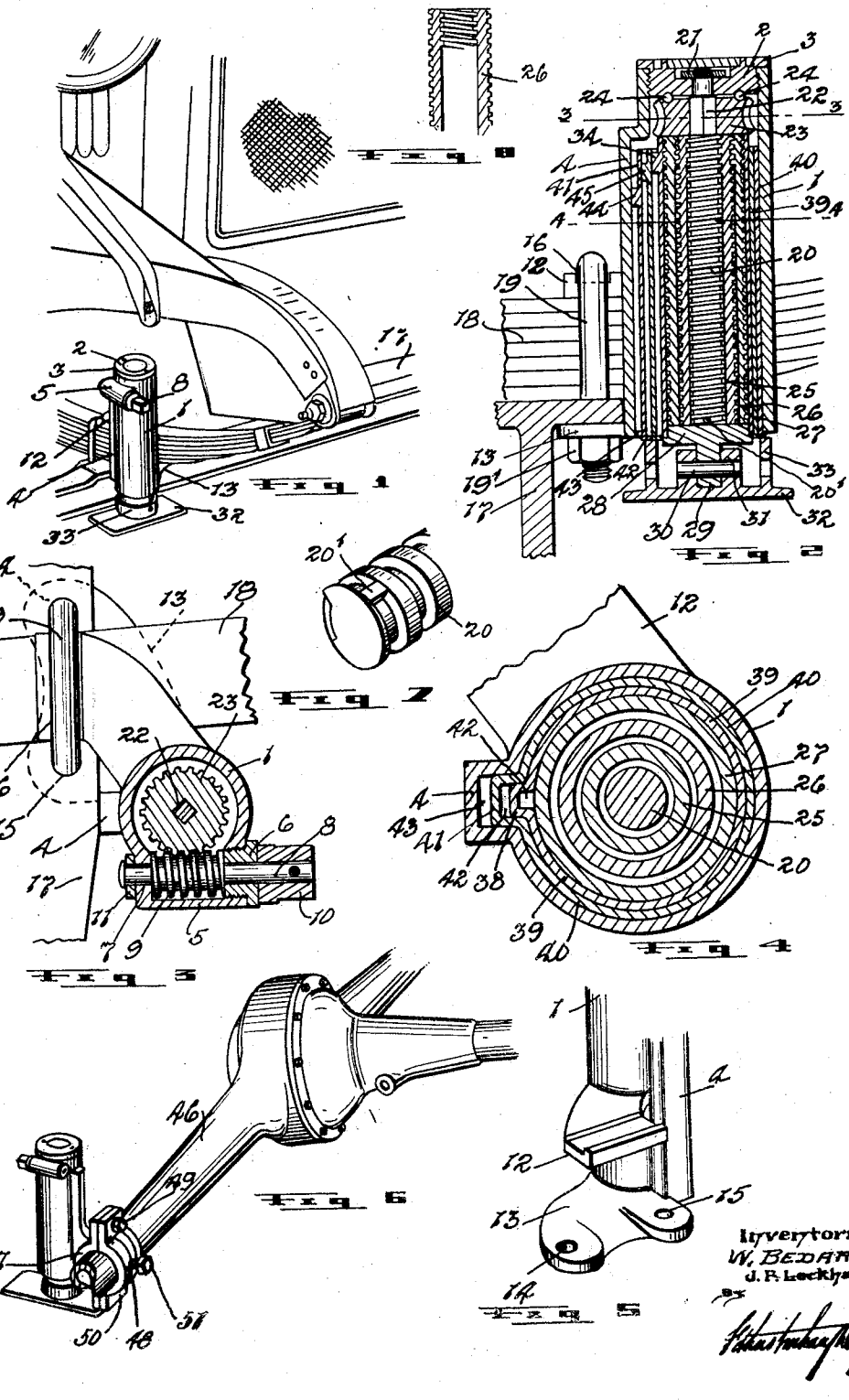
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AUTOMOBILE JACK

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Inventors
W. BEDARD
J. P. Lockhart
By
Attorneys

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WILFRID BEDARD AND JOHN FRANKLIN LOCKHART, OF SELKIRK, MANITOBA, CANADA

AUTOMOBILE JACK

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The invention relates to improvements in automobile jacks and an object of the invention is to provide a jack which can be fastened to a motor vehicle as part of the permanent equipment thereof and which can be readily manipulated to pass into contact with the ground, it being contemplated to equip the vehicle with four of such jacks, one positioned adjacent each wheel so that any wheel can be easily and quickly raised when punctured or otherwise damaged and without having to place the jack under the vehicle as is usual at the present time.

A further object is to construct the jack so that it can be firmly secured to either the front or back axle without requiring any change in the vehicle structure and such also that when the jack is not in use, the working parts will be all effectively enclosed to maintain them free of dust, dirt and weather.

A further object of the invention is to construct the foot of the jack so that it can readily adjust itself to the ground when it engages the same and such that as the jack is extended, the jack screws are housed.

A further object is to construct the jack so that the lifting thrust will be amply taken up in ball bearings provided, such latter also insuring of the easy working of the jack.

A further object is to construct the various parts in a simple, durable and inexpensive manner and so that the same can all be readily manufactured and assembled and also taken apart for inspection or repair or other purposes.

With the above more important objects in view, the invention consists essentially in the arrangement and construction of parts hereinafter more particularly described, reference being had to the accompanying drawing, in which:—

Fig. 1 is a perspective view showing one of the jacks as used for raising one of the front wheels of a vehicle from the ground.

Fig. 2 is an enlarged detailed vertical sectional view centrally through the jack, the section being taken at 2—2 Figure 3.

Fig. 3 is a horizontal sectional view at 3—3 Figure 2.

Fig. 4 is an enlarged detailed horizontal sectional view at 4—4 Figure 2.

Fig. 5 is a perspective view of the brackets used on the jack as shown in Figure 1.

Fig. 6 is a perspective view showing the jack as used on the rear axle for raising one of the rear wheels.

Fig. 7 is a perspective view of the lower end of the jack screw.

Fig. 8 is a vertical sectional view through the upper end of the intermediate screw threaded sleeve.

In the drawing like characters of reference indicate corresponding parts in the several figures.

As hereinbefore stated, we purpose to use a set of four jacks on each motor evhicle, one adjacent each wheel so that any or all wheels can be raised clear of the ground when desired. The jacks of the set are all similarly constructed with the exception that the attaching means utilized for the front jacks is somewhat different from that used for the rear jacks.

The front jacks are fastened permanently to the front axle in a location to the outer sides of the customary front springs so that there is ample clearance space above the jacks, such being apparent from an inspection of Figure 1.

The jack body 1 is in the form of a cylindrical casing of predetermined length and diameter and the upper end of the casing is interiorly screw threaded to receive the screw threaded closure cap 2 which is provided with an outstanding flange 3 overlying the upper end of the casing. The casing is provided at the rear side with a vertical guideway or channel 4 utilized for a purpose later disclosed and at the upper end with a horizontal lying integrally cast sleeve 5 which has the inner side opening to the interior of the casing, the front end closed by a screw plug 6 and the rear end provided with a bearing opening 7.

A driving shaft 8 is rotatably mounted in the plug 6 through which it passes and has the rear end passing rotatably through the opening 7 and the shaft is supplied with a worm 9 which has the threads thereof entering the upper end of the casing 1 through

the side opening provided in the sleeve. A square head 10 is permanently fastened to the front end of the shaft and the rear end is provided with a washer 11, the washer being retained by enlarging the end of the shaft. One can obviously turn the worm by applying the well known type of socket wrench on the square head 10.

The lower end of the casing 1 is provided with opposing upper and lower outstanding brackets 12 and 13, the lower bracket being provided with a pair of eyes 14 and 15 and the upper bracket with a cross channel 16. The casing of the front jack is fastened to the motor vehicle by passing the bracket 13 under the top flange of the front axle 17 of the vehicle and the bracket 12 over the top leaf of the front spring 18 of the vehicle and then fastening the parts together by employing the customary front fastening spring U-bolt 19, the bolt having the upper part thereof resting in the channel 16 and the ends thereof passing first through the axle and then through the eyes 14 and 15, the fastening being complete when the nuts 19′ are tightened up.

By so attaching the jack to the front axle we do not require to make any change in the existing vehicle structure and we also position the jack so that there is ample clearance space thereabove.

The cap 2 receives and supports rotatably the upper end of a jack screw 20, the jack screw extending downwardly and centrally within the casing and having its lower end stopping short of the lower end of the casing. The upper end of the jack screw is contracted and receives a washer 21 and is enlarged to retain the washer and the lower end of the jack screw has a stop pin or obstruction 20′ disposed between the threads thereof (see Figure 7).

Directly underneath the cap 2, the jack screw is provided with a squared shank 22 which receives a worm wheel 23, the worm wheel being housed within the upper end of the casing and continuously in mesh with the worm 9 with the result that when the said worm is turned, the jack screw is rotated. The adjacent faces of the worm wheel and the cap 2 are provided with raceways to receive ball bearings 24 so that the lifting thrust of the jack is distributed through the ball bearings.

On the jack screw 20, we mount an inner interiorly and exteriorly screw threaded sleeve 25 and the sleeve 25 carries an interiorly and exteriorly screw threaded intermediate sleeve 26 and the sleeve 26 carries an interiorly screw threaded outer sleeve 27, the external diameter of the sleeve 27 being considerably less than the internal diameter of the casing 1. The lower end of the outer sleeve 27 is closed by a permanent plug 28 which is provided centrally with an extending eye 29 and the eye is connected by a pivot pin 30 to opposing lugs 31 provided on the foot piece 32. The foot piece is supplied with an upstanding annular flange 33 which is adapted to engage with the lower end of the cylinder or casing 1 when the jack is in a not in use position, such excluding dust and dirt.

The outer sleeve 27 is provided adjacent the upper end with a lug 34 which enters slidably a vertically extending channel shaped rib 38 provided at the rear side of a cylindrical guard or skirt 39 telescopically receiving the outer sleeve. The skirt 39 is normally telescopically received within an outer tubular guard or skirt 40 which is provided at the rear side with a vertically extending channel shaped rib 41 which rib slidably receives the rib 38 and is slidably received within the channel 4 of the casing. The vertical channels formed by the ribs are closed at their lower ends by inturned stops 42 and the lower end of the channel 4 is closed by a similar inturned stop 43. The skirts are provided adjoining their upper ends with similar lugs 44 and 45 and the lugs 34 and 45 are adapted to engage with the stops 42 and the lug 44 with the stop 43.

By the arrangement of lugs and guide channels provided, the outer sleeve 27 and the skirts are prevented from rotary movement when the jack is operated although they are free to move up and down.

It will be observed that the external threads of the inner and intermediate sleeves extend from the top to the bottom ends thereof and that the internal threads of the inner, intermediate and outer sleeves only extend a short distance down from the upper ends of such sleeves, the remaining underlying portions of the sleeves being smooth faced, this latter construction being best shown in Figure 8. According to the above arrangement, it will be apparent that when the inner sleeve has been screwed down until the interior threads thereof strike the obstruction or pin 20′ of the jack screw, it will be stopped from further downward turning movement.

The same arrangement is utilized for stopping the down turning movement of the intermediate sleeve on the inner sleeve and the outer sleeve on the intermediate sleeve as the inner and intermediate sleeves are provided at their lower ends between the exterior threads thereof with stop pins or obstructions identical to that 20′ disclosed as utilized in connection with the jack screw.

When the jack is actuated by applying a socket wrench on the head 10 and turning in a proper direction, the sleeves 25, 26 and 27 are moved down one after the other and pass the foot piece into contact with the ground and thereafter upon their continued down movement, the corner of the vehicle on which the jack is applied rises to clear the vehicle wheel from the ground. As the jack extends, the screws are at all times housed as the skirts

successively extend, it being here observed that as soon as the foot piece starts to move down, the sleeves are free to drop so that the jack screw threads are fully protected at all times against dust, dirt and weather.

In order to attach the jack to the rear axle housing 46, it is equipped at its lower end with clamping members 47 and 48 fastened together by bolts 49 and 50 and provided with a jam screw 51, these latter parts being supplied on the jack instead of the brackets 12 and 13 hereinbefore mentioned. In Figure 6, the rear jack is shown as secured to the rear axle housing and it is located to the inner side of the rear spring so that there will be ample clearance space thereabove. The heads 10 of the jack face forwardly at the front of the vehicle and rearwardly at the rear so that they can be readily gotten at with the socket wrench as will be readily understood.

What we claim as our invention is:—

1. A lifting jack for attaching to the axle of a motor vehicle as part of the permanent equipment thereof comprising an outer cylindrical casing provided with means for permanently fastening it to the axle, said casing having the upper end thereof closed and the lower end open, a vertically extending jack screw located centrally within the casing and having the upper end thereof rotatably suspended from the upper end of the casing, a worm wheel secured to the upper end of the jack screw, thrust bearings interposed between the worm wheel and the upper end of the casing, means manually operable from the exterior of the casing for rotating the worm wheel, a series of sleeves screw threading one on the other and having the inner sleeve screw threaded on the jack screw and the outer sleeve anchored to the casing to prevent rotation thereof but permitting endwise movement, means limiting the down travel of the several sleeves, one in respect to the other and of the inner sleeve in respect to the jack screw and a ground engaging foot piece pivotally suspended from the lower end of the outer sleeve, said ground engaging end piece being provided with an annular flange adapted to engage with and close the lower end of the casing when the jack is in its non-extended position.

2. A lifting jack for attaching to the axle of a motor vehicle as part of the permanent equipment thereof comprising an outer cylindrical casing provided with means for permanently fastening it to the axle, said casing having the upper end thereof closed and the lower end open, a vertically extending jack screw located centrally within the casing and having the upper end thereof rotatably suspended from the upper end of the casing, a worm wheel secured to the upper end of the jack screw, thrust bearings interposed between the worm wheel and the upper end of the casing, means manually operable from the exterior of the casing for rotating the worm wheel, a series of sleeves screw threading one on the other and having the inner sleeve screw threaded on the jack screw, means limiting the down travel of the several sleeves one in respect to the other and of the inner sleeve in respect to the jack screw, inner and outer telescoping skirts normally housed within the casing and interposed between the casing and the outer sleeve, said skirts being guided for vertical shifting movement, one in respect to the other and having the inner skirt guided for vertical shifting movement in respect to the outer sleeve and the outer skirt guided for vertical shifting movement in respect to the casing and a foot piece pivotally secured to the lower end of the outer sleeve and normally engaging and supporting the skirts.

3. A lifting jack for attaching to the axle of a motor vehicle as part of the permanent equipment thereof comprising an outer cylindrical casing provided with means for permanently fastening it to the axle, said casing having the upper end thereof closed and the lower end open, a vertically extending jack screw located centrally within the casing and having the upper end thereof rotatably suspended from the upper end of the casing, a worm wheel secured to the upper end of the jack screw, thrust bearings interposed between the worm wheel and the upper end of the casing, means manually operable from the exterior of the casing for rotating the worm wheel, a series of sleeves screw threading one on the other and having the inner sleeve screw threaded on the jack screw, means limiting the down travel of the several sleeves one in respect to the other and of the inner sleeve in respect to the jack screw, inner and outer telescoping skirts normally housed within the casing and interposed between the casing and the outer sleeve, said skirts being guided for vertical shifting movement, one in respect to the other and having the inner skirt guided for vertical shifting movement in respect to the outer sleeve and the outer skirt guided for vertical shifting movement in respect to the casing and a foot piece pivotally secured to the lower end of the outer sleeve and provided with an upstanding annular flange normally engaging the sleeve.

Signed at Winnepeg this 12 day of December, 1929.

JOHN FRANKLIN LOCKHART.
WILFRID BEDARD.