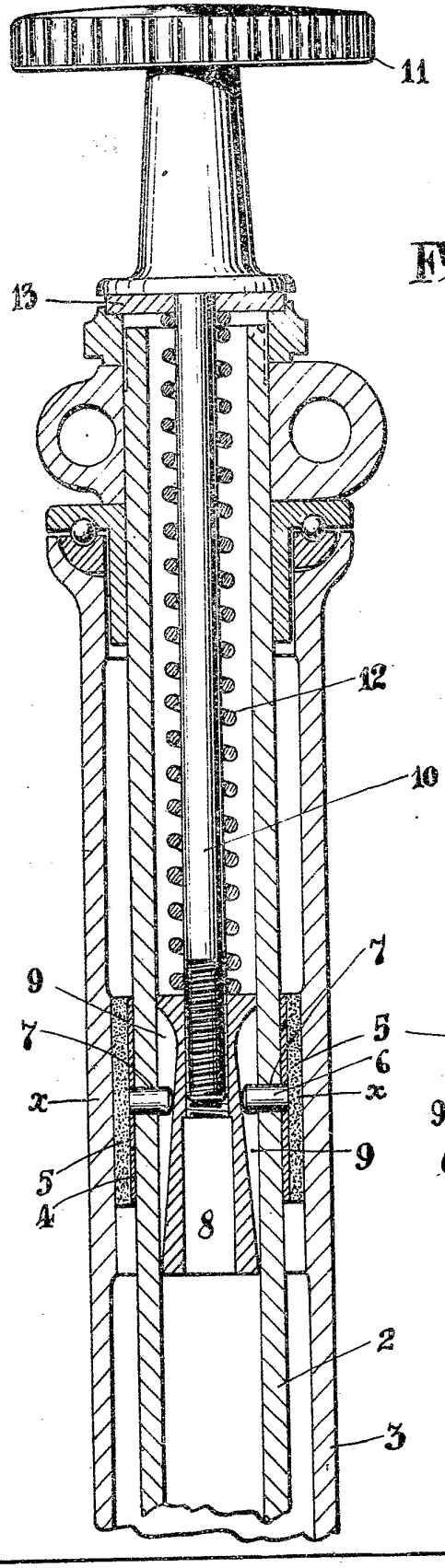
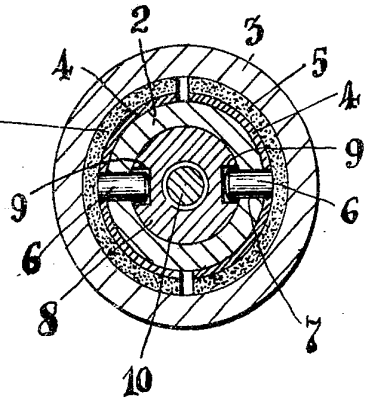


Fig. 1.

Fig. 2.



Charles & Read Ltd. Photo Litho.

PATENT SPECIFICATION

Application Date: Dec. 8, 1928. No. 36,240/28. **321,582**

Complete Left: Sept. 3, 1929.

Complete Accepted: Nov. 14, 1929.

PROVISIONAL SPECIFICATION.

Improvements in or relating to the Automatic Lubrication of Internal Combustion Engines.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British Company, and ALBERT JOHN STEVENS, British Subject, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention to be as follows:—

This invention relates to the automatic lubrication of internal combustion engines, and particularly to motor cycle engines.

In the automatic lubrication of motor cycle engines, the oil passes to a sump in the bottom of the crank case, from which it is pumped back to the oil storage tank. In the particular construction as set forth in our prior Patent No. 290,413 an opening is provided in the lower end of the sump which is closed by a screwed union plug, which plug also carries a gauze filter cylinder. As previously constructed, the oil pipe has been connected direct to the union by means of a screwed union ring which engages the screw-threaded neck of the union plug to firmly seat a conical head on the end of the pipe on to the conical seat of the union plug. The oil is thus sucked through the bore of the union plug into the oil pipe and back to the oil storage tank. A very definite supply of oil is required for the maximum lubrication efficiency, and the suction of the oil pump is accurately adjusted for this purpose. With the aforedescribed method of connecting the oil pipe to the union plug, considerable difficulty has been experienced in that there is liability of air being sucked in at the oil pipe joint, and consequently the required withdrawal from the oil sump does not take place.

According to the present invention, in lieu of the oil pipe terminating at its connection to the union plug, it is continued through the bore of the plug which heretofore normally constituted a part of the oil conduit. The end of this continued portion of the oil pipe therefore lies in the collection of oil, and consequently there is no possibility of air being drawn into the oil conduit at the joint.

The oil sump as set forth in our aforementioned prior Patent No. 290,413 lies to one side of the crank case, and has a downwardly inclined bottom. The side of this sump has an opening therein level with the bottom which is closed by a screwed union plug, the screwed union plug carrying a gauze filter cylinder. The oil pipe is passed through the bore of the union plug into the interior of the gauze cylinder. A conical collar is provided on the pipe a distance from the end, and this collar is firmly seated on a conical seating in the neck of the union plug by means of a screwed union ring. By this construction of oil pipe an effective air seal is obtained at the union joint. Such a joint is substantially also "fool-proof", and consequently prevents the breaking down of the entire lubricating system which was heretofore always possible should an air leak develop at the joint.

A feature of this invention lies in the provision of a sheath which passes through a tubular portion, which heretofore formed a portion of the oil conduit, to bridge over the connection of the oil pipe to the sump, so that the oil passes direct from the oil sump to the oil pipe proper without passing a mechanical joint.

Dated this 6th day of December, 1928.

J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham.

COMPLETE SPECIFICATION.

Improvements in or relating to the Automatic Lubrication of Internal Combustion Engines.

We, A. J. STEVENS & Co., (1914) LIMITED, a British Company, and ALBERT JOHN STEVENS, a British Subject, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention and in what manner the

same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to the automatic lubrication of internal combustion engines, and particularly to motor cycle engines.

In the automatic lubrication of motor cycle engines, the oil passes to a sump in the bottom of the crank case from which it is pumped back to the oil storage tank. In the particular construction as set forth in our prior Patent No. 290,413 an opening is provided in the lower end of the sump which is closed by a screwed union plug, which plug also carries a gauze filter cylinder. As previously constructed, the oil pipe has been connected direct to the union by means of a screwed union ring which engages the screw threaded neck of the union plug to firmly seat a conical head on the end of the pipe on to the conical seat of the union plug. The oil is thus sucked through the bore of the union plug into the oil pipe and back to the oil storage tank. A very definite supply of oil is required for the maximum lubrication efficiency and the suction of the oil pump is accurately adjusted for this purpose. With the aforedescribed method of connecting the oil pipe to the union plug, considerable difficulty has been experienced in that there is liability of air being sucked in at the oil pipe joint, and consequently the required withdrawal from the oil sump does not take place.

According to the present invention, in lieu of the oil pipe terminating at its connection to the union plug, it is continued through the bore of the plug which heretofore normally constituted a part of the oil conduit. The end of this continued portion of the oil pipe therefore lies in the collection of oil, and consequently there is no possibility of air being drawn into the oil conduit at the joint.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawing which illustrates in side elevation the lower portion of the crank case of a motor cycle engine.

The oil sump as set forth in our aforementioned prior Patent No. 290,413 lies to one side of the crank case 1, and has a downwardly inclined bottom. The side of this sump has an opening therein level with the bottom which is closed by a screwed union plug 2, the screwed union plug carrying a gauze filter cylinder. The oil pipe 3 is passed through the bore of the union plug into the interior of the gauze cylinder. A conical collar 4 is provided on the pipe 3 a distance from the end 5, and this collar is firmly seated on a conical seating in the neck 6 of the union plug by means of a screwed union nut 7. By this construction of oil pipe an effective air seal is obtained at the union joint. Such a joint is substantially also "fool-proof", and consequently prevents the breaking down of the entire lubricating system which was heretofore always possible should an air leak develop at the joint.

A feature of this invention lies in the provision of a sheath which passes through a tubular portion, which heretofore formed a portion of the oil conduit to bridge over the connection of the oil pipe to the sump, so that the oil passes direct from the oil sump to the oil pipe proper without passing a mechanical joint.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. In an automatic lubricating system of internal combustion engines, an oil sump, a union plug, an oil delivery pipe which passes through the union plug so that the oil is drawn through the end of the delivery pipe directly from the sump, and means on the pipe, a distance from the end, for fixing the pipe to the union plug, whereby the oil is drawn directly from the sump without passing a mechanical joint between the pipe and the union plug.

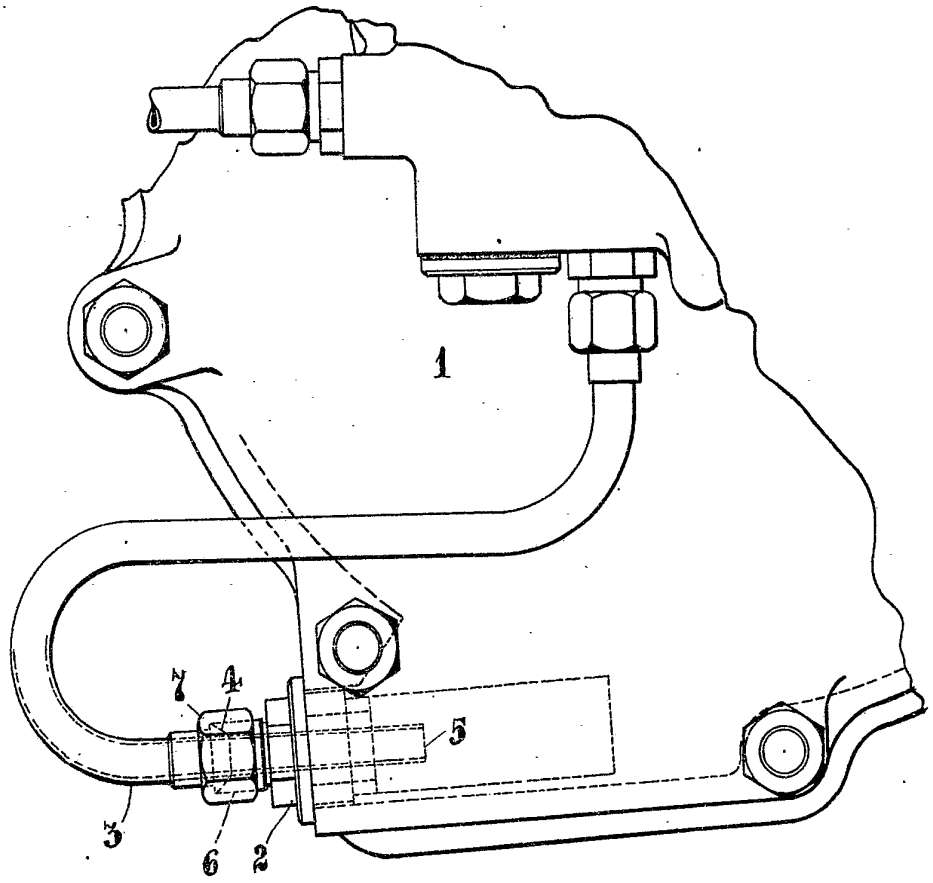
2. In an automatic lubricating system for internal combustion engines, a pipe connection to an oil sump, substantially as herein set forth and illustrated.

Dated this 2nd day of September, 1929.

J. E. S. LOCKWOOD,
Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1929.

[This Drawing is a reproduction of the Original on a reduced scale.]



Charles & Read Ltd. Photo Litho.

PATENT SPECIFICATION

325,198

Application Date: Nov. 6, 1928. No. 32,334/28.

Complete Left: Aug. 1, 1929.

Complete Accepted: Feb. 6, 1930.

PROVISIONAL SPECIFICATION.

Improvements in or relating to Shock Absorbers.

We, HARRY STEVENS, British Subject, and A. J. STEVENS AND COMPANY (1914) LIMITED, a British Company, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in or relating to shock absorbers, of the type comprising a driving member having vanes or abutments thereon, and a driven member having vanes or abutments thereon, the abutments interleaving and having a resilient material or a resilient device therebetween to absorb shocks.

According to the present improvements, the shock absorber is so constructed and arranged that the driving and/or driven member is or are detachable from the shock absorber. The driving or the driven member may form one component part of the shock absorber, whilst the other component part enables the driving or the driven member, as the case may be, to be detached without disturbing the component parts of the shock absorber. For instance one component part of the shock absorber may be formed integral or as a permanent fixture on the driving sprocket and brake drum of the motor cycle. The other component part of the shock absorber is retained in the assembled position, and the construction and arrangement is such that the hub of the wheel can be detachably placed in driving connection with the said latter component part of the shock absorber. The shock absorber can therefore be combined with the brake drums of both front and rear wheels of the motor cycle, and the front and rear wheels are interchangeable. A feature of this invention therefore is present in that a shock absorber is combined with a brake.

According to a convenient embodiment of this invention, as applied to a motor cycle, having detachable and interchangeable wheels, the side face of the drum casing is provided with an annular groove which is conveniently rectangular in cross section. This groove is provided with, for instance, three integral equally spaced radial vanes. The brake drum therefore forms one component part of the shock absorber. The second component part of the shock absorber comprises a flanged ring, such ring taking a bearing on the inside wall of the annular groove which is concentric with the axis of the brake drum. This ring is provided with three equally spaced radial webs which interleave with the webs integral with the brake drum. This ring forms the second component part of the shock absorber, and is retained in the assembled position by means of a ring which fits into a recess in the wall of the brake drum and also into an annular recess in the flange of the said flanged disc. This ring is fixed in position such as by means of set screws. Rubber blocks or other resilient means are inserted between the interleaving webs of the two component parts.

The brake drum is mounted on the cycle frame in any convenient manner, and the hub is also detachably mounted in any convenient manner, the arrangement being such that when the hub is fixed in position it is placed in driving connection with a component part of the shock absorber. In one convenient form studs are carried by the flanged ring or the component part of the shock absorber, and conveniently three of such studs are fixed in position by passing through the webs. A flange on the hub is provided with corresponding perforations so that such flange can be assembled on the studs and bolted thereto. The component part of the shock absorber is therefore rigidly connected to the hub of the road wheel. The brake drum or like member forming the second component part of the shock absorber is mounted through the medium of the bearing surface aforementioned, on the shock absorber fixed to the hub. The brake drum which may also form the chain sprocket is therefore carried by the hub, but such brake drum or chain sprocket is capable of an oscillatory movement to absorb shock. The brake drum, in this particular embodiment is fixed to the cycle frame by means of a headed pin or member into which the fixing bolt for the road wheel is screwed so that when the fixing bolt has been removed to remove the hub,

[Price 1/-]

the brake drum or chain sprocket remains attached to the cycle frame. It will of course be understood that the detachable hub may be connected to the shock absorber by means of dog teeth or in any desired manner. With the construction aforedescribed, the front and rear wheels can be detachable and interchangeable, and the shock absorber can be applied not only to take driving shocks but braking shocks.

Dated this 5th day of Nov., 1928.
J. E. S. LOCKWOOD,
Patent Agent for the Applicants,
3, New Street, Birmingham,

COMPLETE SPECIFICATION.

Improvements in or relating to Shock Absorbers.

We, HARRY STEVENS, a British Subject, and A. J. STEVENS & COMPANY (1914) LIMITED, a British Company, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises certain improvements in or relating to a shock absorber of the type carried by the chain sprocket or brake drum, which is mounted on a motor cycle frame and adapted to be detachably placed in driving connection with a detachable wheel, the shock absorber being of the type comprising a member having vanes or abutments thereon, and a second member having vanes or abutments thereon, the abutments interleaving and having a resilient material or a resilient device therebetween to absorb shocks, or of the type in which component parts of the shock absorber are coupled together by a resilient device through which force is applied from one component part to another.

According to the present improvements, the chain sprocket or the brake drum carrying the shock absorber is so constructed and arranged that when the detachable wheel is in position the chain sprocket or the like and the shock absorber are supported entirely by the hub of the wheel, but when the detachable wheel is removed the chain sprocket or the like and the shock absorber remain fixed in position on the cycle frame. Therefore whilst the chain sprocket or brake drum is connected to the motor cycle frame it is not supported by such connection when the detachable wheel is fixed in position. An annular recess is formed in the face of the chain sprocket or brake drum and a component part of the shock absorber is mounted in such recess, projecting studs being provided on this part of the shock absorber for engaging holes in the flange of the wheel hub.

In order that the invention may be clearly understood and readily carried into effect reference may be had to the accompanying drawings on which:—

Figure 1 is a sectional face view of a device constructed according to this invention the section being taken on line B, B of Figure 2, and

Figure 2 is a section on line A, A of Figure 1.

According to a convenient embodiment, the side face of the brake drum casing 1 is provided with an annular groove 2 which is conveniently rectangular in cross section. This groove is provided with, for instance, three integral equally spaced radial webs or vanes 3. The brake drum therefore forms one component part of the shock absorber. The second component part of the shock absorber comprises a flanged ring 4, such ring taking a bearing on the inside wall 5 of the annular groove 2 which is concentric with the axis of the brake drum. The ring 4 is provided with three equally spaced radial webs 6 which interleave with the webs 3 integral with the brake drum. This ring 4 forms the second component part of the shock absorber, and is retained in the assembled position by means of a ring 7 which fits into a recess in the wall of the brake drum and also into an annular recess in the flange of the said flange ring 4. This ring is fixed in position such as by means of set screws 8. Rubber blocks 9 or other resilient devices are inserted between the interleaving webs 3 and 6 of the two component parts.

The brake drum is mounted on the cycle frame in any convenient manner, and the hub is also detachably mounted in any convenient manner, the arrangement being such that when the hub is fixed in position it is placed in driving connection with a component part of the shock absorber. In one convenient form studs 10 are carried by the flanged ring 4 or one component part of the shock absorber, and conveniently three of such studs are fixed in position by passing through the webs 6. A flange 11 on the hub 12 is provided

with corresponding perforations so that such flange can be assembled on the studs and bolted thereto. One component part of the shock absorber is therefore rigidly connected to the hub of the road wheel. The brake drum forming the second component part of the shock absorber is mounted through the medium of the bearing surface 5 aforementioned, on the shock absorber fixed to the hub. The brake drum which may also form the chain sprocket is therefore carried by the hub, but such brake drum or chain sprocket is capable of an oscillatory movement to absorb shock. The brake drum 1 in this particular embodiment is fixed to the cycle frame by means of a headed pin or member 13 into which the fixing bolt 14 for the road wheel is screwed so that when the fixing bolt has been removed to remove the hub, the brake drum 1 or chain sprocket remains attached to the cycle frame 15. Some motor cycles are fitted with brake drums on both the front and rear wheels and with the construction aforedescribed, the front and rear wheels can be detachable and interchangeable, and the shock absorber can be applied not only to take driving shocks but also braking shocks.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. A shock absorber of the type set forth for the detachable wheels of motor cycles, in which the chain sprocket or the brake drum carrying the shock absorber is so constructed and arranged that when the detachable wheel is in position the chain sprocket or the like and the shock absorber is supported entirely by the hub of the wheel, but when the detachable wheel is removed the chain sprocket or the like and the shock absorber remain fixed in position on the cycle frame.

2. A shock absorber as set forth in Claim 1 for the detachable wheels of motor cycles, in which the chain sprocket or brake drum forms one component part of the shock absorber, characterised in that an annular recess is formed in the face of the chain sprocket or brake drum, in which recess the second component part of the shock absorber is mounted, which latter component part has projecting studs for engaging holes in the flange of the wheel hub.

3. A shock absorber for the detachable wheels of motor cycles constructed and arranged substantially as herein set forth or illustrated.

Dated this 10th day of December, 1929.

J. E. S. LOCKWOOD,
Agent for the Applicants.
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1930

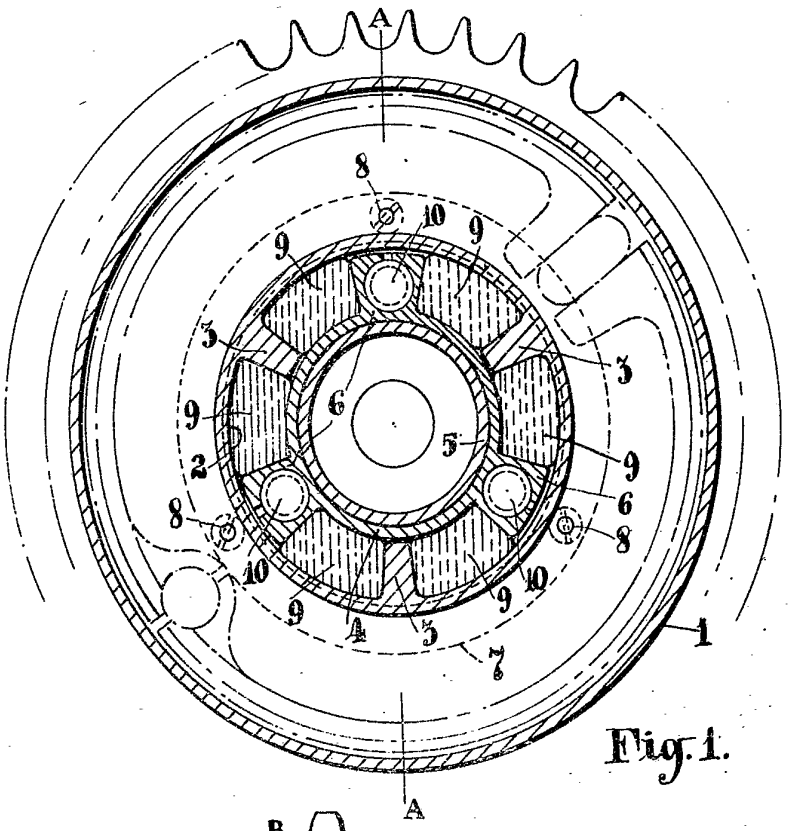


Fig. 1.

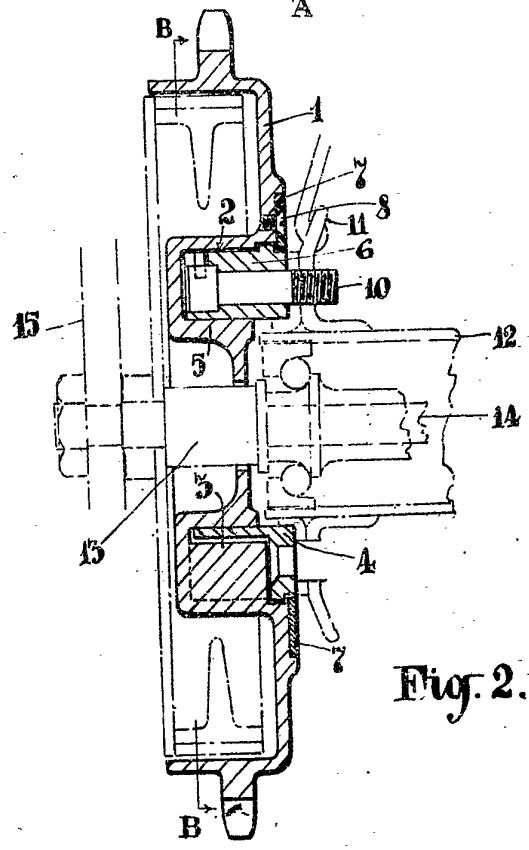


Fig. 2.

Charles & Read Ltd. Photo Litho.

PATENT SPECIFICATION

Application Date: Aug. 29, 1929. No. 26,273/29.

333,413

Complete Left: May 28, 1930.

Complete Accepted: Aug. 14, 1930.

PROVISIONAL SPECIFICATION.

Improvements in or relating to Saddles for Motor Cycles.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British Company, and HARRY STEVENS, a British Subject, of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention to as follows:—

This invention comprises certain improvements in or relating to saddles for motor cycles. The saddle tank of a motor cycle, as now ordinarily fitted, has a top surface which inclines down towards the peak or front of the saddle, and as the peak lies close to the tank it is found that rain is deflected from this inclined tank surface on to the seating surface of the saddle, thereby causing considerable inconvenience to the rider; and the present invention has for its object to obviate this inconvenience.

According to the present improvements, the peak of the saddle, which lies adjacent to the saddle tank, is protected or provided with, or adapted to form, a shield to protect the top of the saddle. The shield may be permanently or detachably fixed to the saddle or may be formed integral with the saddle leather cover.

According to one form of saddle, now in general use, the leather seat is supported hammock-wise on a spring frame, the springs being fixed to a metal plate at the peak of the saddle; the saddle is consequently flat whilst the peak is comparatively wide, thereby forming a surface which will receive and hold the rain deflected from the saddle tank. According to one form of this invention a strip of leather or other suitable material is sewn or otherwise attached to the front edge of the leather cover of the saddle. This strip of leather forms an upstanding flange at the peak of the saddle, the flange conveniently gradually reducing in depth at the sides or where it passes away from the peak. This flange or ledge may be directed at any suitable angle from the edge of the leather cover.

According to a further form of the invention, the flange or shield may be formed integral with the leather cover, and in lieu of the shield being formed as a definite upstanding flange the leather or other cover at the peak of the saddle may be upwardly curved or upwardly and outwardly curved. The flange or shield may be supported by a shaped metal underframe or other strengthening member or members, and if desired such strengthening member or members may be formed of spring material. In one form of saddle in which springs are anchored to a metal plate at the peak, such metal plate may be shaped to form or support the shield.

According to a further form of the invention the shield may be formed separately and adapted to be detachably fitted at the front of the saddle. The shield may be detachably fitted by means of clips or other fastening members which engage the leather cover or any suitable part of the frame of the saddle. By this invention therefore a shield is incorporated with the saddle in such a manner that rain is prevented from being deflected by the saddle tank on to the saddle even though the peak of the cap is located in close proximity to the inclined surface of the tank.

Dated this 23rd day of August, 1929.

J. E. S. LOCKWOOD
Agent for the Applicants,
3, New Street, Birmingham.

COMPLETE SPECIFICATION.

Improvements in or relating to Saddles for Motor Cycles.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British Company, and HARRY STEVENS, a British Subject, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention comprises certain im-

provements in or relating to saddles for motor cycles. The saddle tank of a motor cycle, as now ordinarily fitted, has a top surface which inclines down towards the peak or front of the saddle, and as the peak lies close to the tank it is found that rain is deflected from this inclined tank surface on to the seating surface of the saddle, thereby causing considerable inconvenience to the rider; and the present invention has for its object to obviate this inconvenience.

According to the present improvements, the peak of the saddle, which lies adjacent to the saddle tank, is protected or provided with, or adapted to form, a shield to protect the top of the saddle. The shield may be permanently or detachably fixed to the saddle or may be formed integral with the saddle leather cover.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a side elevation of a saddle constructed according to this invention.

Figure 2 is a plan view.

Figure 3 is a perspective view.

Figure 4 is a perspective view of a modified form of the invention, and

Figure 5 is a view of the shield, shown by Figure 4, detached.

According to one form of saddle, now in general use, the leather seat is supported hammock-wise on a spring frame, the springs being fixed to a metal plate at the peak of the saddle; the saddle is consequently flat whilst the peak is frequently comparatively wide, thereby forming a surface which will receive and hold the rain deflected from the saddle tank. According to one form of this invention a strip of leather or other suitable material 1 is sewn or otherwise attached to the front edge of the leather cover of the saddle. This strip of leather forms an upstanding flange at the peak of the saddle, the flange conveniently gradually reducing its depth at the sides or where it passes away from the peak. This flange or ledge may be directed at any suitable angle from the edge of the leather cover.

The flange or shield 1 may be formed integral with the leather cover, and in lieu of the shield being formed as a definite upstanding flange the leather or other cover at the peak of the saddle may be upwardly curved or upwardly and outwardly curved. The flange or shield may be supported by a shaped metal underframe or other strengthening member or members, and if desired such strengthening member or members may be formed of spring material. In one form of saddle in which springs are anchored to a metal plate 2 at the peak, such metal plate is shaped to form or support the shield.

According to a further form of the invention the shield 1*a* may be formed separately and adapted to be detachably fitted at the front of the saddle. The shield may be detachably fitted by means of metal clips 3 or other fastening members which engage the frame of the saddle, or by means of clips which engage the leather cover. By this invention therefore a shield is incorporated with the saddle in such a manner that rain is prevented from being deflected by the saddle tank on to the saddle even though the peak of the cap is located in close proximity to the inclined surface of the tank.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A saddle for motor cycles having a shield at the peak of the saddle to prevent the deflection of water from an inclined surface on to the seat of the saddle.

2. A saddle for motor cycles as set forth in claim 1, in which the shield is formed integral with the saddle cover or with the underframe of the saddle.

3. A saddle for motor cycles as set forth in claim 1, in which the shield is detachably fitted on the saddle.

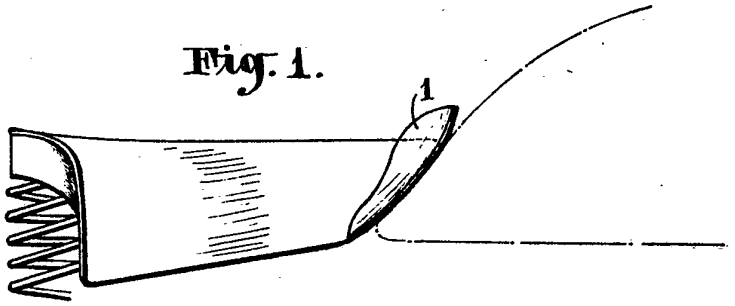
4. A saddle, or a shield for fitting to a saddle, substantially as herein set forth or shown.

Dated this 17th day of May, 1930.

J. E. S. LOCKWOOD,
Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1930.

Fig. 1.



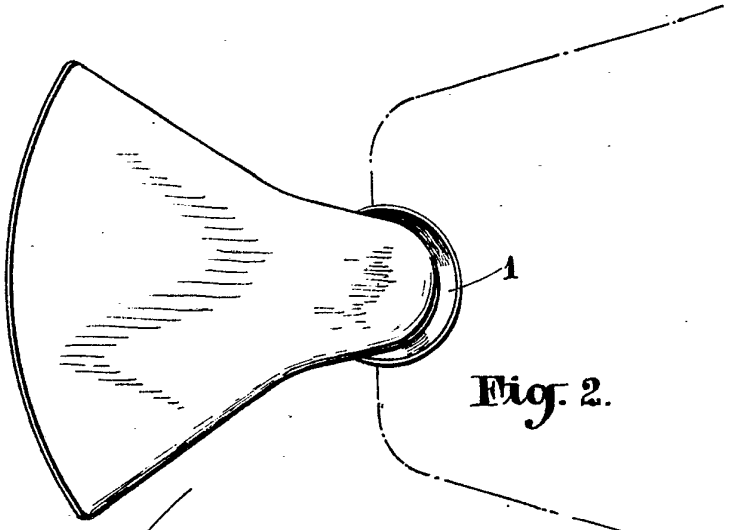
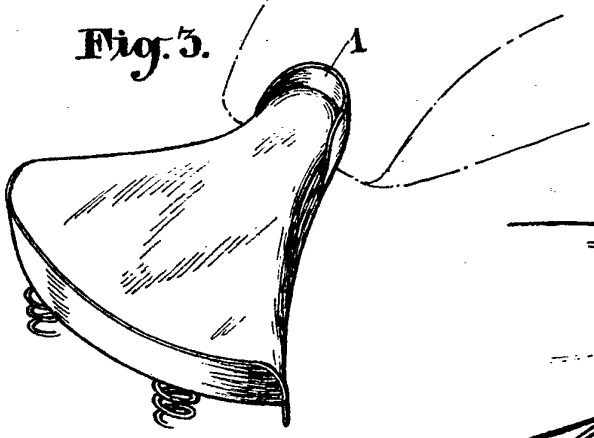


Fig. 2.

Fig. 3.



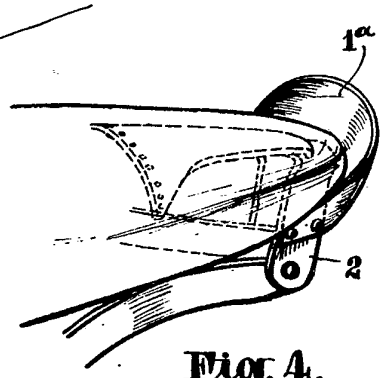


Fig. 4.

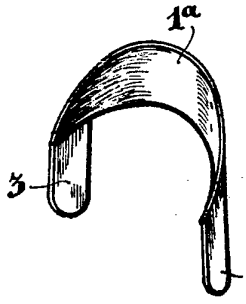


Fig. 5.

Charles & Read Ltd. Photo Litho.

PATENT SPECIFICATION

342,037

Application Date: Nov. 19, 1929. No. 35,282/29.

Complete Left: Aug. 9, 1930.

Complete Accepted: Jan. 29, 1931.

PROVISIONAL SPECIFICATION.

Improvements in or relating to the Lubrication of the Driving Chains of Motor Cycles and the like.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British Company, and HARRY STEVENS, a British Subject, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention to be as follows:—

This invention comprises certain improvements in or relating to the lubrication of power transmission chains for motor cycles and the like. Heretofore the usual method has been to connect a pipe to the timing side of the engine and arrange the end over the chain, so that any oil forced through the pipe will drip on the chain; this method is however unsatisfactory in that the delivery of oil is not definitely assured. This invention has for its object means whereby a predetermined quantity of oil is delivered to the chain in a positive and certain manner, and so that the continued delivery automatically ceases when the engine is stopped.

According to the present improvements the return flow of the oil, in a continuous circulating system of lubrication, is adapted to control the supply of oil to a drip control or regulator delivering the oil to the chain. When therefore the circulation of the oil through the engine ceases the continuous supply of oil to the chain also ceases.

According to a convenient embodiment of this invention, a needle valve is fitted, conveniently, to the side of the oil storage tank or bottle, and a pipe inside the storage tank delivers oil to the needle valve whilst a second pipe directs the oil passing from the valve to the chain. The pipe returning the oil from the engine is carried to the upper end of the storage tank and is curled over at the top, whilst the pipe delivering oil to the needle valve is carried upwardly so that its open end, conveniently funnel-shaped, lies immediately under the open end of the said return oil pipe. The flow of oil returned from the engine therefore will maintain the feed pipe directing oil to the valve in a filled condition. The needle valve is set to deliver the required number of drops per minute, and as the continuous supply of oil to the valve is always the same, a regular and predetermined supply of oil is delivered to the chain. When the engine is stopped the supply of oil is also stopped and therefore when the machine is standing there will be no liability of draining the oil from the storage tank and consequently there will be neither wastage nor pools of oil on the floor. Again when the engine is first started up from the cold, the oil fed to the needle valve will be warm, thereby enabling such needle valve to immediately function and lubricate the chain.

Dated this 11th day of November, 1929.

J. E. S. LOCKWOOD,
Agent for the Applicants,
3, New Street, Birmingham.

COMPLETE SPECIFICATION.

Improvements in or relating to the Lubrication of the Driving Chains of Motor Cycles and the like.

We, A. J. STEVENS & COMPANY (1914) LIMITED, a British Company, and HARRY STEVENS, a British Subject, both of Graiseley House, Penn Road, Wolverhampton, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

[*Price* 1/-]

This invention comprises certain improvements in or relating to the lubrication of power transmission chains of motor cycles or the like in which lubrication of the engine is effected by a continuous lubricating system.

According to the present improvements, the lubricating means for the transmission chain comprises a feed pipe or con-

duit connected to a drip control valve or the like, the open end of which feed pipe or conduit is located in the oil storage tank of the engine lubricating system and lies adjacent to the open end of the pipe returning the oil back to the tank from the engine, so that the said feed pipe is maintained in a filled condition when the oil is circulating in the main system. The feed pipe and the return flow pipe are conveniently located against the wall of the filler neck. The drip control valve conveniently comprises a needle valve which is spring controlled and which is adapted to be moved into the open position by a lever action.

In order that the invention may be clearly understood and readily carried into effect, reference may be had to the accompanying drawings on which:—

Figure 1 is a side view of an oil tank constructed according to this invention.

Figure 2 is an end view.

Figure 3 is a sectional plan view on the line *x*—*x* of Figure 1, and

Figure 4 is a cross sectional view of the drip control or regulator.

According to a convenient embodiment of this invention, a needle valve 1 is fitted, conveniently, to the side of the oil storage tank or bottle 2, and a pipe 3 inside the storage tank delivers oil to the needle valve whilst a second pipe 4 directs the oil passing from the valve to the chain. The pipe 5 returning the oil from the engine is carried to the upper end of the storage tank 2, whilst the pipe 3 delivering oil to the needle valve is carried upwardly so that its open end 3*a* lies near the open end 5*a* of the said return oil pipe 5 to receive oil therefrom. The upper ends of these pipes lie against the inclined wall of the filler neck 2*d*, and the ends of the pipes are inclined. The flow of oil returned from the engine therefore will maintain the feed pipe 3 directing oil to the valve in a filled condition. The needle valve 1 is set to deliver the required number of drops per minute, and as the continuous supply of oil to the valve is always the same, a regular and predetermined supply of oil is delivered to the chain. The needle valve is conveniently set into the open or closed position by means of the forked lever 6 pivoted to the upper end of the valve needle 1. The valve needle is normally pressed into the closed position by means of a spring 7, and when the forked lever 6 is in alignment with the valve needle 1, such needle is held back in the open position. The forked lever 6 is rounded at 8 so that it can be readily rotated from one position to the other. When the engine is stopped the supply of oil is also stopped and therefore when the machine is standing there will be no liability of draining the oil from the storage tank and consequently there will be neither wastage nor pools of oil on the floor. Again when the engine is first started up from the cold, the oil fed to the needle valve 1 will be warm, thereby enabling such needle valve to immediately function and lubricate the chain.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Means for lubricating power transmission chains of motor cycles and the like, comprising a feed pipe or conduit connected to a drip control valve or the like, the open end of which feed pipe or conduit is located in the oil storage tank of the engine lubricating system and lies adjacent to the open end of the pipe returning the oil back to the tank from the engine, so that the said feed pipe is maintained in a filled condition when the oil is circulating in the main system.

2. Means for lubricating power transmission chains of motor cycles and the like, as set forth in Claim 1, in which the feed pipe and the return flow pipe are located against the wall of the filler neck.

3. Means for lubricating power transmission chains for motor cycles and the like, as set forth in the preceding Claims, in which the drip control valve is fixed to the storage tank.

4. Means for lubricating power transmission chains of motor cycles or the like as set forth in the preceding claims, in which the drip control comprises a needle valve which is spring controlled and which is adapted to be moved into the open position by a lever action.

5. Means for lubricating power transmission chains of motor cycles, substantially as herein set forth or shown.

Dated this 29th day of July, 1930.

J. E. S. LOCKWOOD,
Agent for the Applicants,
3, New Street, Birmingham.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1931

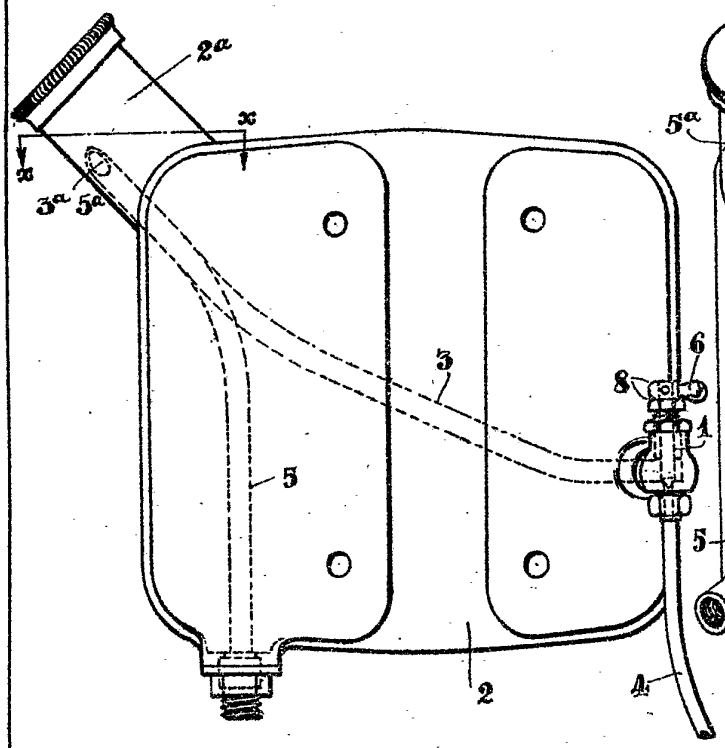


Fig. 1.

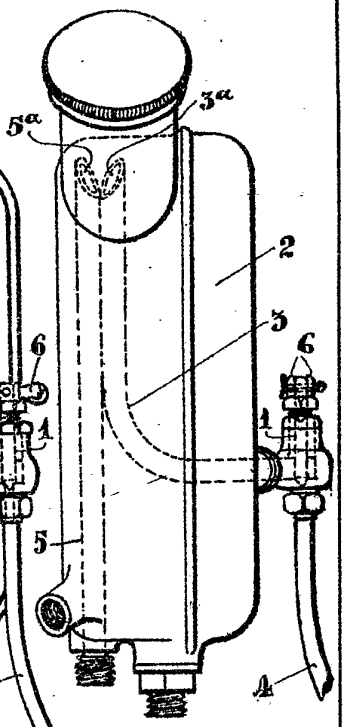


Fig. 2.

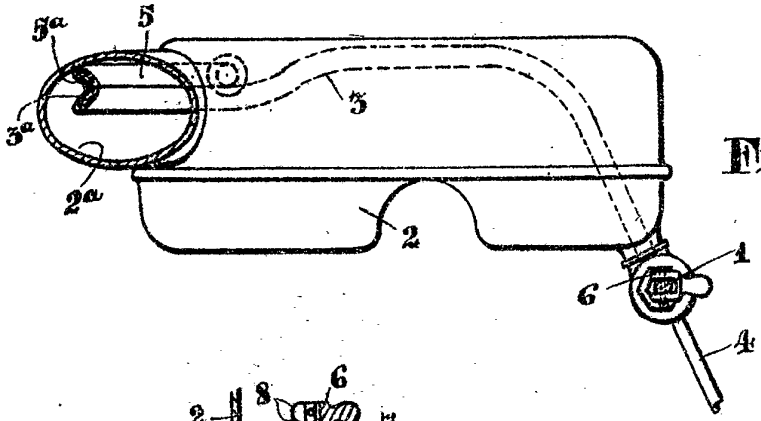


Fig. 3.

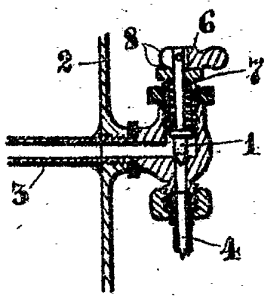


Fig. 4.

Charles & Read Ltd. Photo Litho.

SCHWEIZERISCHE EIDGENOSSENSCHAFT

EIDGEN. AMT FÜR GEISTIGES EIGENTUM

PATENTSCHRIFT

Veröffentlicht am 16. Dezember 1925

Nr. 113015 (Gesuch eingereicht: 17. Dezember 1924, 18 ½ Uhr.) **Klasse 97**
(Prioritäten: Großbritannien, 29. Januar und 27. Februar 1924.)

HAUPTPATENT

A. J. STEVENS & Co. (1914) LTD., und Albert John STEVENS,
Wolverhampton (Großbritannien).

Schmiervorrichtung an einer Kraftmaschine mit Innenverbrennung.

Vorliegende Erfindung bezieht sich auf eine Schmiervorrichtung an einer Kraftmaschine mit Innenverbrennung und mit mindestens einem Schwungrad.

Die Schmiervorrichtung an einer Kraftmaschine gemäß der Erfindung besitzt einen Ölbehälter, einen unter dem Schwungrad der Kraftmaschine angeordneten Trog, einen tiefer als der Trog angeordneten Sammler, wohin das Öl aus dem Trog frei herabfallen kann und Fördermittel mit zugehörigen Leitungen zur Förderung des Öls vom Behälter zum Trog und zum Rückfördern des vom Trog in den Sammler herabfallenden Öls aus dem Sammler zum Behälter. Bei dieser Schmiervorrichtung findet somit eine Ölzirkulation statt.

Der Trog besitzt zweckmäßig Bogenform, entsprechend der Rundform des Schwungrades, unter dem es angeordnet ist. An diesem Schwungrad ist zweckmäßig ein in den Trog eintauchendes Organ angebracht, um eine feine Ölschicht auf die arbeitenden Teile zu werfen, wie zum Beispiel direkt auf den Zylinder.

Zur Ölförderung wird zweckmäßig ein Zweipumpensystem angewandt, wobei die eine Pumpe das Öl in den Trog fördert oder leitet, während die andere das Öl aus dem Sammler in den Behälter fördert, nachdem es in den Sammler gefallen ist. Zweckmäßig werden beide Pumpen durch ein Schneckenradgetriebe von einer gemeinsamen Welle angetrieben und sind, zwecks Kontrolle, leicht abnehmbar.

Die Zeichnung veranschaulicht ein Ausführungsbeispiel des Erfindungsgegenstandes durch Fig. 1 in perspektivischer Ansicht und Schnitt; Fig. 2 zeigt eine Detailvariante.

Beim gezeigten Beispiel ist die Schmiervorrichtung am Motor eines Motorfahrrades angebracht. Das Kurbelgehäuse a des Motors besitzt eine ringförmige Wand, entsprechend der Kreisform der Schwungräder b. Vom Boden des Kurbelgehäuses ragen zwei parallele, einen niederen Trog bildende Rippen a^1 aufwärts, deren Krümmung jener der

Schwungräder b entspricht. Der Trog umspannt ungefähr ein Fünftel des Umfanges des Kurbelgehäuses. Aus dem Trog fällt das Öl in einen durch einen kastenförmigen Ansatz des Kurbelgehäuses gebildeten und durch eine Bodenplatte geschlossenen Sammler c. Auf demjenigen Teil der Kurbelwelle, welcher aus dem die Schwungräder einschließenden Teil des Kurbelgehäuses vorragt, ist eine Schnecke d befestigt, welche in ein auf einer unter der Kurbelwelle angeordneten kurzen Welle d^2 sitzendes Schneckenrad d^1 eingreift. Mit der Welle d^2 sind durch Klauen und Schlitze zwei Förderpumpen e, f beliebiger Bauart verbunden, wobei jede Pumpe in einem Ansatz des Kurbelgehäuses verschiebbar gelagert ist und, zwecks Kontrolle, leicht herausgenommen werden kann.

Die Pumpe e steht durch eine Leitung g mit dem Boden des Ölbehälters h in Verbindung, welcher an irgend einer geeigneten Stelle des Motorrades angeordnet ist. Eine zweite Leitung i führt von der Pumpe e zunächst an der Wand des eigentlichen Kurbelgehäuses hinunter, dann horizontal unter dem Trog durch und mündet bei i^1 in der Mitte des Troges an dessen einem Ende aus.

Von der Pumpe f führt eine Leitung j vor der Wand des Kurbelgehäuses in den Sammler hinunter und eine zweite Leitung k so weit über den Ölbehälter h hinauf, daß die Mündung über dem Ölspiegel im Behälter liegt und das Öl auf den schon im Behälter vorhandenen Vorrat hinunterfällt. Dieses Hinabfallen kann durch ein passend angeordnetes Schauglas oder einen Deckel beobachtet werden. Teile der zu den Pumpen und zum Ölbehälter führenden Leitungen sind zweckmäßig in einer Platte oder einem Teil vorgesehen, welcher denjenigen Ansatz des Kurbelgehäuses, in welchem die Pumpen und ihre Antriebsorgane angeordnet sind, abschließt.

Die Öffnungen der Gehäuse der Pumpen e und f koinzidieren mit passenden Öffnungen des Kurbelgehäuses, welche letztere Öffnungen die Pumpen mit den zum Ölbehälter führenden Leitungen verbinden, so daß die Pumpen, zwecks Kontrolle, ohne Demontage irgend einer Leitung entfernt werden können. Die Seitenwände des Troges sind auf ganzer Länge von gleicher oder annähernd gleicher Höhe, so daß die Öltiefe im Trog, unbeachtet der normalen Neigungen, nach vorn oder hinten, denen der Motor unterworfen werden mag, immer gleich ist.

An einem oder beiden Schwungrädern b ist ein Vorsprung l angebracht. Dieser Vorsprung kann die Form einer kleinen Schaufel, einer Spitze oder hohlen Rippe haben, taucht in das Öl im Trog und spritzt durch den zwischen den Rippen a^x des Kurbelgehäuses a freigelassenen Raum a^y eine dünne Ölschicht in einem Bogen auf den untersten Teil der Zylinderwand z. Das Tauchorgan kann auch statt an einem Schwungrad an einer Kurbel der Kurbelwelle oder am dickeren Kopf der Kurbelstange angebracht sein. Die Rippen a^x können auch fehlen, um das Öl leichter zur Zylinderwand z gelangen zu lassen.

Bei der Detailvariante nach Fig. 2 sind am Boden des Kurbelgehäuses Öffnungen a^2 angebracht, durch welche das Öl aus dem Trog und Rücklauföl aus dem Zylinder in den Sammler c fließt. Die einen Enden a^3 der Trogwände a^1 konvergieren gegeneinander und schließen den Trog an diesem Ende bis auf einen, für den Durchlaß des Tauchorganes nötigen Spalt ab; ein solcher Abschluß kann auch am andern Ende des Troges angebracht sein. Das Tauchorgan l kann auch die Form eines kleinen, von einem kurzen Arm getragenen Torpedos haben, welches infolge seiner Form nach seinem Durchgange dem Ölstrom im Trog gestattet, sich schnell zu schließen, um bei allen Geschwindigkeiten ein wirksames Ölen zu erreichen.

Beim Betrieb wird, nachdem der Motor seine Funktion begonnen hat, Öl durch die Pumpe e aus dem Behälter h in den Trog a, a^1 hinunter gepumpt. Dieses Öl wird durch das Tauchorgan fortgeschleudert; der Überschuß fließt über die Ränder des Troges entweder direkt oder durch die Löcher a^2 in den

Sammler *c*, von wo es durch die Pumpe *f* zum Behälter *h* hinauf gefördert wird. Hier fällt es auf das Öl im Behälter hinunter und kühlt sich hierbei ab. Die Bogenform des Troges *a*, a^1 bedingt, daß eine konstante Ölmenge unter den Schwungrädern vorhanden bleibt und infolge der Bogenform des Troges bewegt sich das Öl beim Berg- oder Talfahren einfach dem Trog entlang an eine andere Stelle, ohne daß das Eintauchverhältnis zwischen Öl und Tauchorgan sich dabei ändert.

PATENTANSPRUCH:

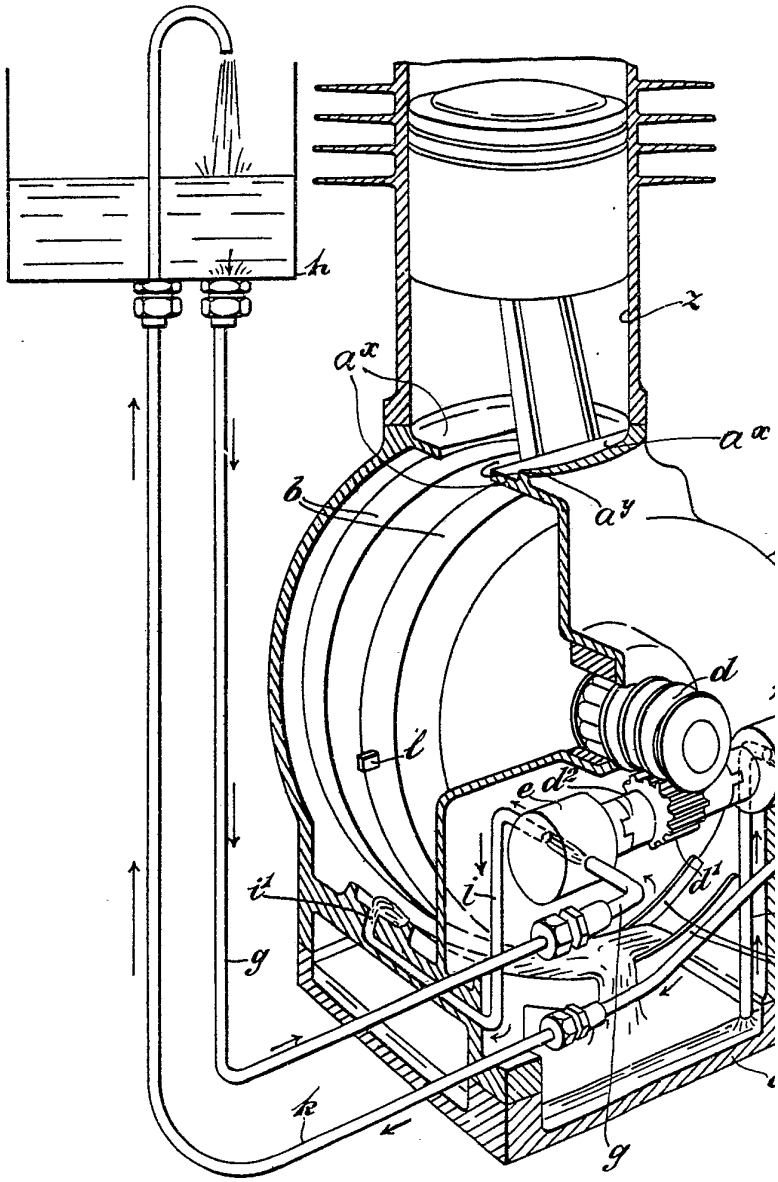
Schmiervorrichtung an einer Kraftmaschine mit Innenverbrennung, und mit mindestens einem Schwungrad, gekennzeichnet durch einen Ölbehälter, einen unter dem Schwungrad angeordneten Trog, einen tiefer als der Trog angeordneten Sammler, in welchen das Öl aus dem Trog frei herabfallen kann und Fördermittel mit zugehörigen Leitungen zur Förderung des Öls vom Behälter zum Trog und zum Rückfördern des vom Trog in den Sammler herabgefallenen Öls aus dem Sammler zum Behälter.

UNTERANSPRÜCHE:

1. Schmiervorrichtung nach Patentanspruch, dadurch gekennzeichnet, daß die Kraftmaschine zwei parallel nebeneinander angeordnete gleiche Schwungräder besitzt, unter welchen der bogenförmig gebildete und mit seiner Krümmung der Krümmung der Schwungräder folgende Trog unmittelbar über dem Sammler angeordnet ist, in welchen das überschüssige Öl aus dem Trog fällt, und daß an wenigstens einem Schwungrad wenigstens ein Tauchorgan angebracht ist, welches Öl aus dem Trog mitzureißen vermag.
2. Schmiervorrichtung nach Patentanspruch und Unteranspruch 1, dadurch gekennzeichnet, daß die Seitenwände des Troges auf ganze Länge wenigstens annähernd gleich hoch sind, derart, daß die Öltiefe im Trog, bei Neigungen der Kraftmaschine in der Ebene der Schwungräder stets gleich bleibt.
3. Schmiervorrichtung nach Patentanspruch, dadurch gekennzeichnet, daß die Fördermittel zwei an den Enden einer gemeinsamen, an ihrem mittleren Teil von der Kurbelwelle angetriebenen Welle angeordnete Pumpen aufweist, wobei die eine Pumpe Öl vom Behälter nach dem im Schwungradgehäuse untergebrachten Trog fördert und die andere Pumpe das Öl aus dem ebenfalls in diesem Gehäuse untergebrachten Sammler zum Behälter zurückfördert.
4. Schmiervorrichtung nach Patentanspruch und Unteranspruch 3, dadurch gekennzeichnet, daß die Pumpen in am Schwungradgehäuse vorgesehenen Gehäusen derart untergebracht sind, daß sie, zwecks Kontrolle, leicht demontiert werden können.

A. J. STEVENS & Co. (1914) LTD.
Albert John STEVENS.
Vertreter: H. KIRCHHOFER
vormals Bourry-Séquin & Co., Zürich.

A. J. Stevens & Co. (1914) Ltd. und
Albert John Stevens



Patent Nr. 113015
1 Blatt

Fig. 1.

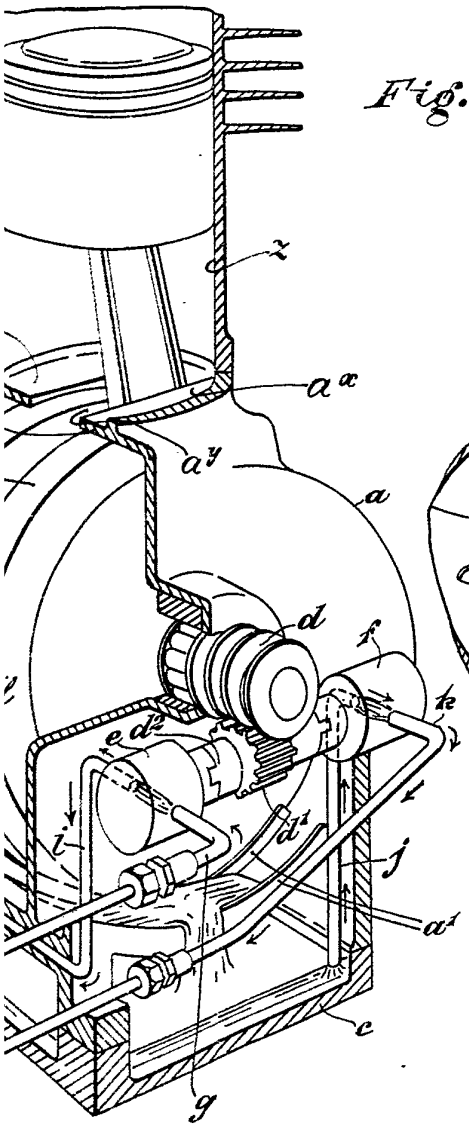
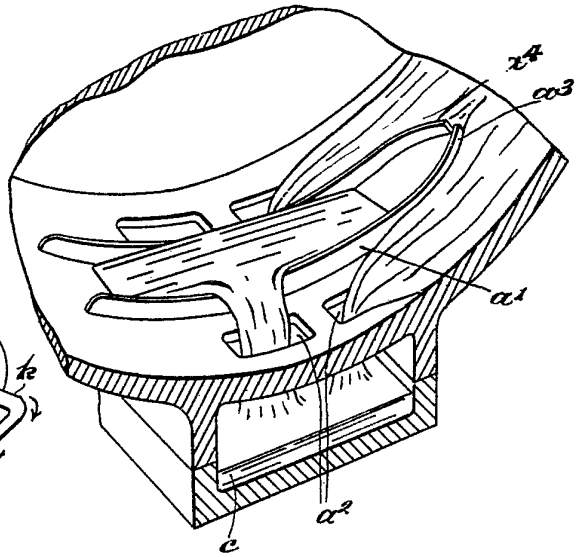


Fig. 2.



A. J. Stevens & Co. (1914) Ltd. und
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Patent Nr 113015
1 Blatt

Fig. 1.

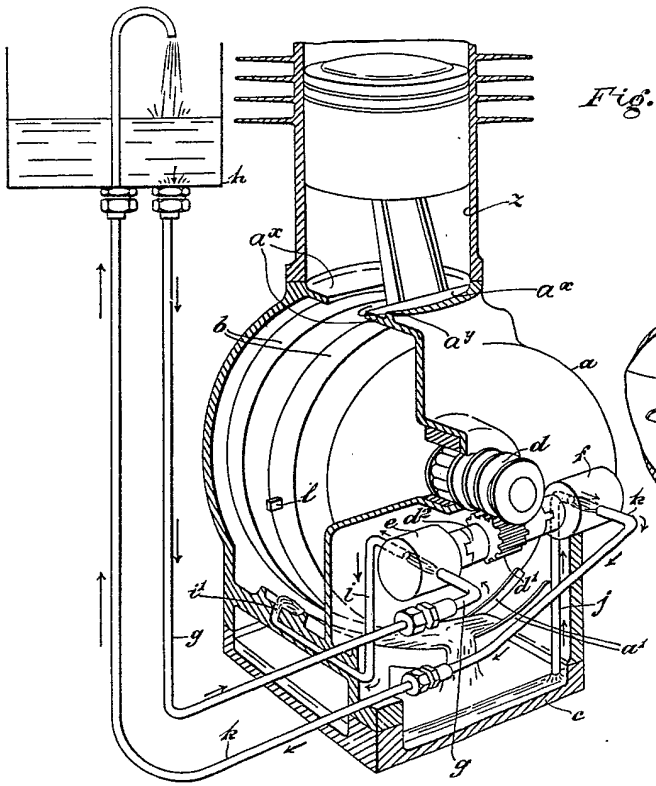
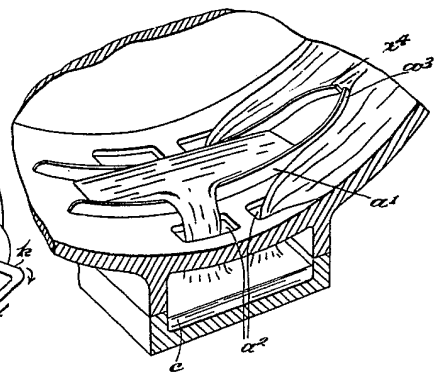


Fig. 2.



DEUTSCHES REICH

AUSGEGEBEN AM
6. DEZEMBER 1928

REICHSPATENTAMT

PATENTSCHRIFT

№ 469257

KLASSE 46c¹ GRUPPE 5

St 43522 I/46c¹

Tag der Bekanntmachung über die Erteilung des Patents: 22. November 1928

A. J. Stevens & Company (1914) Limited, Harry Stevens und Albert John Stevens in Wolverhampton, England

Kettengehäuse für Brennkraftmaschinen

Patentiert im Deutschen Reiche vom 26. November 1927 ab

Die Priorität der Anmeldung in England vom 29. März 1927 ist in Anspruch genommen.

Gegenstand der Erfindung ist die Ausbildung eines Gehäuses für den Kettenantrieb der obenliegenden Nockenwelle von Brennkraftmaschinen, deren Steuerung selbst wieder in einem Gehäuse untergebracht ist, das mit Schmieröl beschickt wird. Wesentlich für die Erfindung ist, daß das Kettengehäuse mit dem Kurbelgehäuse fest verbunden und mit dem Steuernockenwellengehäuse lediglich durch Anpressung zusammengehalten ist, und zwar insbesondere derart, daß der obere Teil des Gehäuses über einen kranzartigen Vorsprung des Steuernockenwellengehäuses gestülpt ist und sich an dieses unter Zwischenschaltung einer Öldichtung anlegt. Der Rand der Überstülpöffnung ist nach dem Innern des Kastens kegelig erweitert zur Ableitung des aus dem Steuergehäuse abtropfenden Öles nach der Mitte der Rückwand des Kettengehäuses, an der nach der Mitte vorspringende Leitkörper für das Öl vorgesehen sind. Der untere Teil des Kettengehäuses, der einen nach allen Seiten abgedichteten Behälter für das Öl bildet und durch eine Ölabflußbohrung mit dem Kurbelgehäuse in Verbindung steht, besitzt in der Öffnung seiner Rückwand über Vorsprünge am Kurbelgehäuse zu schiebende Führungsflächen. Schließlich ist das mit einem entsprechenden Deckel versehene Kettengehäuse L-förmig ausgebildet zur gleichzeitigen Aufnahme einer Kette für den Antrieb der Zündmagnetmaschine.

Eine Ausführungsform des Erfindungsgegenstandes ist in der Zeichnung beispielsweise dargestellt.

Abb. 1 ist eine Seitenansicht einer Brennkraftmaschine mit dem neuen Kettengehäuse.

Abb. 2 ist ein Schnitt nach *x-x* der Abb. 1.

Abb. 3 ist eine Seitenansicht des Kurbelgehäuses.

Abb. 4 zeigt die eine Hälfte desselben in Draufsicht.

Abb. 5 ist eine Innenansicht der hinteren Hälfte des Kettengehäuses.

Abb. 6 ist eine Außenansicht der vorderen Hälfte des Kettengehäuses.

Bei der in der Zeichnung dargestellten

Ausführungsform einer Brennkraftmaschine ist das Gehäuse 1 für die Steuernockenwelle mit Ausflußbohrungen 2, 2^a in einem die eine Endfläche desselben bildenden Kranz 3 versehen, der das Überstülpen des Kettengehäusekopfes 5 mit einer über diesen Kranz passenden Öffnung 4 (Abb. 5) gestattet. Die Bohrungen 2, 2^a liegen einander gegenüber, und zwar die Bohrung 2^a, die sich einseitig erweitert, an tiefster Stelle. Im oberen Teil hat der Kranz eine Luftdurchgangsöffnung 2^b. Zwischen dem Gehäuse 1 und dem Teil 5 des Kettengehäuses ist ein aus Filz o. dgl. bestehender Dichtungsring 7 eingeschaltet. Der die Öffnung 4 umschließende Rand der Haube 5 ist mit einer kegeligen Erweiterung 8 versehen (Abb. 2 und 5), so daß das in den Kettenschacht eintretende Öl daran heruntertropft und mitten an der inneren Wand des Gehäuses herunterläuft. An dieser Wand ist eine Auffangetasche 9 über dem unteren Kettenrad 10 angeordnet, und in dem den Boden der Tasche 9 bildenden Vorsprung 19 des Kurbelgehäuses sind Bohrungen 11 vorgesehen, durch die das Öl aus dem Kettengehäuse in denjenigen Teil überläuft, in dem sich das Kettenantriebsrad 10 befindet. Das herabfließende Öl gelangt schließlich auch zu dem Zahnradgetriebe 14, 13 auf der Vorgelegewelle 16 und zu der Kurbelwelle 15. Auf der Welle 16 sitzt das Kettenrad 10 zum Antrieb der obenliegenden Steuerwelle und das Kettenrad 17 zum Antrieb der Zündmagnetmaschine. Infolgedessen schmiert das im Kettenkasten befindliche Öl auch die Kette für den Magneten. Aus dem Kettenkasten führt eine Bohrung 27 (Abb. 1 und 2) in das Kurbelgehäuse, um das Öl auch zum Schmieren der Kurbel zu benutzen, so daß eine Kreislaufölung stattfindet.

Die Vorgelegewelle 16 ruht mit ihrem einen Ende in einem Lager 28 der Abschlußwand der Kurbelkammer und mit dem anderen Ende in dem Lager eines Armkreuzes 18, das an die Vorsprünge 19 angeschraubt ist. Zweckmäßig sind drei derartige Vorsprünge 19 vorhanden, zwischen denen die Antriebskette 20 (siehe insbesondere Abb. 1) für die Steuerwelle und die Antriebskette 21 für den Zündmagneten hindurchgeht. Die beiden Ketten liegen in sich rechtwinklig kreuzenden Ebenen. Der Antrieb der Vorgelegewelle 16 erfolgt von der Kurbelwelle 15 aus durch die sich im Verhältnis von 2:1 übersetzenden Zahnräder 13, 14, so daß die Kette halb so schnell läuft, als wenn sie von der Kurbelwelle unmittelbar angetrieben würde. Der Kettenkasten ist längsgeteilt. Der eine Teil 5 wird über die Vorsprünge 19 gestülpt, die das Armkreuz 18 tragen. Dieserhalb sind die Vorsprünge nach einer Zylinderfläche abgedreht (Abb. 5), und die Kastendecke hat eine damit zusammenpassende Öffnung 22 mit passenden Kreisflächen 23, um die Ansätze 19 zu übergreifen. Das Kurbelgehäuse hat einen Ringflansch 24, gegen den sich der Fuß des Gehäuseteils 5 legt und mit dem er durch Schrauben 25 zusammengehalten wird. Das Kettengehäuse ist vorteilhaft L-förmig gestaltet, so daß es gleichzeitig die Kette für die Steuerwelle und den Zündmagneten aufzunehmen gestattet. Demnach ist auch der Außendeckel 26, der am Gehäuse abnehmbar befestigt ist, L-förmig gestaltet. Die außerhalb des Deckels 26 angeordnete, mit der Vorgelegewelle 16 gekuppelte Ölpumpe gestattet die Wegnahme des Deckels 26 nach Lösung ihrer Verbindung mit dem Gehäuseteil 5.

Patentansprüche:

1. Kettengehäuse für Brennkraftmaschinen mit obenliegender Nockenwelle, dadurch gekennzeichnet, daß das Kettengehäuse (5, 26) mit dem Kurbelgehäuse fest verbunden und mit dem obenliegenden Steuernockenwellengehäuse (1) lediglich durch Anpressung zusammengehalten ist.

2. Kettengehäuse nach Anspruch 1, dadurch gekennzeichnet, daß der untere Teil des Kettengehäuses mit dem Kurbelgehäuse verschraubt, der obere Teil mit einer Öffnung (4) über einen kranzartigen Vorsprung (3) des Steuernockenwellengehäuses gestülpt ist und sich an dieses unter Zwischenschaltung einer Dichtung (7) anlegt.

3. Kettengehäuse nach Anspruch 1 und 2, dadurch gekennzeichnet, daß der Rand (8) der Überstülpöffnung nach dem Innern des Kastens kegelig erweitert ist zur Ableitung des aus dem Steuergehäuse abtropfenden Öles nach der Mitte der Rückwand des Kettengehäuses.

4. Kettengehäuse nach Anspruch 1 bis 3, gekennzeichnet durch aus der inneren Rückwand des Gehäuses nach der Mitte vorspringende Leitkörper (9) für das an der Rückwand hinunterfließende Öl.

5. Kettengehäuse nach Anspruch 1 bis 3, gekennzeichnet durch über Vorsprünge (19) am Kurbelgehäuse zu schiebende Führungsflächen (23) in der Öffnung (22) des Kettengehäuses.

6. Kettengehäuse nach Anspruch 1 bis 5, dadurch gekennzeichnet, daß der untere Teil des Kettengehäuses einen nach allen Seiten abgedichteten Behälter für Öl bildet und durch eine Ölabflußbohrung

(27) mit dem Kurbelgehäuse in Verbindung steht.

7. Kettengehäuse nach Anspruch 1 bis 6, gekennzeichnet durch eine L-förmige Ausbildung des Kettengehäuses mit ebensolchem Deckel (26) zur gleichzeitigen Aufnahme der Kette zum Antrieb der Zündmagnetmaschine.

8. Kettengehäuse nach Anspruch 7, dadurch gekennzeichnet, daß das Gehäuse in an sich bekannter Weise in einer senkrechten Ebene geteilt ist.

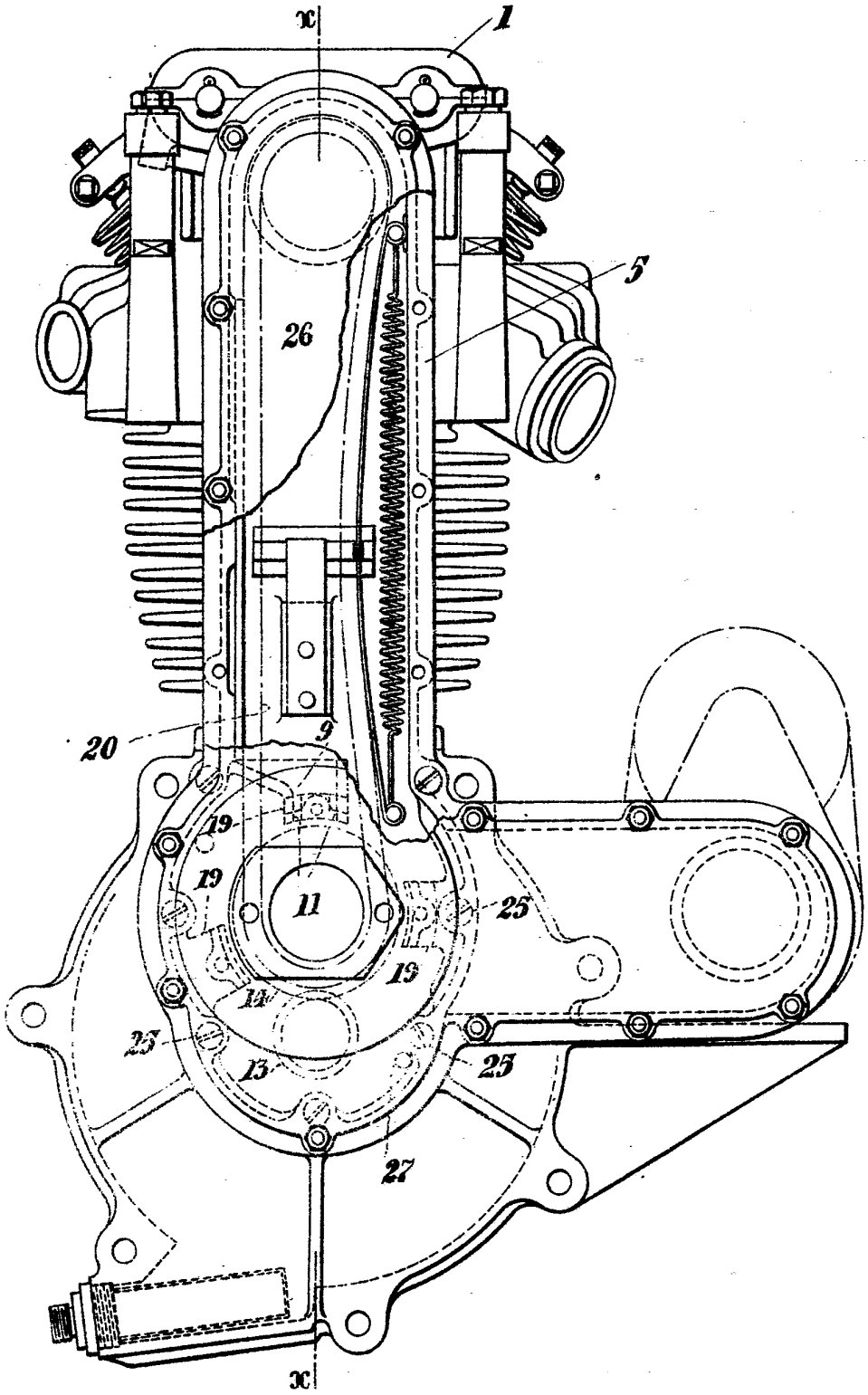
Hierzu 1 Blatt Zeichnungen

BERLIN. GEDRUCKT IN DER REICHSDRUCKEREI

Zu der Patentschrift **469 257**

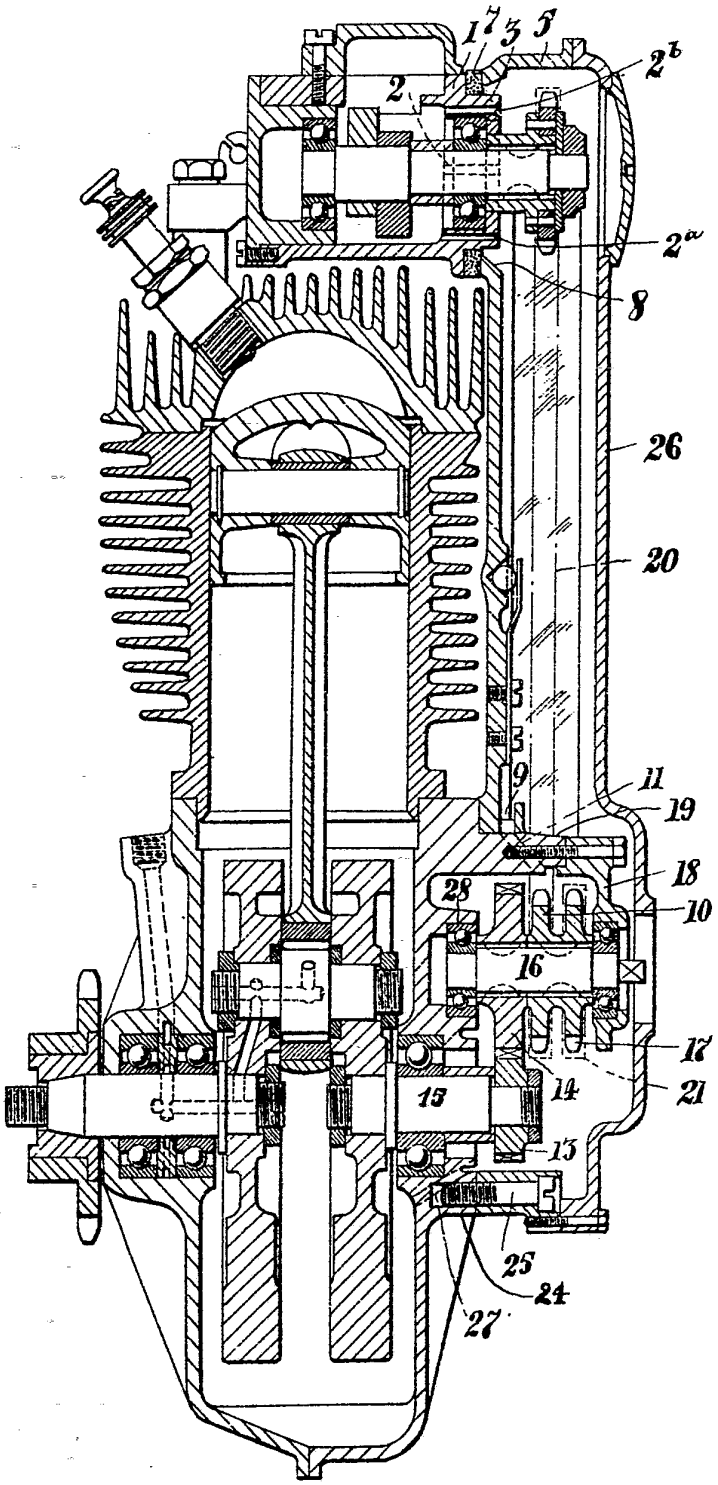
Kl. 46c¹ Gr. 5

Abb. 1.



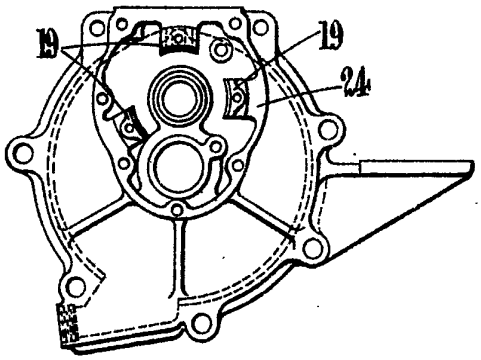
Zu der Patentschrift 469 257
Kl. 46c¹ Gr. 5

Abb. 2.



Zu der Patentschrift **469 257**
Kl. 46c[1] Gr. 5

Abb. 3.



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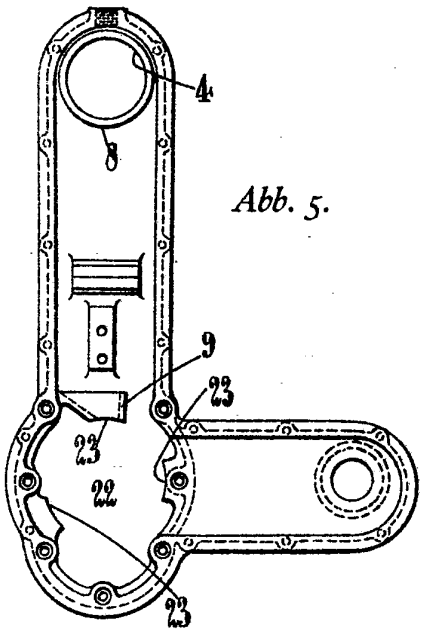


Abb. 4.

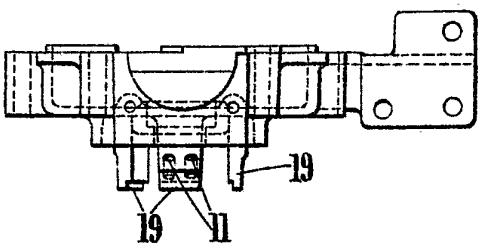
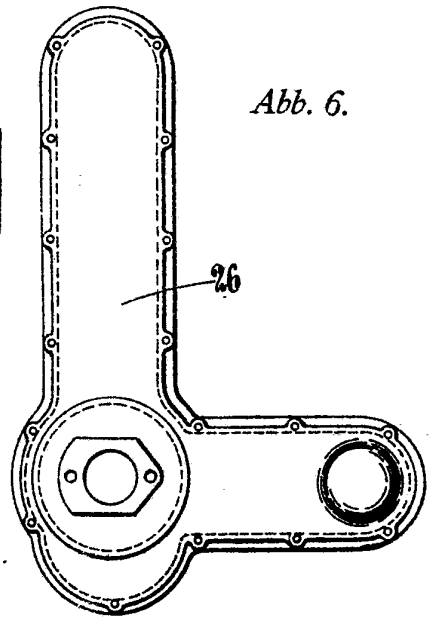


Abb. 6.



DEUTSCHES REICH

AUSGEGEBEN AM
2. JULI 1929

REICHSPATENTAMT

PATENTSCHRIFT

№ 478763

KLASSE 46b¹ GRUPPE 7

St 43523 I/46b¹

Tag der Bekanntmachung über die Erteilung des Patents: 13. Juni 1929

A. J. Stevens & Company (1914) Limited, Harry Stevens und Albert John Stevens in Wolverhampton, Engl.

Auf dem Zylinder gelagerte Steuerung für die Ventile von Brennkraftmaschinen mit Steuerhebeln

Patentiert im Deutschen Reiche vom 26. November 1927 ab

Die Priorität der Anmeldung in England vom 29. März 1927 ist in Anspruch genommen.

Die Erfindung betrifft eine auf dem Zylinder gelagerte Steuerung für die Ventile von Brennkraftmaschinen mit Steuerhebeln, bei denen die Arme jeweils an einer auf einer Welle drehbaren Büchse befestigt sind und der eine Arm vollständig im Gehäuse, der andere außerhalb des Gehäuses liegt. Das Wesen der Erfindung ist darin zu erblicken, daß die Welle und die auf ihr gelagerte, die seitlichen Steuerhebel tragende Büchse freitragend durch die Gehäusewand geführt ist, so daß eine völlige Abdichtung an der Durchführungsstelle ermöglicht wird. Zur Lagerung der Steuerhebel dienen aus dem Innern des Gehäuses und außen aus der Wandung desselben vorstehende Augen. Die Büchsen der Steuerhebel gehen durch Bohrungen des Gehäuses — ohne darin gelagert zu sein — hindurch, die je zur Hälfte auf den Gehäuseunterteil und auf den Deckel verteilt sind und die in einer Rille je einen Abdichtungsring aufnehmen.

Eine Ausführungsform des Erfindungsgegenstandes ist in der Zeichnung beispielsweise dargestellt.

Abb. 1 zeigt das Steuerhebelgehäuse in Vorderansicht.

Abb. 2 ist eine Draufsicht auf dasselbe bei abgenommenem Deckel.

Abb. 3 ist eine Draufsicht auf den Gehäuseunterteil mit herausgenommenen Steuerhebeln.

Abb. 4 ist ein Schnitt nach *a-a* der Abb. 3.

Abb. 5 ist eine Vorderansicht des Gehäuseunterteils.

Abb. 6 und 7 zeigen den Steuerhebel in Ansicht und Draufsicht.

Gemäß der in der Zeichnung veranschaulichten Ausführungsform besteht der die Steuerhebel enthaltende Aufsatz 1 aus einem Aluminiumgußgehäuse 2 und einem gewölbten Aluminiumgußdeckel 3. Das Gehäuse birgt die auf der Welle sitzenden Nocken 4 und hat an der Innenseite seiner Wandung bzw. im Innern aufragende Augen 5 sowie von der Außenseite vorstehende Augen 6 zur Aufnahme der Steuerhebelwellen 7. Halbrunde Öffnungen 8 je in der Stirnkante des Gehäuses 2 und in der Unterkante des Deckels 3 bilden bei aufgesetztem Deckel Lageraugen für auf den Wellen 7 sitzende Büchsen. Diese Büchsen 9 von zylindrischer Form sind zwischen die gegenständig angeordneten Steuerhebel 11, 12 geschaltet und füllen die Öffnungen im Gehäuse 2, 3 genau passend aus, so daß kein Öl hierbei entweichen kann. Um die Sicherheit des Ölabschlusses zu erhöhen, kann die Gehäusewand eine halbringförmige Rille 13 aufnehmen, der eine Halbringrille im Deckel 3 entspricht. In dieser Aussparung ist ein Korkring o. dgl. eingesetzt, der die Büchse 9 innig umschließt und so einen unbedingt sicheren Abschluß bildet. In eine seitliche Öffnung des Gehäuses wird das Öl mittels Rohrleitung eingeführt, und aus

diesem führt eine Leitung heraus, so daß ein ständiger Ölumlauf im Gehäuse gewährleistet ist.

Der Boden des Gehäuses ist an der Stelle 14, über welcher die Nocken umlaufen, kreisförmig ausgebaucht. Außerdem ist die Stelle durch eine Rippe 15 überwölbt, die eine Öffnung 16 zum Durchtritt der Steuerhebel und Löcher 18 aufweist, durch die Öl hindurchgeschleudert wird, um von der dieses auffangenden Decke in den Boden 14 zurückgeführt zu werden, wo es sich sammelt.

An der Vorderseite des Gehäuses 1, 2 befindet sich ein Kragen 19, der in den diesem benachbarten Kasten mit den Antriebsketten für die Steuerhebel ragt und dem Kasten das Öl durch Kanäle 17 zuführt.

Patentansprüche:

1. Auf dem Zylinder gelagerte Steuerung für die Ventile von Brennkraftmaschinen mit Steuerhebeln, bei denen die Arme jeweils an einer auf einer Welle drehbaren Büchse befestigt sind und der eine Arm vollständig im Gehäuse, der andere außerhalb des Gehäuses liegt, dadurch gekennzeichnet, daß die Welle und die auf ihr gelagerte, die seitlichen Steuerhebel tragende Büchse freitragend durch die Gehäusewand geführt ist, so daß eine völlige Abdichtung an der Durchführungsstelle ermöglicht wird.

2. Ventilsteuerung nach Anspruch 1, gekennzeichnet durch aus dem Innern des Gehäuses und außen aus der Wandung desselben vorstehende Augen (5, 6) zur Lagerung für die Steuerhebel.

3. Ventilsteuerung nach Anspruch 1 und 2, dadurch gekennzeichnet, daß die Büchsen (9) der Steuerhebel durch Bohrungen (8) des Gehäuses — ohne darin gelagert zu sein — hindurchgehen, die je zur Hälfte auf den Gehäuseunterteil und auf den Deckel verteilt sind.

4. Ventilsteuerung nach Anspruch 3, gekennzeichnet durch einen Abdichtungsring in einer die Bohrungen (8) für die Büchse umgebenden Rille (13).

Hierzu 1 Blatt Zeichnungen

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Zu der Patentschrift **478763**
Kl. 46b¹ Gr. 7

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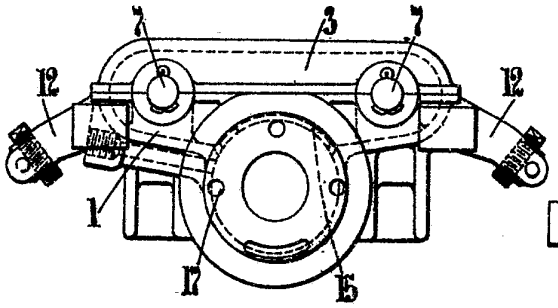

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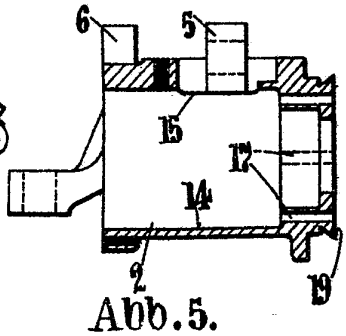

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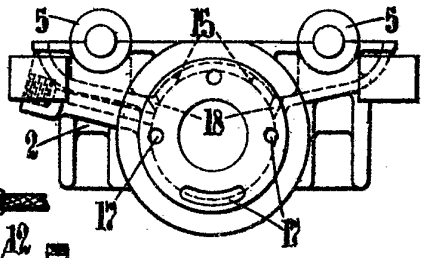

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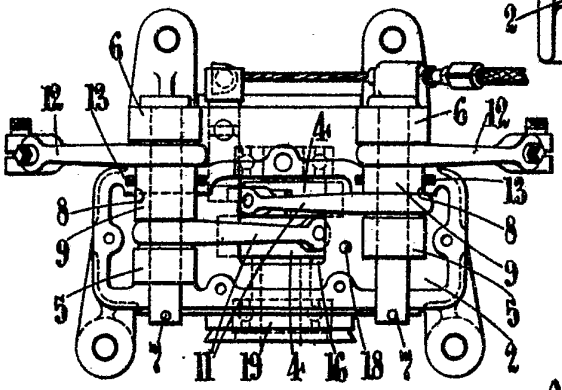

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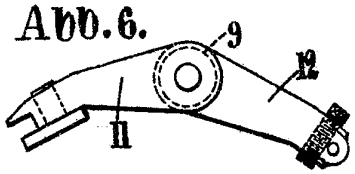

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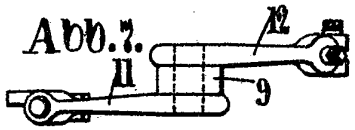

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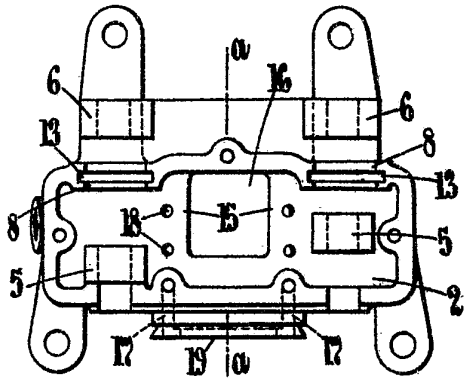

RÉPUBLIQUE FRANÇAISE.

MINISTÈRE DU COMMERCE ET DE L'INDUSTRIE.

DIRECTION DE LA PROPRIÉTÉ INDUSTRIELLE.

BREVET D'INVENTION.

X. — **Transport sur routes.**

1. — VOITURES.

N° 598.791

Perfectionnements aux châssis de side cars pour motocyclettes.

M. CHARLES WILLIAM HAYWARD et Société dite : A. J. STEVENS & C° (1914) LIMITED résidant en Angleterre.

Demandé le 26 mai 1925, à 14h 23m, à Paris.

Délivré le 5 octobre 1925. — Publié le 24 décembre 1925.

(2 demandes de brevets déposées en Angleterre les 21 octobre et 28 novembre 1924. — Déclaration des déposants).

Cette invention vise certains perfectionnements apportés aux side-cars ou autres supports adjonctifs à roues pour motocyclettes et elle a pour objet une construction perfectionnée de châssis de side car bon marché à établir et d'un montage facile et rapide.

Selon les présents perfectionnements, les pièces constitutives du châssis sont solidarisées les unes aux autres de telle sorte que la nécessité de les braser soit en grande partie ou même entièrement éliminée. En outre, le châssis est construit de manière à pouvoir être emballé sous un faible espace une fois démonté et à pouvoir être remonté facilement et rapidement.

Dans les dessins annexés :

Fig. 1 est une vue en élévation latérale d'une partie d'un châssis de side-car établi selon l'invention ;

Fig. 2 en est une vue de face ;

Fig. 3 en est une vue en plan ;

Fig. 4 est une vue en élévation latérale d'une partie d'une variante d'établissement de ce châssis ;

Fig. 5 en est une vue en plan ;

Fig. 6 est une section droite des tasseaux représentés dans les fig. 4 et 5 ;

Fig. 7 en est une vue en élévation latérale.

Selon l'invention, la fusée 1 de l'essieu de la roue du side-car est montée dans un tasseau 2 fixé sur l'extrémité du tube 3 formant, à proprement parler, l'essieu du side-car. Ce tasseau 2 forme une plateforme qui permet d'attacher un ressort 4 en forme de ⊏ qui supporte la partie arrière de la caisse du side-car. Un tasseau analogue 2 est assujetti à l'autre extrémité de l'essieu tubulaire 3, un ressort 6 en forme de ⊏ et une tige 7 assurant la liaison avec le cadre de la motocyclette étant similairement portés par ce tasseau. Ces deux tasseaux 2 sont fixés à des pièces tubulaires 8 dirigées vers l'avant, de préférence au moyen d'une broche filetée et d'un dispositif de blocage à écrou. Selon la construction à adopter de préférence, les tasseaux 2 sont fixés sur les extrémités de l'essieu tubulaire 3 du fait que chacune des extrémités de cet essieu vient épouser une douille fendue 9 ménagée dans les tasseaux respectifs. Des oreillons 10 placés de part et d'autre de cette douille descendent jusqu'en dessous de l'essieu 3 et une broche 11 brasée, vissée ou bloquée en place dans l'extrémité de chaque tube 8 passe à travers des perforations desdits oreillons 10 de façon à recevoir un écrou de blocage 12. Une fois que cet écrou a été vissé, l'essieu 3 se trouve maintenu invariablement dans la douille 9 tandis

que les extrémités des tubes 8 sont fixées solidement au tasseau. Le cas échéant, ce tasseau peut être fixé de façon permanente à l'extrémité de la pièce longitudinale ou de l'essieu, bien qu'il soit préférable de fixer les tasseaux comme il a été décrit de façon à obvier à la nécessité du brasage et à assurer une jointure qui puisse être montée rapidement et sans difficulté après que le châssis a quitté l'usine. Chaque ressort 4 et 6 en forme de ⊏ est fixé sur la plateforme du tasseau au moyen de deux boulons 13 en ⊔ qui pénètrent dans les rainures semi-circulaires 14 du tasseau et viennent passer dans des perforations ménagées dans une plaque de fixation 15 superposée aux ressorts en ⊏.

Les tubes 8 sont constitués, autant que possible, par les jambages d'un même tube replié sur lui-même en forme d'⊔, la partie transversale antérieure de ce tube, c'est-à-dire celle correspondant à son milieu, étant étudiée pour permettre la fixation d'un ressort à boudin 16 destiné à supporter élastiquement l'avant de la caisse du side-car par rapport au châssis. Un tube cintré 17 est fixé à l'une de ses extrémités au milieu de l'essieu 3 et à son autre extrémité au cadre de la motocyclette de la manière usuelle. L'extrémité antérieure du châssis est également reliée audit cadre au moyen d'un tube transversal 18 lequel est fixé à l'avant du tube en ⊔ au moyen d'agrafes comprenant, de préférence, deux tasseaux 19 et 20 présentant chacun deux logements dans lesquels viennent s'engager les deux tubes, un boulon de fixation 21 passant à travers ces deux tasseaux et entre les deux tubes. Le tube transversal 18 peut être ajusté aussi bien transversalement que radialement dans les agrafes tandis que celles-ci peuvent elles-mêmes être ajustées sur le tube en ⊔ permettant ainsi audit tube 18 d'être relié à divers types de cadres de motocyclettes ayant des dimensions différentes.

Selon la variante de construction représentée dans les fig. 4, 5, 6 et 7, les tasseaux 22 correspondants aux susdits tasseaux 2 présentent un trou ou une ouverture allongée 23 pour recevoir les deux essieux tubulaires 24 disposés transversalement l'un au-dessus de l'autre. Des trous circulaires sont ménagés dans les parois opposées de l'ouverture allongée 23 et des chevilles cylindriques creuses 25 passent dans chaque trou, les extrémités de chacune de ces chevilles étant alvéolées ou amenuisées en 26 sur les côtés opposés pour s'appliquer contre les faces adjacentes des deux tubes transversaux. Une broche filetée 11 (voir également la fig. 1) montée sur l'extrémité des tubes 8 dirigés vers l'avant passe à travers ces deux chevilles creuses 25 et un collier 27 ceinturonnant ladite broche 11 vient porter contre une de ces chevilles tandis que, par ailleurs, l'écrou 28 porte contre l'autre cheville creuse. Lorsque, par conséquent, ce dernier écrou est serré à bloc, les deux chevilles creuses séparent les deux tubes transversaux et les unissent dans le tasseau 22 tandis qu'en même temps le tube 8 est fermement assujetti à ce tasseau. La broche filetée 11 peut être fixée dans ledit tube 8 de toute manière désirée. Un tube interne 29 (voir la fig. 1) peut être fixé dans l'extrémité du tube 8, l'extrémité interne dudit tube présentant, de préférence, deux traits de scie 30 sur ses côtés diamétralement opposés. Le forage à l'extrémité fendue de ce tube est également conique et la broche filetée 11 a une extrémité conique 31 pour venir s'engager dans le tube fendu 29 de façon que, quand ladite broche est déplacée axialement, elle se coince d'elle-même dans le tube fendu qui lui-même est coincé dans le tube 8. Les tasseaux de support des ressorts en ⊏ comprennent dans les variantes des fig. 4 à 7 deux organes 32 formant des sortes de selles et s'appliquant exactement au-dessus et au-dessous du tube, ces selles présentant dans leurs côtés des rainures de réception d'un boulon en ⊔. Le tube cintré est fixé à l'extrémité d'un boulon qui passe à travers une agrafe comprenant deux tasseaux présentant des logements dans lesquels s'engagent les deux tubes.

Le garde-boue 33 est supporté entièrement par le ressort 4 en forme de ⊏ sans être par conséquent attaché à la caisse du side-car. Il est commode de relier ce garde-boue en deux endroits à l'extrémité relevée 34 de la traverse 35 à laquelle est fixée la caisse du side-car. Ce garde-boue est relié à cette extrémité relevée 34, d'une part, au moyen du boulon 16, et, d'autre part, au moyen de l'agrafe 37 qui enserre la barre 38 et l'axe 39 reliant le ressort 4 en forme de ⊏ à la traverse 35.

Un châssis ainsi construit est extrêmement bon marché à usiner puisque les joints brasés sont intégralement ou au moins pour la plupart éliminés. La robu tesse ou la sécurité qu'offre le châssis n'est cependant aucunement amoindrie puisque, ainsi qu'on l'aura remarqué, le tube cintré tend à tirer lesdits tasseaux contre les extrémités dudit tube en forme d'⊔.

De même, étant donné que les tasseaux sont portés sur l'extrémité du tube en ⊔, ce dernier tendra à les maintenir sur les extrémités de l'essieu. Enfin les tasseaux sont reliés à la caisse du side-car par des ressorts en ⊏.

Le châssis pourra être agencé pour se monter aussi bien à gauche qu'à droite de la motocyclette.

RÉSUMÉ.

Ces perfectionnements visent un châssis de side-car pour motocyclettes étudié essentiellement pour éliminer dans la plus grande mesure possible le brasage et comprenant à cet effet des tubes latéraux dirigés vers l'avant (ces tubes pouvant former les jambages d'un seul et même tube façonné en ⊔) et un essieu tubulaire ou plein placé vers l'arrière et dont chaque extrémité est reliée au tube latéral respectif par un tasseau sur lequel est montée soit la fusée de la roue porteuse du side-car, soit une tige assurant sa liaison avec le cadre de la motocyclette, lequel tasseau est maintenu invariablement en position sur ledit tube latéral respectif et ledit essieu par un seul écrou de blocage ou un dispositif analogue à vis de serrage. Chaque tasseau possède une douille de réception de l'extrémité correspondante de l'essieu, laquelle s'y trouve maintenue invariablement par une broche et un écrou montés sur l'extrémité du tube latéral respectif dirigé vers l'avant, cette broche traversant des oreillons solidaires de ladite douille.

Selon une variante, l'essieu du side-car comprend deux tubes parallèles superposés dont les extrémités sont supportées par une douille que possède chacun des tasseaux à l'aide de chevilles formant coins, une broche filetée passant à travers ledit tasseau et lesdites chevilles de façon à fixer l'essieu et le tube latéral dirigé vers l'avant au tasseau lorsqu'un écrou vissé sur le bout de ladite broche est serré sur elle.

Enfin, selon ces perfectionnements, la broche est assujettie au tube latéral dirigé vers l'avant grâce à une tête conique qu'elle possède et qui dilate un tube fendu placé dans l'intérieur dudit tube latéral. Le garde-boue de la roue porteuse du side-car est supporté sur ses ressorts de suspension en ⊏ sans liaison avec sa caisse; à cet effet il est relié par deux jointures à l'extrémité relevée d'un organe transversal supporté par lesdits ressorts et fixé à la face inférieure de la dite caisse, chacun desdits ressorts en ⊏ étant fixé au tasseau solidaire du châssis, au moyen d'un boulon en ⊔ pénétrant dans une rainure ménagée dans le tasseau.

CHARLES WILLIAM HAYWARD ET Société dite :
A. J. STEVENS & C° (1919) LIMITED.
Par procuration :
MACLVAULT.

Pour la vente des fascicules, s'adresser à l'IMPRIMERIE NATIONALE, 27, rue de la Convention. Paris (15e).

N° 598,791

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et Société dite : A. J. Stevens & Cº (1914) Limited

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et Société dite : A. J. Stevens

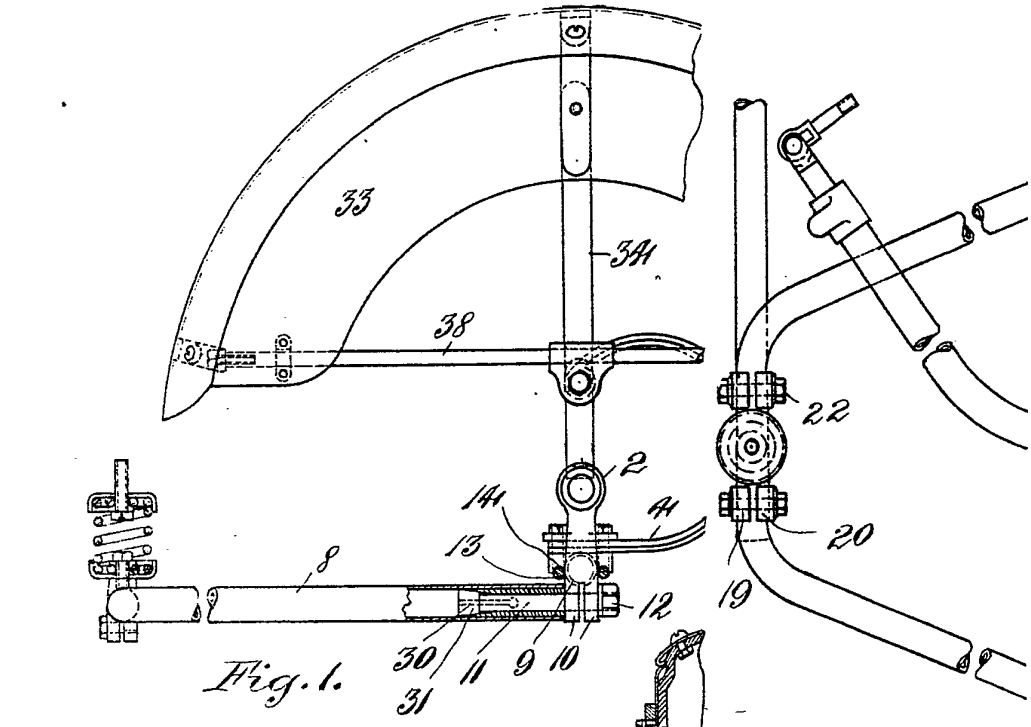

Fig. 1.

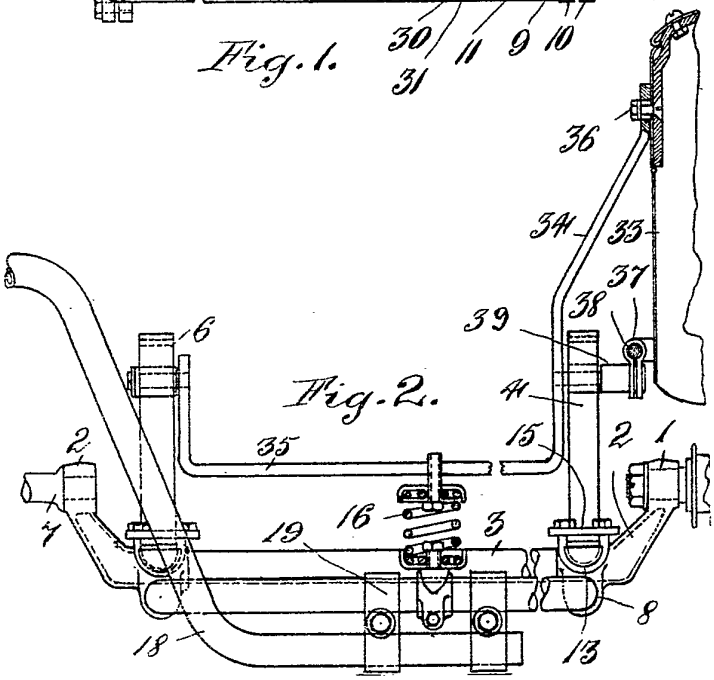

Fig. 2.

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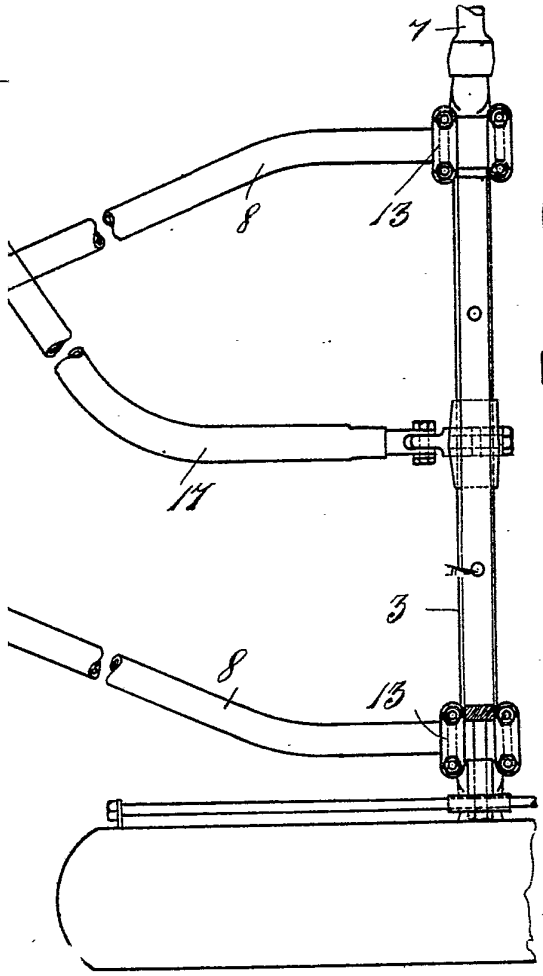
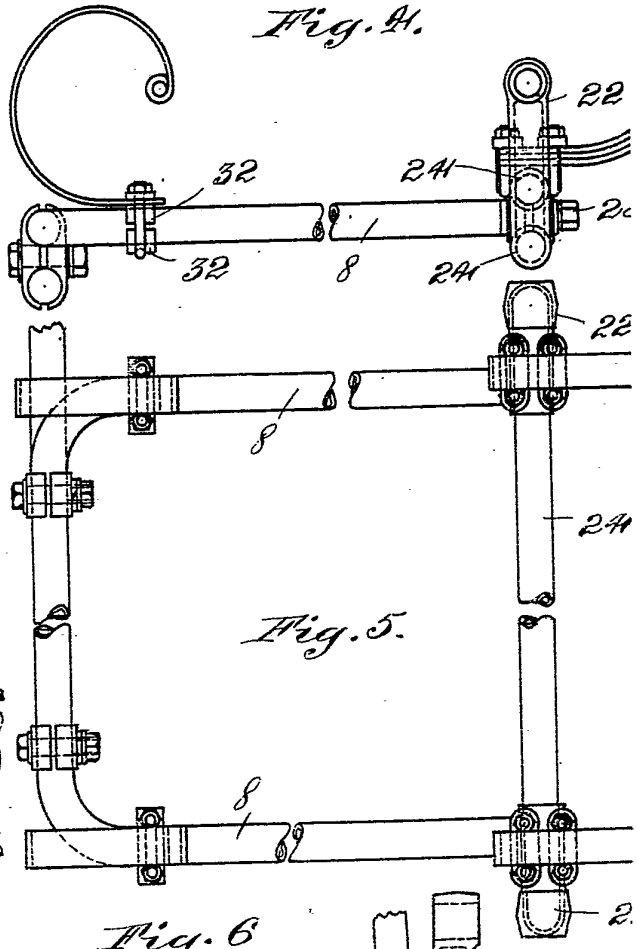


Fig. 3.

Fig. 4.



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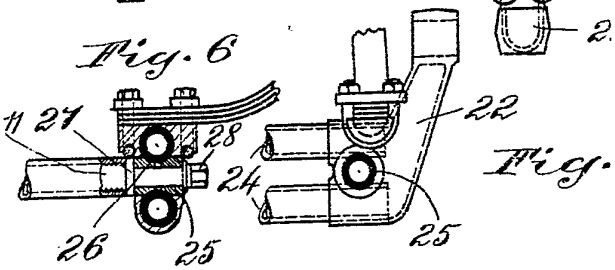

Fig. 6

Fig.

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DIRECTION DE LA PROPRIÉTÉ INDUSTRIELLE.

BREVET D'INVENTION.

Gr. 5. — Cl. 8. **N° 643.247**

Perfectionnements apportés au graissage automatique des moteurs à combustion interne.

Raison sociale : A. J. STEVENS & C° (1914) Ltd et MM. Harry STEVENS et Albert John STEVENS résidant en Angleterre.

Demandé le 29 octobre 1927, à 16h 3m, à Paris.

Délivré le 15 mai 1928. — Publié le 12 septembre 1928.

(Demande de brevet déposée en Angleterre le 29 mars 1927. — Déclaration des déposants.)

La présente invention a pour objet des perfectionnements apportés au graissage automatique des moteurs à combustion interne et plus particulièrement aux moteurs de motocycles du type où le volant est enfermé dans le carter de la manivelle. Dans tout système de graissage à circulation continue, l'huile doit passer dans ledit carter, et jusqu'ici on n'est pas arrivé à faire ressortir l'huile d'un carter enfermant le volant. On a proposé de faire sortir l'huile du carter avec l'aide du volant qui devait la ramasser au fond du carter et la porter en rond avec soi vers un racloir, lequel dirigerait ensuite cette huile vers une ouverture ménagée dans une paroi du carter et communiquant avec un réservoir; bien qu'ayant été expérimenté sérieusement par grand nombre d'hommes de l'art, ce système n'a pas réussi, et l'on est pas jusqu'à ce jour arrivé à résoudre le problème d'une manière satisfaisante, la sortie de l'huile du carter de la manivelle rencontrant des complications à cause de la grande vitesse avec laquelle tourne le volant logé dans ce carter.

D'après la présente invention, on a disposé dans le carter de la manivelle un canal, réservoir collecteur ou compartiment, de manière que l'huile, qui sous l'action du volant tournant est lancée dans une direction essentiellement tangentielle au bas du volant, arrive dans lesdits canal, réservoir ou compartiment, d'ou elle est ensuite évacuée par un conduit qui avec l'aide d'une pompe appropriée la ramène au réservoir à huile principal.

Dans les dessins annexés :

Figure 1 est une vue de côté d'un moteur construit selon le principe de l'invention;

Figure 2 est une coupe suivant la ligne x-x, de la figure 1;

Figure 3 est une vue de côté du carter détaché du moteur et vu dans la direction de la flèche tracée dans la figure 2;

Figure 4 est une vue du carter prise dans la direction indiquée par la flèche b tracée dans la figure 1.

Le carter de manivelle 1 est essentiellement cylindrique, comme d'usage. Dans le fond du carter est pratiquée une ouverture 2, passant transversalement du centre de ce fond jusqu'en un point situé à une distance convenable de ce centre, dans le sens de la rotation du volant; l'ouverture en question constitue l'entrée d'un petit réservoir collecteur ou bassin 3 ménagé en donnant à cet endroit une forme convenable à la paroi du

Prix du fascicule : 5 francs.

carter. 4 est une paroi inclinée (voir fig. 1) qui part du bord avant de l'ouverture 2, et dont le bord inférieur 5 est légèrement élevé au-dessus du fond du carter. Par suite du mouvement de rotation du volant, l'huile est projetée essentiellement dans une direction tangente au bas de celui-ci; elle traverse donc l'ouverture 2 et arrive dans le bassin 3. L'extrémité avant de ce bassin présente une ouverture 6 à laquelle se rattache un tuyau connecté avec une pompe, de manière que l'huile en coulant se dirige tout naturellement vers le dit tuyau. Un filtre en toile métallique ou autre filtre convenable est placé sur l'orifice de décharge.

Lorsque le moteur fonctionne, l'huile envoyée aux différents organes à graisser coule dans le carter de manivelle, d'où elle est renvoyée au réservoir d'alimentation à travers le réservoir collecteur ou bassin 3. Ainsi par exemple l'huile envoyée par la pomme au coussinet 10 et directement à la paroi du cylindre, revient par la voie du bassin 3; l'huile envoyée dans la boîte de brimbale 8 revient aussi à ce bassin par le carter de chaîne 11 et à travers une ouverture 9 du carter de manivelle; l'ouverture 9 est située de manière que le mouvement du haut en bas du volant assiste l'écoulement naturel de l'huile. On obtient ainsi un graissage positif, et l'on évite de se fier à un graissage par barbotage. L'huile entre dans le carter de manivelle et en sort à une allure uniforme, et le bas du volant ne tourne donc pas dans un bain d'huile.

Par les dispositions ci-dessus décrites, basées sur des principes entièrement nouveaux, on réalise un écoulement uniforme et continu de l'huile à travers le carter de manivelle renfermant le volant.

RÉSUMÉ.

L'invention comprend :

1° Les dispositions permettant de faire ressortir l'huile de graissage d'un carter de manivelle d'un moteur à combustion interne renfermant le volant; le trait caractéristique de ces dispositions est que grâce, à elles, l'huile, soumise à l'action du volant qui tourne, est lancée tangentiellement audit volant ou à peu près, dans un canal, petit réservoir collecteur, bassin ou compartiment, d'où elle est tirée par une pompe ou autres moyens appropriés.

2° Les dispositions constructives particulières suivantes :

a. Par une conduite connectée avec le canal ménagé au fond du carter, l'huile est par une pompe ramenée au réservoir alimentaire;

b. Dans le fond du carter est pratiquée une ouverture passant transversalement du centre de ce fond jusqu'en un point situé à une distance convenable de ce centre, dans le sens de la rotation du volant; l'ouverture en question constitue l'entrée du petit réservoir collecteur ou bassin mentionné sous 1°, lequel est constitué en donnant à cet endroit une forme convenble à la paroi du carter; à l'extrémité avant du bassin est pratiquée une ouverture de sortie à laquelle se rattache la conduite revenant au réservoir alimentaire;

c. De l'extrémité avant du bassin part une paroi inclinée dont le bord inférieur ou pied est légèrement élevé au-dessus du fond du carter.

Raison sociale : A. J. STEVENS & C° (1914) LTD
ET MM. HARRY STEVENS ET ALBERT JOHN STEVENS.

Par procuration :

H. BOETTCHER fils.

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N° 643.247

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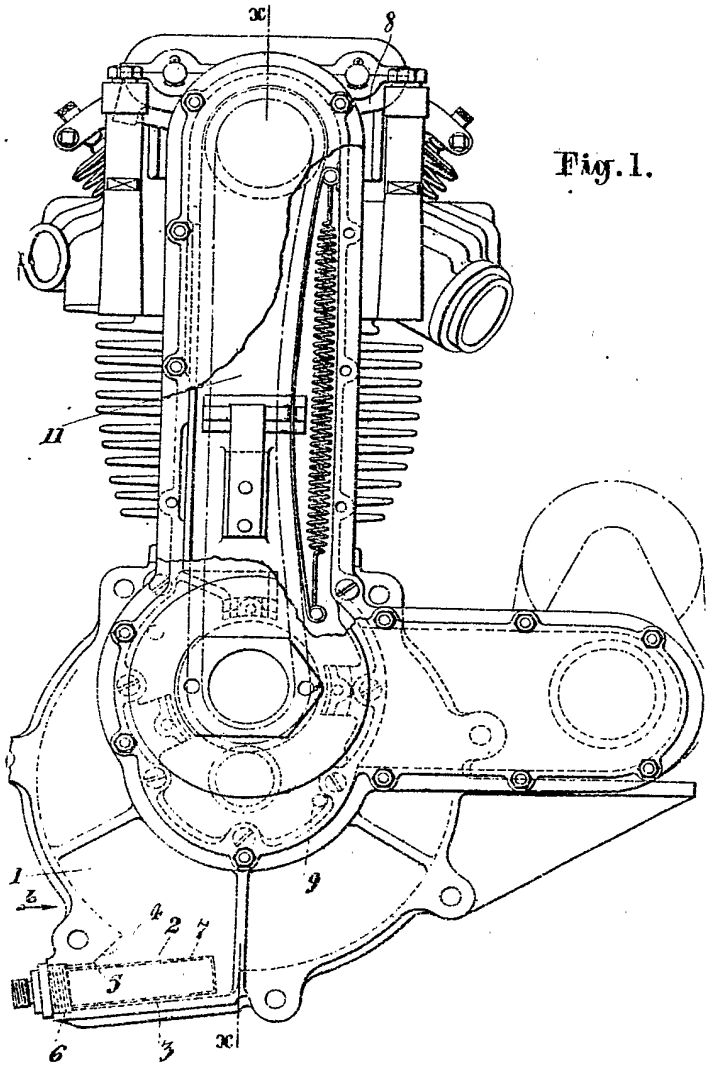


Fig. 1.

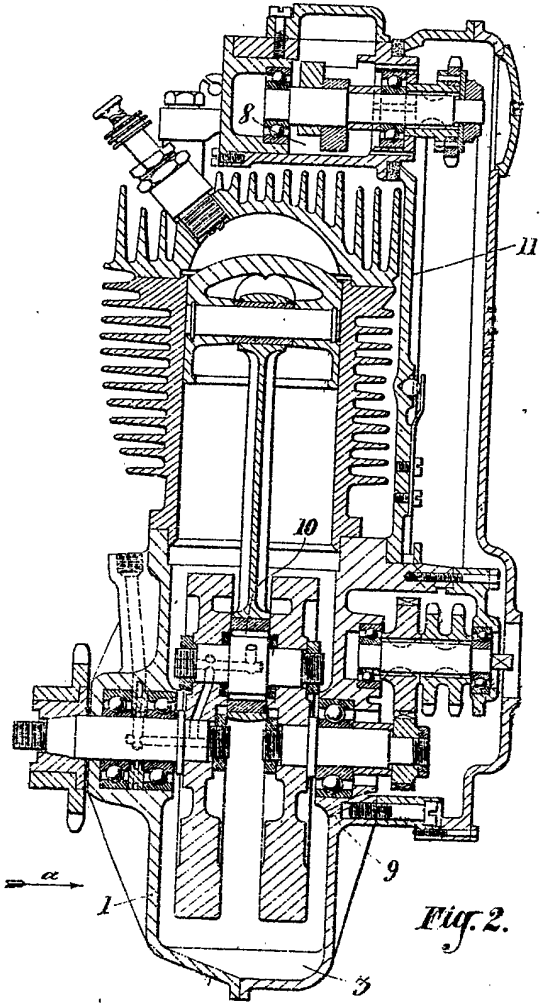
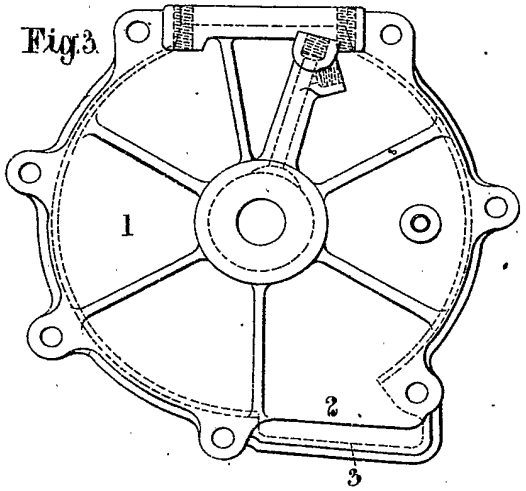


Fig. 2.

Fig. 3.



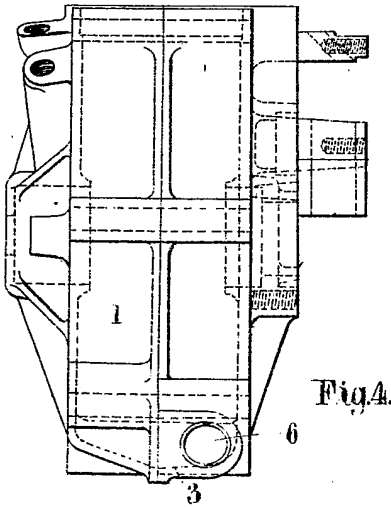


Fig. 4.

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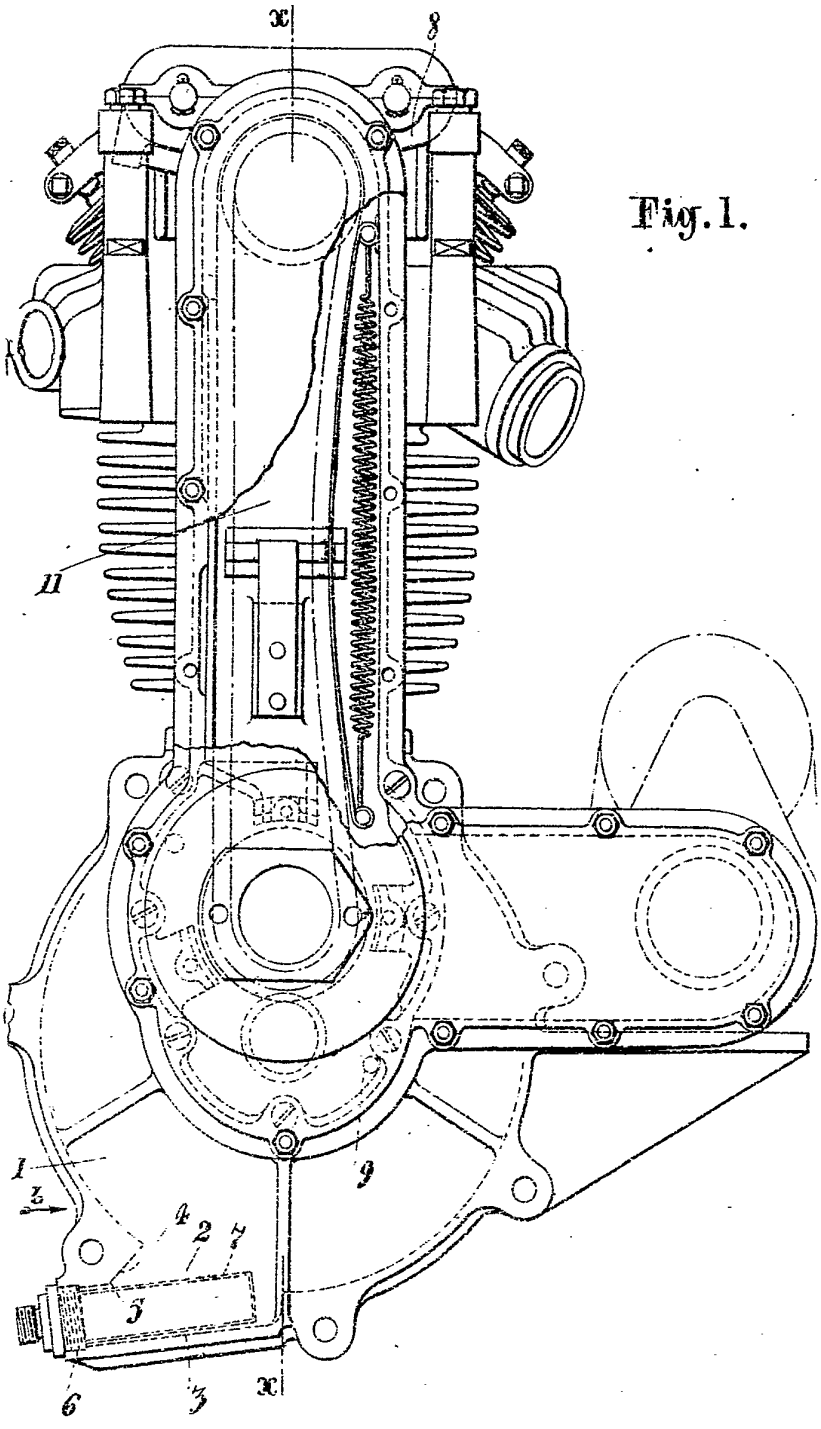

Fig. 1.

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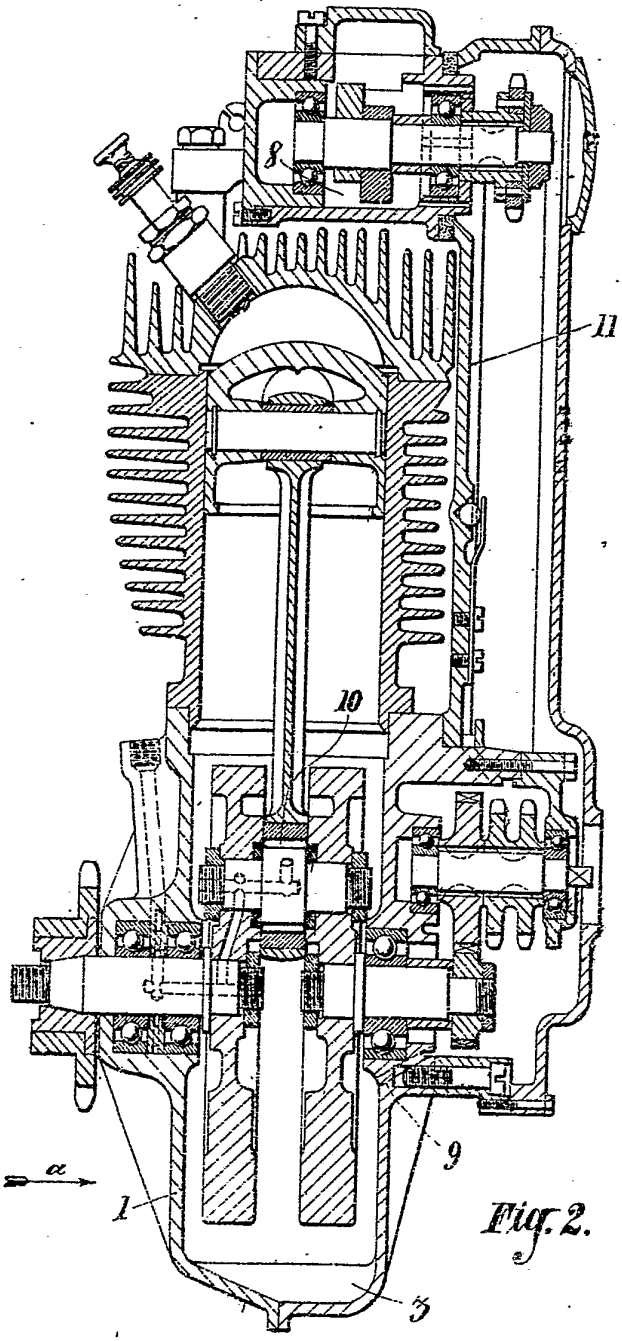

Fig. 2.

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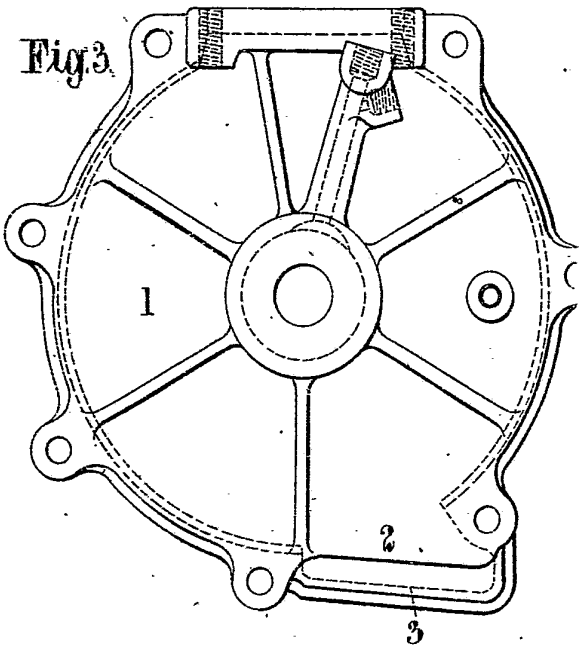

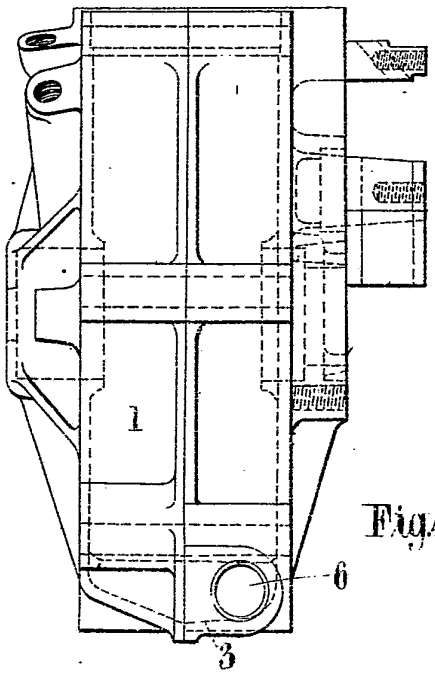

Fig. 4.

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MINISTÈRE DU COMMERCE ET DE L'INDUSTRIE.

DIRECTION DE LA PROPRIÉTÉ INDUSTRIELLE.

BREVET D'INVENTION.

Gr. 5. — Cl. 8. N° 643.248

Perfectionnements aux systèmes de graissage des moteurs à combustion interne ou autres machines ou dispositifs animés d'un mouvement de rotation.

Raison sociale : A. J. STEVENS & C° (1914) Limited et MM. Harry STEVENS et Albert John STEVENS résidant en Angleterre.

Demandé le 29 octobre 1927, à 16h 4m, à Paris.
Délivré le 15 mai 1928. — Publié le 12 septembre 1928.
(Demande de brevet déposée en Angleterre le 29 mars 1927. — Déclaration des déposants.)

La présente invention consiste en certains perfectionnements apportés aux systèmes de graissage des moteurs à combustion interne, ou autres machines ou dispositifs animés d'un mouvement de rotation; elle a plus particulièrement pour objet un dispositif simple au moyen duquel l'orifice d'un conduit tournant est maintenu en communication avec l'orifice d'un conduit fixe et de manière qu'il n'y ait pas de fuite d'huile.

D'après l'invention, on a ajusté une bague entre un arbre rotatif et un moyeu ou autre partie concentrique. La bague présente à sa périphérie extérieure une gorge qui communique avec le conduit d'huile dans le moyeu ou partie fixe, et elle présente encore une gorge ou rainure annulaire à sa périphérie intérieure, communiquant avec l'orifice du conduit dans l'arbre tournant; les deux gorges sont en communication l'une avec l'autre. La bague constitue un obturateur pour fermer toute ouverture latérale dans toute pièce placée entre le moyeu fixe et l'arbre. Le conduit tournant est de cette manière toujours en communication avec le conduit fixe et la bague sert d'obturateur pour empêcher que l'huile ne puisse fuir latéralement.

Le dessin annexé montre l'invention appliquée à un système de graissage pour moteur de motocycle; le moteur est représenté en coupe verticale par le milieu.

1 est un moyeu ou renflement ménagé sur le carter de manivelle 2 et pourvu d'un conduit 3 qui passe à travers la paroi cylindrique; l'arbre manivelle 4 est pourvu d'un trou radial 5 qui communique avec un canal à huile axial 6 conduisant au coussinet 7. 8 est une bague qui est ajustée entre l'arbre 4 et le moyeu 1, une gorge annulaire 9 de la périphérie extérieure de la bague communique avec le conduit 3, tandis qu'une gorge ou rainure annulaire 10 de la périphérie intérieure communique avec le trou radial 5 de l'arbre. Les deux gorges 9 et 10 communiquent l'une avec l'autre par l'intermédiaire de plusieurs trous radiaux 11. La bague 8 est placée entre les deux roulements à billes 12, 12 dont les bagues de roulements extérieures s'appuient contre les faces latérales de la bague 8 en la maintenant en place fixe. La paroi intérieure du moyeu 1 présente une rainure 13 qui communique avec la gorge 9 de la bague 8, dans le but de permettre à l'huile de passer librement du conduit fixe 3 à ladite gorge 9. Le conduit d'huile 5 est

Prix du fascicule : 5 francs.

ainsi constamment en communication avec le conduit fixe 3, de manière que l'huile puisse couler à travers le trou radial de l'arbre au passage rapide autour de la gorge intérieure de la bague 8. Celle-ci obture en même temps effectivement l'ouverture entre les bagues ou cuvettes des roulements à billes de chaque côté d'elle.

RÉSUMÉ.

L'invention comprend :

1° Des moyens pour faire passer de l'huile de graissage d'un conduit pratiqué dans une partie fixe d'un moteur à combustion interne ou autre machine, à un conduit pratiqué dans une partie mobile, les deux parties de moteur ou de machine se trouvant séparées l'une de l'autre, les moyens en question comprennent une bague présentant des gorges dans ses périphéries extérieure et intérieure, ces gorges sont en communication l'une avec l'autre à travers le corps de bague, et elles communiquent respectivement avec les conduits fixe et mobile.

2° Les détails constructifs particuliers suivants :

a. La bague est fixée à la partie fixe de moteur ou autre machine, et l'orifice du conduit tournant passe sur la gorge de la périphérie intérieure de la bague.

b. La bague à gorges placée entre deux roulements à billes, de manière que les faces latérales des bagues de roulement extérieures s'appuient contre les faces latérales de la bague à gorges.

c. Le conduit fixe passe à travers un moyeu ou renflement du carter de la manivelle d'un moteur à combustion interne; les paliers de l'arbre manivelle sont ménagés à l'intérieur de ce moyeu ou renflement.

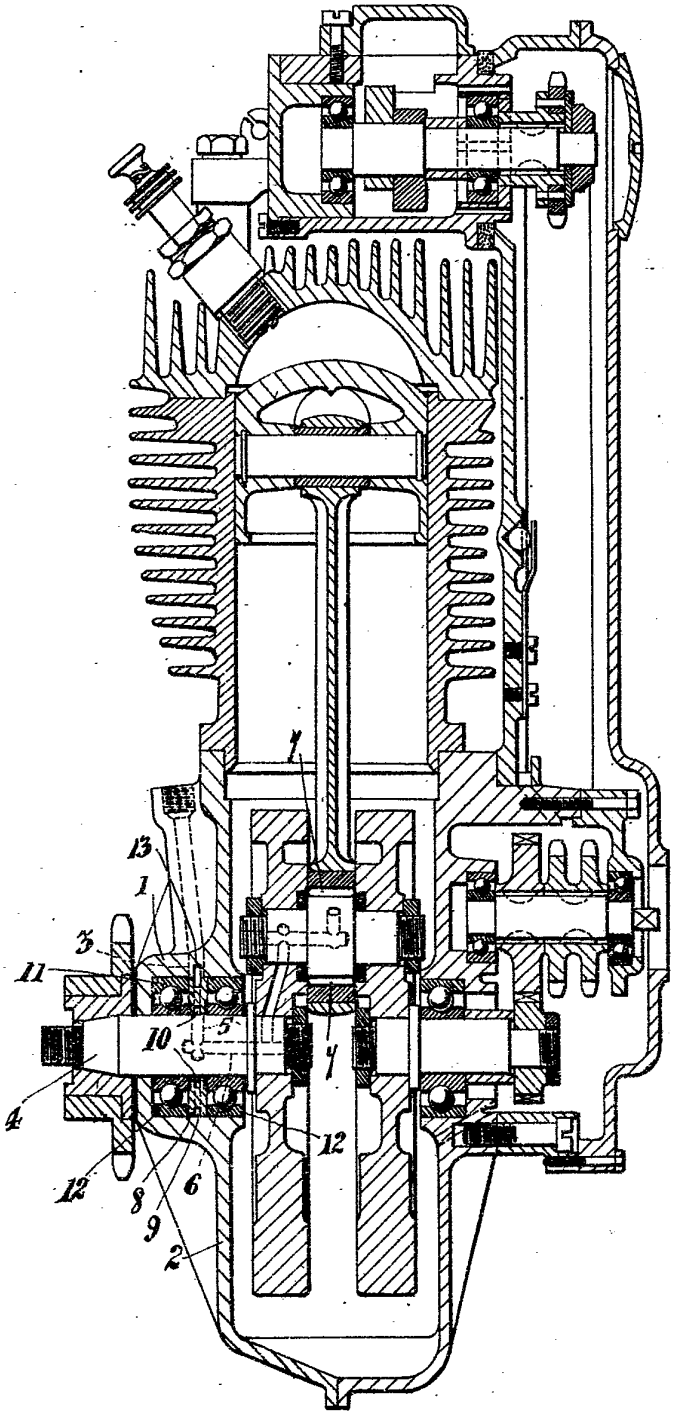
Raison sociale :
A. J. STEVENS & C° (1914) LIMITED
ET MM. HARRY STEVENS ET ALBERT JOHN STEVENS.
Par procuration :
H. BOETTCHER fils.

Pour la vente des fascicules, s'adresser à l'IMPRIMERIE NATIONALE, 27, rue de la Convention. Paris (15e).

N° 643.248 Raison Sociale : Pl. unique

A. J. Stevens & C° (1914) Limited

et MM. Harry Stevens et Albert John Stevens



RÉPUBLIQUE FRANÇAISE.

MINISTÈRE DU COMMERCE ET DE L'INDUSTRIE.

DIRECTION DE LA PROPRIÉTÉ INDUSTRIELLE.

BREVET D'INVENTION.

Gr. 5. — Cl. 8. N° 643.249

Perfectionnements apportés aux arbres de distribution à commande par chaîne, placés au sommet des moteurs à combustion interne.

Raison sociale : A. J. STEVENS & C° (1914) Ltd et MM. Harry STEVENS et Albert John STEVENS résidant en Angleterre.

Demandé le 29 octobre 1927, à 16h 5m, à Paris.
Délivré le 15 mai 1928. — Publié le 12 septembre 1928.
(Demande de brevet déposée en Angleterre le 29 mars 1927. — Déclaration des déposants.)

La présente invention est relative aux arbres de distribution à commande par chaîne, montés dans le haut des cylindres de moteurs à combustion interne, et elle a plus particulièrement pour objet des perfectionnements apportés au graissage automatique du mécanisme moteur.

D'après la présente invention, les moyens de graissage automatique de moteurs à combustion interne pourvus d'arbres de distribution placés en haut des cylindres, comprennent une boîte de brimbale dans laquelle l'huile est introduite, et un carter de chaîne fixé au carter de la manivelle et attaché encore à la boîte de brimbale; le carter de chaîne et la boîte de brimbale sont construits de manière que l'huile coule de cette boîte à travers ledit carter de chaîne, et de là dans le carter de manivelle. Le carter de chaîne est à son extrémité inférieure fixé au carter de manivelle, et il est à son extrémité supérieure pourvu d'une ouverture destinée à recevoir une partie saillante ou tenon ménagé sur la boîte de brimbale; le joint à cet endroit est établi de façon à rendre impossible la fuite d'huile, sans que pour cela l'assemblage entre le carter et la boîte en question soit rigide. Le bord de l'ouverture du carter de chaîne est biseauté de manière que l'huile venant de la boîte de brimbale puisse y tomber et se trouver dirigée de manière à couler en bas, au milieu de la paroi du carter de chaîne. On a ménagé convenablement sur ladite paroi, des moyens pour diriger l'huile sur l'intérieur du pignon de commande de la chaîne de l'arbre de distribution. Le carter de manivelle présente des saillies, et le carter de chaîne est pourvu d'une ouverture qui s'ajuste sur ces saillies. Le contre-arbre du pignon de chaîne est monté à une extrémité dans une pièce de support fixée auxdites saillies, et son autre extrémité est montée dans un palier que porte le carter de la manivelle. Le fond du carter de chaîne forme réservoir collecteur ou bassin à huile pour le graissage du mécanisme commandé par la chaîne, et l'on a ménagé un canal pour que le trop-plein d'huile puisse s'écouler dans le carter de manivelle. Le carter de la chaîne est convenablement établi en forme d'équerre ou L, de façon à couvrir aussi bien la chaîne qui commande l'arbre de distribution que celle qui commande la magnéto; ce carter est préférablement formé de deux pièces de fonte en L, l'une formant le devant, l'autre le derrière.

Dans les dessins annexés :

Prix du fascicule : 5 francs.

Figure 1 est une vue de côté d'un moteur à combustion interne construit selon le principe de l'invention;

Figure 2 est une coupe suivant la ligne *x-x* de la figure 1;

Figure 3 est une vue de côté du carter de la manivelle;

Figure 4 est un plan d'une moitié du carter de la manivelle;

Figure 5 est une vue de face de l'intérieur du carter de la chaîne;

Figure 6 est une vue de face extérieure du carter de la chaîne.

1 est une boîte de brimbale pourvue de trous de trop-plein 2 et 2^a à l'une de ses extrémités, laquelle est faite en forme de raccord tubulaire 3 en vue de passer à travers un trou 4 ménagé dans le haut du carter de chaîne 5; les trous de trop-plein 2 sont placés dans des positions diamétralement opposées, de côté et d'autre du raccord 3, tandis que le trou 2^a est placé à une certaine distance au-dessous dudit raccord. Au-dessus de celui-ci on a ménagé un trou de ventilation 2^b. Une rondelle 7 de feutre ou autre matière équivalente est placée entre la boîte 1 et le carter de chaîne 5. Le bord du trou 4 est biseauté en 8 pour que l'huile qui tombe sur le biseau soit dirigée centralement en bas le long de la paroi du carter de chaîne.

Un rebord formant poche collectrice d'huile 9 est ménagé sur la paroi intérieure dudit carter, au-dessus du pignon de chaîne inférieur 10, et dans les saillies 19 de la poche 9 on a pratiqué un ou plusieurs trous 11, en vue de diriger l'huile sur la partie du pignon 10 en dedans de la chaîne. L'huile coule finalement au fond du carter de chaîne et sert aussi pour graisser les roues dentées 13 et 14 placées respectivement sur l'arbre manivelle 15 et sur le contre-arbre 16, lequel porte d'ailleurs le pignon 10 pour la commande de l'arbre de distribution dans le haut du moteur, et porte encore le pignon à chaîne 17 pour la commande de la magnéto. L'huile qui arrive par le carter de chaîne sert aussi pour le graissage de la commande par chaîne de la magnéto. 27 est un trou qui met le carter de chaîne en communication avec le carter de manivelle, pour permettre à l'huile de passer à l'intérieur de ce dernier et de circuler ainsi continuellement.

Le contre-arbre 16 est à une extrémité supporté dans un coussinet 28 fixé sur le côté du carter de la manivelle, et il est à son autre extrémité supporté dans un coussinet suspendu à un bras 18 lequel est fixé à des saillies 19 jointes par la fonte au côté du carter de manivelle. Ces saillies sont convenablement au nombre de trois, et elles sont disposées de manière à laisser le passage libre à la chaîne 20 qui commande l'arbre de distribution, et encore à la chaîne qui commande la magnéto; ces deux chaînes sont montées sous un angle de 90° l'une par rapport à l'autre. Le contre-arbre 16, est accouplé avec l'arbre manivelle 15 par l'intermédiaire des roues dentées 13 et 14, lesquelles opèrent une démultiplication dont le rapport est de 2 sur 1, de façon que les chaînes se meuvent à une vitesse de moitié moins grande que celle avec laquelle elles marcheraient si leurs pignons étaient montés directement sur l'arbre manivelle. Le carter de chaîne est en deux parties dont l'une 5 s'ajuste sur les saillies 19 qui — ainsi qu'il a été décrit ci-dessus — portent le bras 18. Dans ce but, les faces extérieures des saillies sont placées dans une surface de révolution, et une ouverture 22 du carter de chaîne est pourvue de surfaces circulaires correspondantes 23 qui s'y ajustent. Le carter de manivelle présente une surface à brides 24 contre laquelle s'appuie la partie inférieure de la partie 5 du carter de chaîne, et à laquelle elle est fixée par des boulons à vis 25. Le carter de chaîne est convenablement établi en forme d'équerre ou L, formant ainsi une couverture pour les deux chaînes, savoir celle qui commande l'arbre de distribution et celle qui commande la magnéto. L'enveloppe extérieure 26 du carter de chaîne a une forme correspondante et elle est amovible.

La pompe à huile sur le côté extérieur de cette enveloppe est connectée avec le contre-arbre, de manière que l'enveloppe extérieure 26 en question peut s'enlever après avoir été séparée du carter de chaîne intérieur 5.

RÉSUMÉ.

L'invention comprend :

1° Des moyens pour le graissage automatique de moteurs à combustion interne ayant

en haut des arbres de distribution à commande par chaîne; ces moyens comprennent une boîte de brimbale dans laquelle l'huile est introduite, et un carter de chaîne fixé au carter de manivelle et s'ajustant à la boîte de brimbale; lesdits carter de chaîne et boîte de brimbale sont construits de manière que l'huile venant de cette boîte coule en bas à travers le carter de chaîne d'où elle arrive dans le carter de manivelle.

2° Les détails constructifs particuliers suivants :

a. Le carter de chaîne est à son extrémité inférieure boulonné au carter de manivelle; il présente à son extrémité supérieure une ouverture qui reçoit une partie saillante ou raccord ménagé sur la boîte de brimbale; le joint à cet endroit est rendu étanche à huile, sans que pour cela l'assemblage du carter avec la boîte soit rigide;

b. Le bord de l'ouverture de l'extrémité supérieure du carter de chaîne est biseauté de manière à constituer un guide qui dirige l'huile centralement en bas le long de la paroi dudit carter;

c. Des dispositifs spéciaux dirigent l'huile sur le pignon de chaîne en dedans de la chaîne;

d. Le carter de manivelle est pourvu de saillies sur lesquelles s'ajuste une ouverture du carter de chaîne; une pièce de support est tenue par ces saillies et porte un palier pour l'une des extrémités de l'arbre du pignon de chaîne; l'autre extrémité de cet arbre est montée à tourillon dans un palier ménagé sur le côté du carter de manivelle;

e. Le fond du carter de chaîne constitue un bassin à huile pour le graissage des pignons moteurs de la chaîne; un trou partant de ce bassin permet à l'huile de couler dans le carter de la manivelle;

f. Le carter de chaîne est en forme d'équerre ou L, couvrant ainsi en même temps la chaîne de commande de l'arbre de distribution en haut du moteur, et la chaîne qui commande la magnéto;

g. Le carter de chaîne en L est en deux parties, chacune constituée par une pièce de fonte de forme correspondante; l'une de ces pièces forme le devant, l'autre pièce forme le derrière du carter en question.

Raison sociale : A. J. STEVENS & C° (1914) Ltd et MM. Harry STEVENS et Albert John STEVENS.

Par procuration :

H. Boettcher fils.

Pour la vente des fascicules, s'adresser à l'Imprimerie Nationale, 27, rue de la Convention. Paris (15e).

N° 643.249

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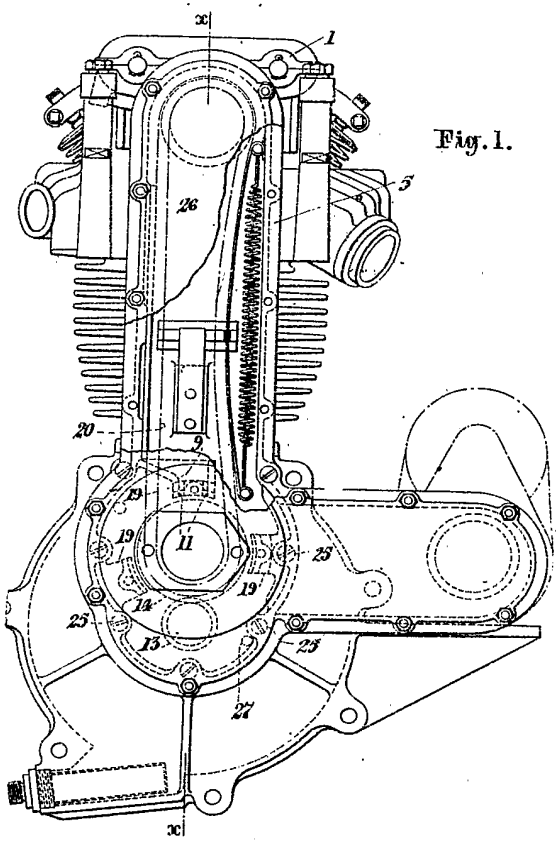

Fig. 1.

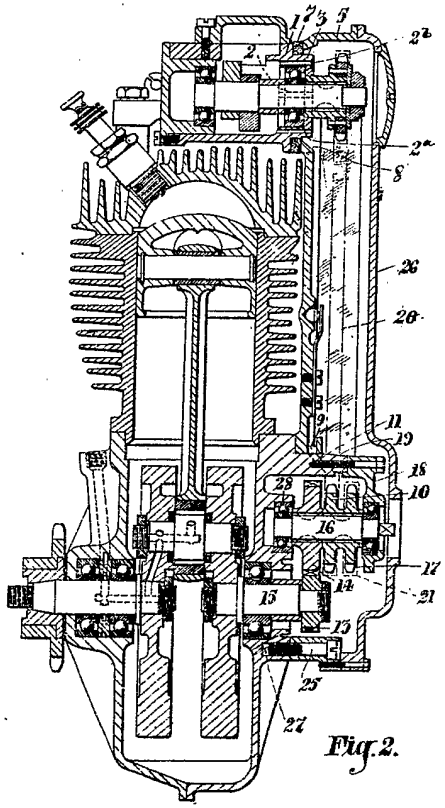

Fig. 2.

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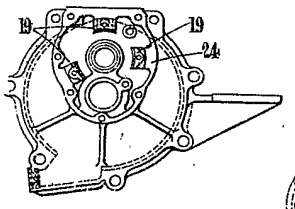

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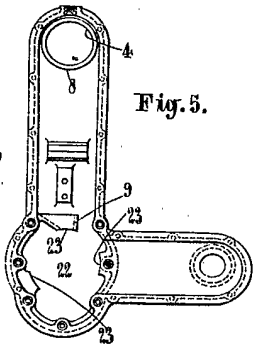

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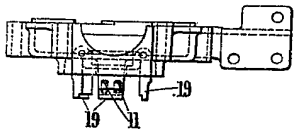

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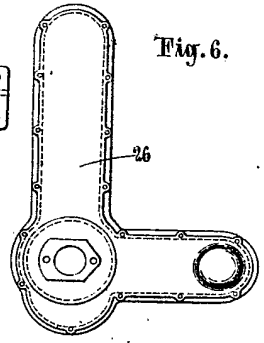

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Raison S

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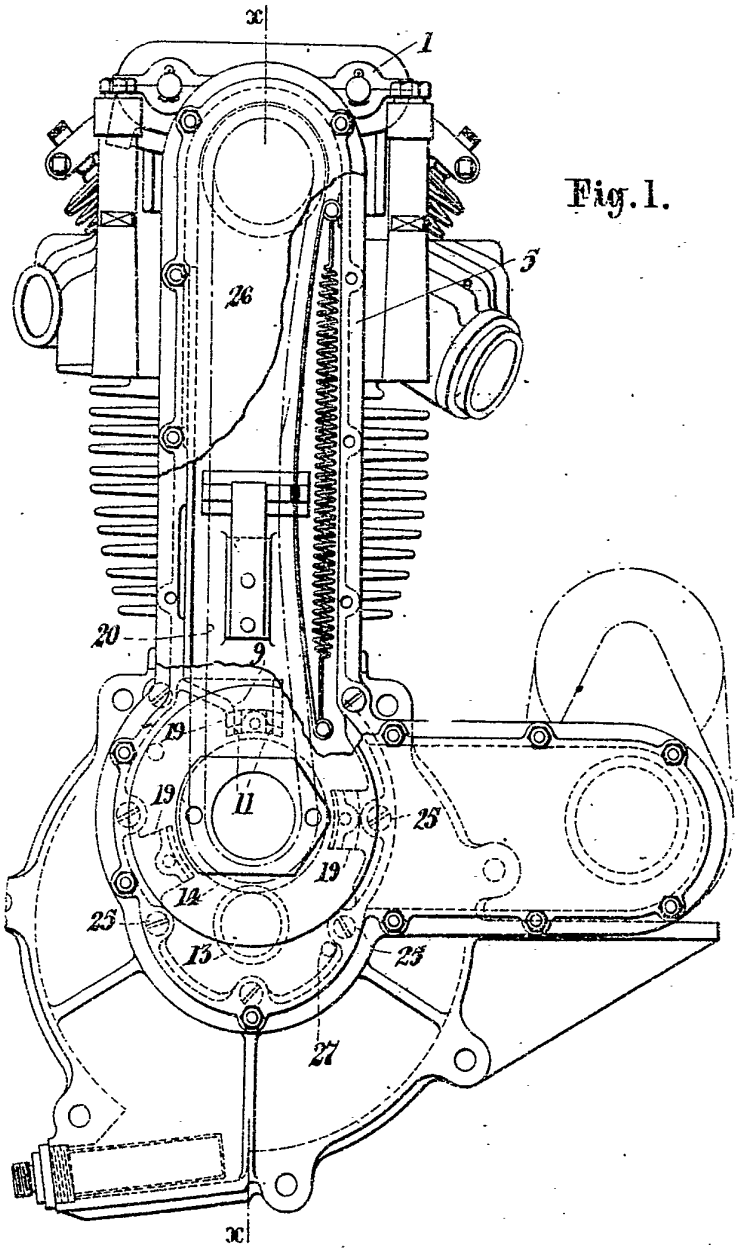
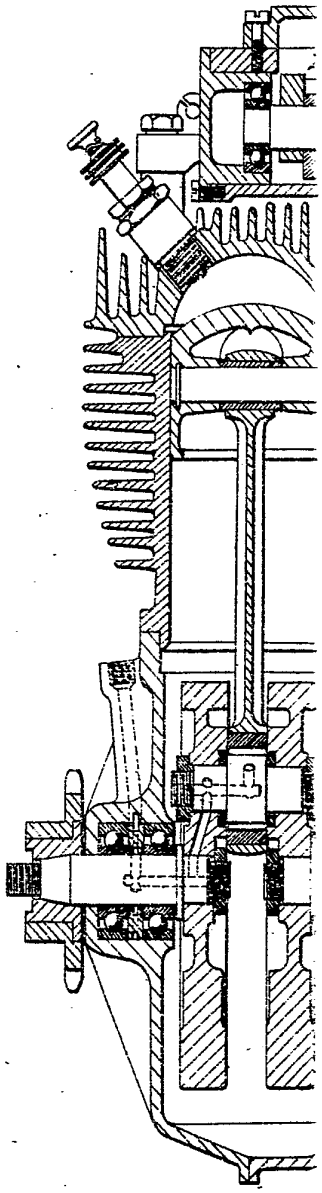


Fig. 1.



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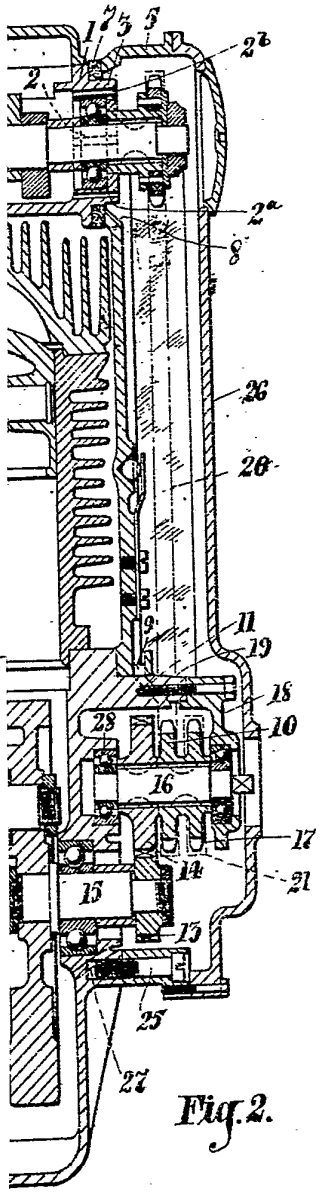
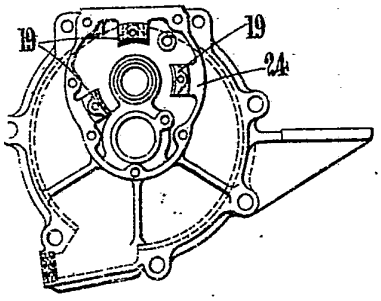


Fig. 2.

Fig. 3.



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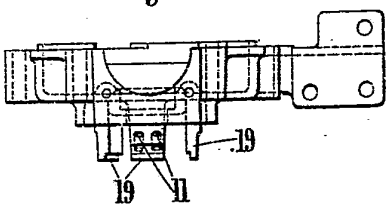

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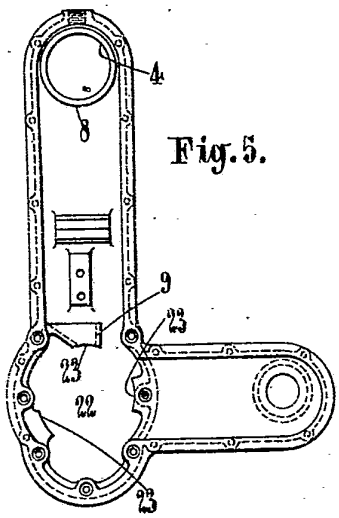

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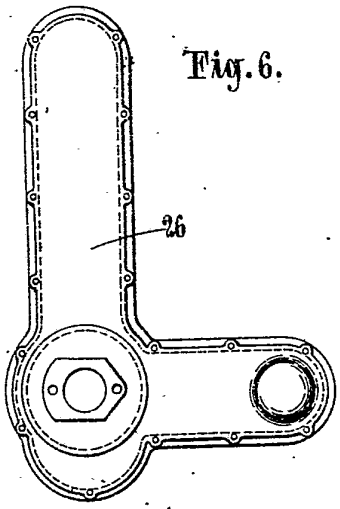

RÉPUBLIQUE FRANÇAISE.

MINISTÈRE DU COMMERCE ET DE L'INDUSTRIE.

DIRECTION DE LA PROPRIÉTÉ INDUSTRIELLE.

BREVET D'INVENTION.

Gr. 10. — Cl. 5. **N° 677.737**

Perfectionnements dans les amortisseurs pour guidons de motocyclettes ou véhicules similaires.

Société dite : A. J. STEVENS & COMPANY (1914) LIMITED et M. JOSEPH STEVENS résidant en Angleterre.

Demandé le 2 juillet 1929, à 14h 40m, à Paris.
Délivré le 18 décembre 1929. — Publié le 13 mars 1930.
(Demande de brevet déposée en Angleterre le 29 août 1928. — Déclaration des déposants.)

La présente invention se rapporte à des perfectionnements dans les amortisseurs pour guidons de motocyclettes ou véhicules similaires, dans lesquels un arbre tubulaire tourne sur un manchon ou une colonne concentrique.

Le dispositif comprend une ou plusieurs pièces ou bandes de friction internes, réglables de l'extérieur et servant à retarder le mouvement tournant relatif. La ou les bandes de friction sont susceptibles d'un mouvement radial ou d'expansion pour produire une pression réglable contre la surface interne du manchon concentrique extérieur. Le mouvement radial est produit, de préférence, au moyen d'un dispositif en forme de coin contrôlé par une pièce qui passe au centre du manchon intérieur.

Le dessin ci-annexé représente :

Fig. 1, une vue en coupe longitudinale de la barre de direction d'une motocyclette.

Fig. 2, une section transversale suivant la ligne *x-x* de la fig. 1.

Le dispositif de l'invention est applicable particulièrement à des motocyclettes pour amortir les mouvements de la barre de direction. Pour cette application, l'appareil comporte deux bandes demi-circulaires placées entre la tige de fourche 2 et le manchon à billes 3 qui entoure cette tige. Chaque bande comprend une plaque métallique de base, 4, recouverte d'un métal antifriction 5, tel que la garniture « Ferodo » ; à l'arrière de la bande est rivée une cheville 6. Les chevilles 6 entrent dans des trous 7 diamétralement opposés de la tige 2, et servent à tenir les bandes en place et aussi à les tendre. Un plongeur 8 glisse dans la tige 2 tubulaire ; il présente les faces opposées chanfreinées 9. Dans ce plongeur est vissé l'extrémité d'une tige 10 s'étendant jusqu'au sommet de la tige 2 et terminée par un écrou moleté 11. Autour de la tige 10 est enroulé un ressort 12 portant, d'une part, contre le dessus du plongeur 8, et d'autre part, contre une rondelle 13 placée sur le sommet de la tige 2 et sur laquelle s'appuie l'écrou moleté 11.

Les chevilles 6 portées par les bandes de friction pénètrent dans les échancrures 9 et, quand l'écrou moleté est tourné dans un sens, le plongeur monte et fait sortir les chevilles qui compriment les bandes contre le manchon à billes 3. Quand on fait ensuite tourner l'écrou moleté dans le sens inverse, la pression cesse sur les chevilles et le ressort fait descendre le plongeur.

Prix du fascicule : 5 francs.

Le dispositif amortisseur décrit ci-dessus fait bon effet sur une motocyclette et réduit beaucoup le nombre des pièces accessoires nécessaires ; il permet aussi d'obtenir facilement un réglage précis des effets d'amortissement.

RÉSUMÉ.

Un dispositif amortisseur ou de freinage pour les têtes de direction de motocyclettes, caractérisé par :

1° Un élément ou des éléments de friction entre un arbre tubulaire intérieur et un manchon concentrique ; des moyens agissant de l'intérieur de l'arbre tubulaire sur les éléments de friction comme il est décrit.

2° Les éléments de friction actionnés par une tête tournante située à l'extrémité supérieure de l'arbre tubulaire interne.

3° Les éléments de friction mobiles radialement au moyen de saillies fixés sur eux, et pénétrant dans des trous traversant l'arbre tubulaire intérieur.

4° Lesdites saillies mues radialement sous la poussée d'une pièce de coin glissant.

5° Des chevilles tenant aux éléments de friction et pénétrant dans des échancrures longitudinales en forme de coin pratiquées dans une pièce glissant dans l'arbre tubulaire intérieur et actionnée par une tige vissée.

6° Un ressort enroulé autour de la tige vissée, et s'étendant depuis la tête de cette tige jusqu'à la pièce glissante vissée au bas de cette même tige.

Société dite :
A. J. STEVENS ET COMPANY (1914) LIMITED
ET M. JOSEPH STEVENS.

Par procuration :
H. BOETTCHER fils.

N° 677.737 Société dite : Pl. unique

A. J. Stevens & Company (1914) Limited

et M. Stevens

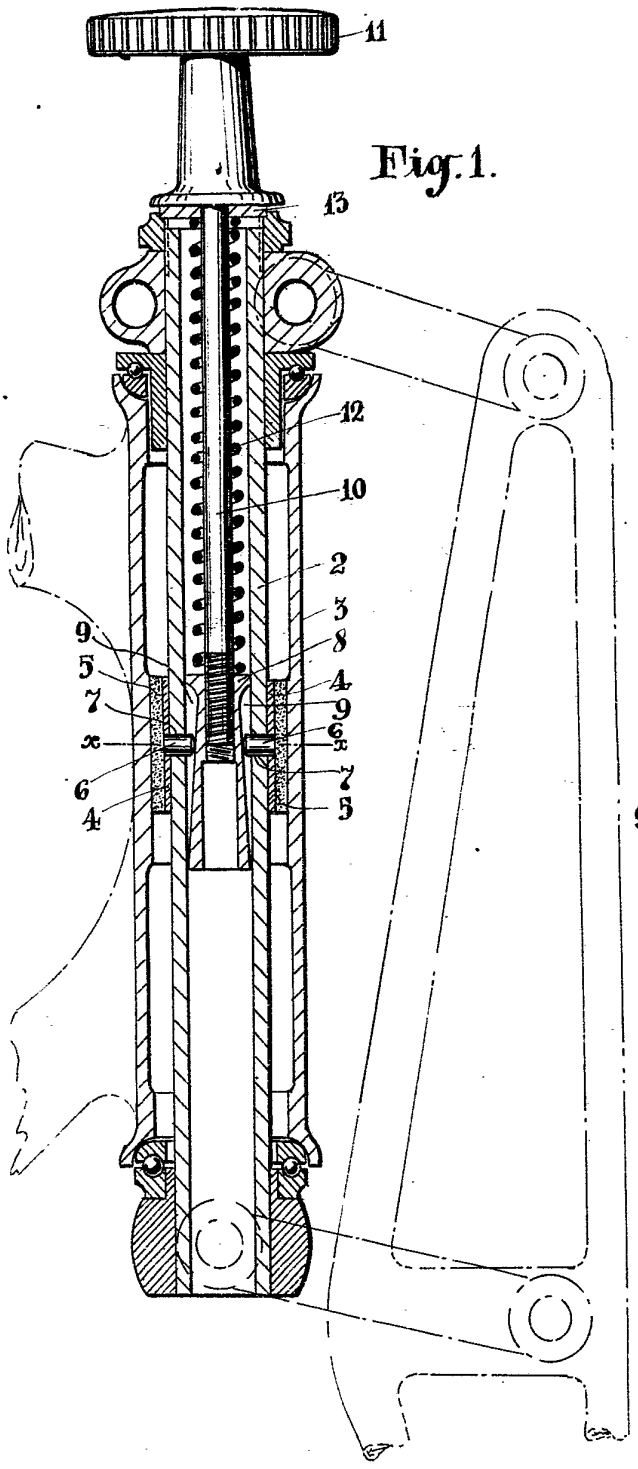

Fig. 1.

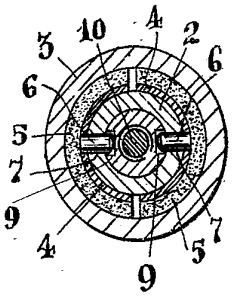

Fig. 2.

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MINISTÈRE DU COMMERCE ET DE L'INDUSTRIE.

DIRECTION DE LA PROPRIÉTÉ INDUSTRIELLE.

BREVET D'INVENTION.

Gr. 5. — Cl. 8. **N° 691.095**

Piston pour machines à combustion interne.

Société : A.-J. STEVENS & COMPANY (1914) LIMITED et M. ALBERT JOHN STEVENS résidant en Angleterre.

Demandé le 5 mars 1930, à 11h 17m, à Paris.

Délivré le 1er juillet 1930. — Publié le 1er octobre 1930.

(Demande de brevet déposée en Angleterre le 6 avril 1929. — Déclaration des déposants.)

Cette invention est relative aux pistons pour machines à combustion interne, et elle a pour objet une construction perfectionnée par laquelle les bossages, dans lesquels est montée la broche-tourillon, sont incorporés sur le piston de telle manière que le risque de craquelure ou de rupture est réduit à un minimum.

Conformément aux présents perfectionnements les extrémités intérieures des bossages, recevant la broche-tourillon, font saillie sur des parois plates passant en travers du piston perpendiculairement à l'axe des bossages, les faces intérieures des parois étant placées directement de chaque côté de la bielle, les extrémités extérieures des bossages étant rentrées en dedans de la circonférence extérieure du piston. La partie supérieure et la partie inférieure du piston sont circulaires, et lesdites parois plates sont reliées à ces parties circulaires par des nervures passant en dehors perpendiculairement à l'axe du piston. Des nervures de renforcement sont aussi agencées comme il est expliqué ci-après.

Afin que l'invention puisse être clairement comprise et facilement mise en pratique, on peut se référer aux dessins annexés, dans lesquels :

La figure 1 est une élévation latérale d'un piston.

La figure 2 est une coupe suivant la ligne A-A de la figure 1.

La figure 3 est une coupe suivant la ligne B-B de la figure 1.

La figure 4 est une vue de l'extrémité intérieure du piston, et

La figure 5 est une vue perspective.

D'après une forme de l'invention, les bossages 1, recevant la broche-tourillon, sont rentrés et chacun fait saillie, à son extrémité intérieure sur une paroi plate 2 passant en travers du piston perpendiculairement à l'axe des bossages. La forme en section droite transversale de la partie du piston recevant les segments de piston, au-dessus des bossages, est circulaire, tandis que la forme en section transversale du piston exécutée à travers lesdites parois plates est un peu rectangulaire, ses deux parois extrêmes, en cette partie 4, étant formées par une partie cylindrique qui se continue vers le bas à partir de la tête du piston. La partie cylindrique comprise entre les parois plates est continuée vers le bas entre les parois plates et ces parties cylindriques sont reliées par une petite bande 7 pour former une partie inférieure cylin-

Prix du fascicule : 5 francs.

drique complète au piston.

Les bords inférieurs des parois plates sont reliés à cette partie cylindrique par une nervure horizontale 8 dirigée vers l'extérieur. Vu de l'extrémité intérieure, le piston est circulaire et ladite nervure horizontale inférieure 8 est raccordée à lui et y forme une ouverture un peu rectangulaire 9, dont les côtés longitudinaux sont formés par les parois plates 2 susmentionnées. Il est à remarquer spécialement qu'il n'y a ni nervures, ni bossages faisant saillie sur les faces intérieures des parois plates rectangulaires 2. Les extrémités de ladite ouverture rectangulaire sont formées par les bords de la nervure ou saillie 8ª, de sorte que les parties de la paroi cylindrique de l'enveloppe reliant les parois plates sont renforcées par cette nervure. Vu de l'extérieur, le piston *a*, sur ses côtés diamétralement opposés, des cavités 10 dont les fonds sont formés par les parois plates 2 susmentionnées. Chaque bossage pour la broche-tourillon fait saillie en dehors sur le fond de la cavité et la partie supérieure du bossage est placée immédiatement sous la nervure 5 dirigée vers l'extérieur susmentionnée, partant de la partie supérieure de la paroi plate. La partie supérieure du bossage se raccorde avec cette nervure, de sorte qu'elle est d'une seule pièce avec elle.

La partie cylindrique 7 de l'enveloppe de piston s'étend jusqu'à une courte distance au delà des parois plates, de sorte que cette partie cylindrique forme les bords latéraux extérieurs de la cavité. Le bord extérieur du bossage est rentrée par rapport à la paroi cylindrique du piston, et le bossage est renforcé par des nervures 11ª qui partent de chaque côté du bossage, et aussi par des nervures 11 allant du côté inférieur du bossage à la nervure 8 dirigée vers l'extérieur.

En construisant ainsi le piston, la broche-tourillon est supportée immédiatement de chaque côté de l'extrémité de la bielle par lesdites parois plates, les bossages dans lesquels la broche-tourillon est montée faisant seuls saillie en dehors de la face extérieure de ces parois. Un support à paroi solide pour la broche-tourillon est obtenu et l'on évite le risque de craquelure qui a été éprouvé jusqu'à ce jour.

RÉSUMÉ :

1° Un piston pour machines à combustion interne, dans lequel les extrémités intérieures des bossages recevant la broche-tourillon font saillie vers l'extérieur sur les parois passant en travers du piston perpendiculairement à l'axe des bossages, et dans lequel les parties supérieures des parois plates sont reliées à la paroi circulaire du piston par des nervures dirigées vers l'extérieur, lesquelles nervures sont reliées par d'autres nervures à la tête ou partie supérieure du piston.

2° Variantes d'exécution de ce piston caractérisées individuellement par les particularités suivantes :

a. Les extrémités extérieures des bossages sont dérivées des extrémités extérieures des nervures dirigées vers l'extérieur partant des parties supérieures des parois plates;

b. Le piston possède des nervures qui vont des parties inférieures de la paroi plate à la partie circulaire placée à la partie inférieure du piston, ce dispositif étant caractérisé par le fait que les nervures sont placées à une certaine distance du côté inférieur des bossages et sont reliées au côté inférieur des bossages par d'autres nervures;

c. Les côtés des bossages sont reliés par des nervures aux parois plates;

d. Les nervures qui partent des parties inférieures des parois plates sont reliées par des saillies pour former un support pour la partie inférieure du piston.

Société : A. J. STEVENS & COMPANY (1914) LIMITED & ALBERT JOHN STEVENS.

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N° 691.095 Société : Pl. unique

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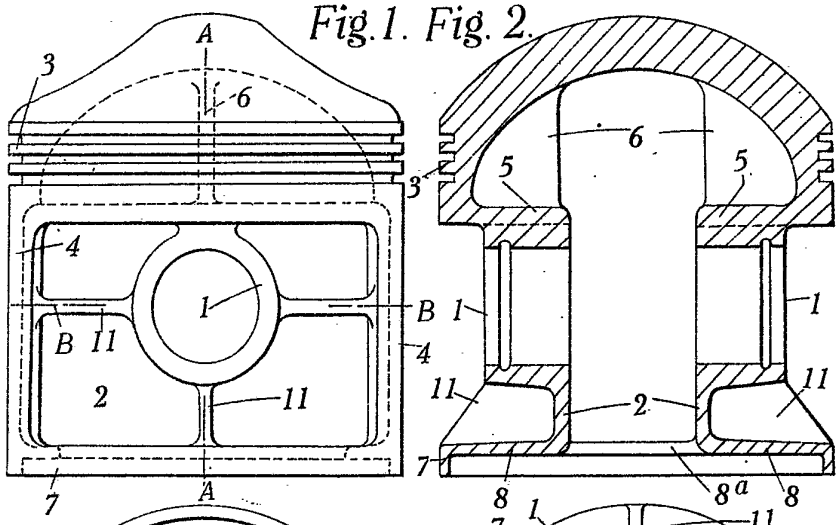
& M. Stevens

Fig. 1. Fig. 2.



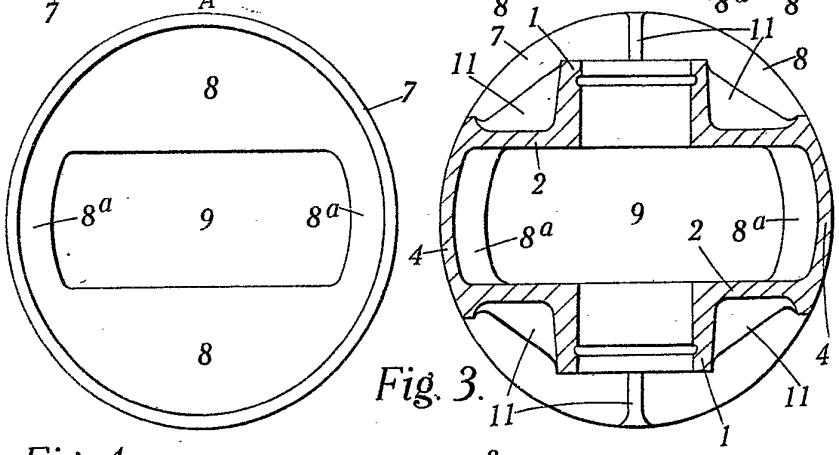


Fig. 3.

Fig. 4.

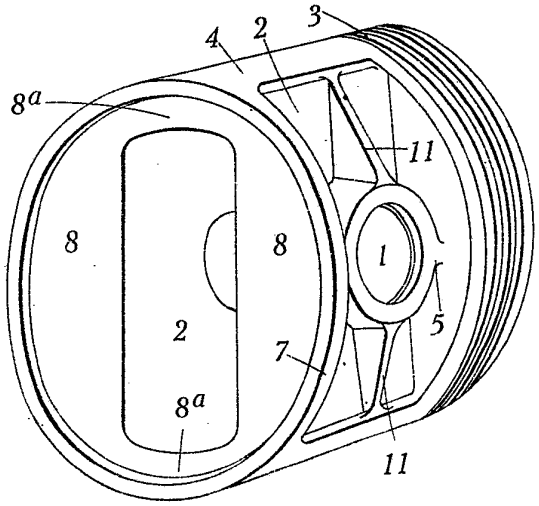


Fig. 5.

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DIRECTION DE LA PROPRIÉTÉ INDUSTRIELLE.

BREVET D'INVENTION.

Gr. 10. — Cl. 5. **N° 701.247**

Perfectionnements dans les coussinets à rouleaux coniques.

Société : A. J. STEVENS & C° (1914) LIMITED et M. HARRY STEVENS résidant en Angleterre.

Demandé le 27 août 1930, à 15h 42m, à Paris.

Délivré le 7 janvier 1931. — Publié le 13 mars 1931.

(Demande de brevet déposée en Angleterre le 29 août 1929. — Déclaration du déposant.)

La présente invention a pour objets certains perfectionnements dans les coussinets à rouleaux coniques qui s'appliquent tout particulièrement aux roues démontables des motocyclettes ou autres, ayant des axes creux.

Suivant ces perfectionnements, la cuvette interne ne fait qu'une seule pièce avec l'axe du moyeu, et des moyens perfectionnés de réglage sont prévus pour la cuvette extérieure. Il existe encore d'autres moyens perfectionnés en vue d'obtenir un joint d'huile.

Pour permettre de comprendre plus clairement l'objet de cette invention et de le mettre plus facilement en exécution, il sera décrit en se reportant au dessin ci-joint qui représente une coupe longitudinale du moyeu d'une roue démontable pour motocycle, pourvu de coussinets à rouleaux suivant la présente invention.

Suivant un mode d'exécution approprié de l'invention appliquée à une roue démontable pour motocycle, l'axe 1 du moyeu, qui est creux pour recevoir le boulon de fixation, possède des surfaces 2 en forme d'évidements coniques qui constituent les cuvettes internes de roulement des coussinets à rouleaux coniques de chaque côté de l'axe. Des rainures circulaires 3 et 4 sont formées sur les côtés des évidements coniques, et un collet 5 d'un diamètre plus grand est prévu sur le côté interne de chaque cuvette. Le moyeu comprend un manchon tubulaire 6 sur lequel sont fixés les bords du moyeu 7, 7*a*, tandis que la cuvette extérieure 8 de chaque coussinet conique est insérée à chaque extrémité du manchon. La cuvette extérieure, du côté du pignon, est en contact avec un organe de fermeture qui est maintenu en position par un segment brisé 9 qui est engagé dans une rainure circulaire de l'alésage du manchon. Cet organe de fermeture comprend une bague 10 de section rectangulaire, sur chaque côté de laquelle est disposé un disque perforé 11 qui est traversé par l'extrémité de l'axe creux 1. Des étoupes, ou autre matériel analogue de garniture, sont renfermées dans l'espace compris entre les deux disques 11 pour former une fermeture de graissage. Sur l'autre côté du manchon, la cuvette extérieure est réglable au moyen d'une bague 13 filetée extérieurement qui s'engage dans un taraudage prévu à l'intérieur du manchon de moyeu 6, la bague filetée de réglage étant pourvue de crans prévus à sa surface intérieure ou autrement, avec des moyens pour faciliter le réglage par vissage. Un organe de fermeture est également prévu de ce côté du moyeu, et il comprend un disque perforé 14 et une rondelle en forme de chapeau 15 ayant un bord extérieur 16 qui vient buter contre le

disque perforé 14. Ce rebord 16 et la partie extérieure du disque perforé 14 sont serrés entre la bague de réglage 13 et la cuvette extérieure 8, de telle sorte que la bague 13 maintient également en position l'organe de fermeture. Un matériel de garniture est inséré dans l'espace circulaire formé entre le disque perforé et la rondelle à chapeau. Ladite bague de réglage 13 est bloquée dans sa position par un écrou de blocage 17 qui se visse au-dessus et s'appuie contre le manchon du moyeu. Le moyeu est fixé dans sa position au moyen d'un organe ou boulon de fixation comprenant deux parties dont l'une 18 est fixée au cadre du cycle ou autre organe analogue, tandis que l'autre est constituée par un boulon qui traverse l'axe creux 1 et est vissé dans la partie taraudée 18*a*. Le pignon de la chaîne ou le tambour de frein est fixé au rebord 7, mais quand le moyeu est démonté, le pignon ou le tambour est supporté par la partie 18.

RÉSUMÉ :

1° Moyeu pour roues démontables de motocycles et similaires, dans lequel les cuvettes internes pour les coussinets à rouleaux coniques sont formées d'une seule pièce avec l'axe du moyeu, et la cuvette externe est réglable.

2° Ce moyeu présente encore les particularités suivantes :

a. Les cuvettes internes sont constituées sur chaque côte de l'axe du moyeu par des surfaces coniques qui s'élargissent vers l'extérieur, des rainures étant prévues sur chaque côté des surfaces coniques, ainsi qu'un collet élargi sur le côté interne de chaque cuvette.

b. Le moyeu comprend un manchon, un axe creux dans lequel sont formées d'une seule pièce avec lui les cuvettes internes pour des coussinets à rouleaux coniques, une cuvette externe montée dans le manchon contre une butée fixe à l'une des extrémités, et une cuvette externe montée dans l'autre extrémité du manchon, un organe fileté de réglage étant monté dans ledit manchon pour le réglage de cette dernière cuvette externe.

c. L'axe du moyeu est monté sur un boulon ou organe de fixation en deux parties dont l'une reste fixée au cadre de la machine pour maintenir le pignon de la chaîne ou le tambour de frein quand ils sont détachés du moyeu.

d. Une fermeture de graissage est placée entre une cuvette extérieure du coussinet et un segment brisé ou autre organe de fixation.

e. Une fermeture de graissage est disposée entre une cuvette interne et un organe de réglage à vis pour ladite cuvette.

f. L'organe de fermeture est formé par deux rondelles entre lesquelles sont placées des étoupes ou autres matières de garnitures.

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Pour la vente des fascicules, s'adresser à l'IMPRIMERIE NATIONALE, 27, rue de la Convention. Paris (15e).

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