W. HENDRY.

JACK.

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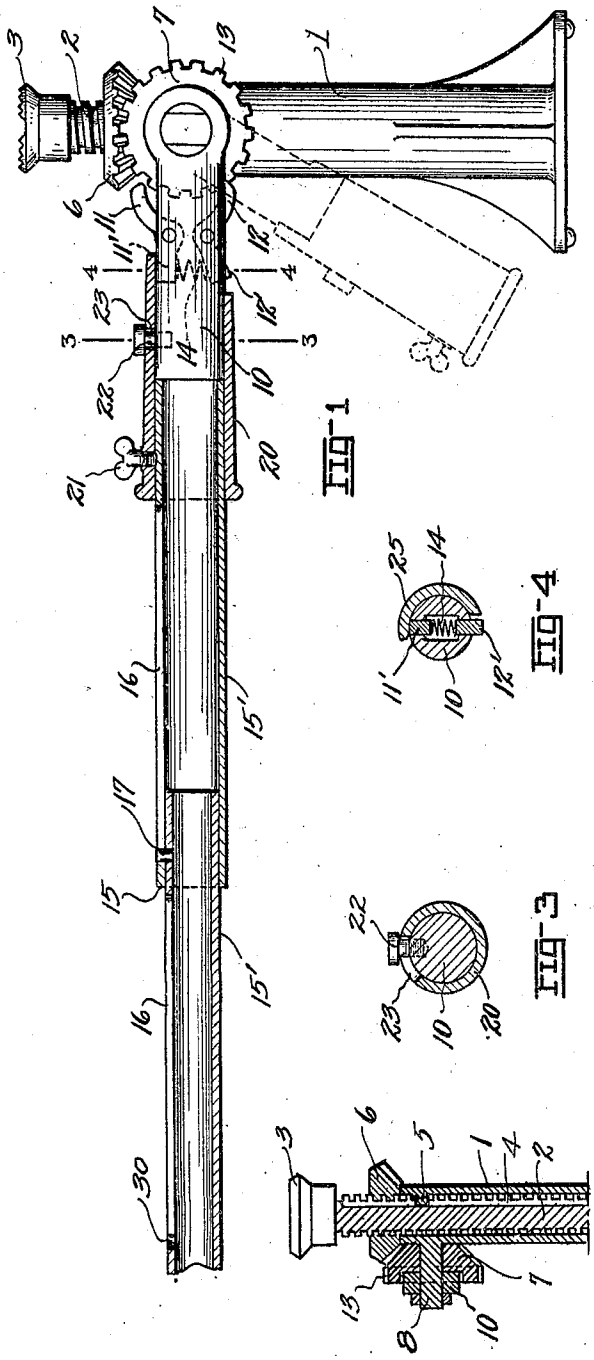


Fig-1

Fig-4

Fig-3

Fig-5

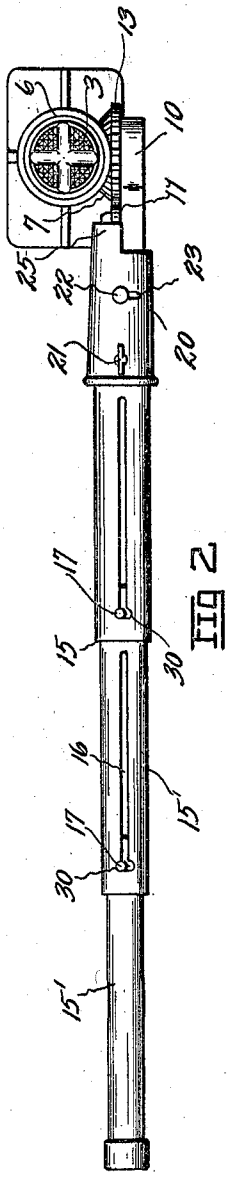


Fig 2

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UNITED STATES PATENT OFFICE.

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JACK.

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To all whom it may concern:

Be it known that I, WILLIAM HENDRY, a subject of the King of England, and a resident of the city of Tacoma, county of Pierce, State of Washington, have invented certain new and useful Improvements in Jacks, of which the following is a specification.

My invention relates to improvements in jacks, and more particularly to devices of that type adapted for jacking up the wheels of automobiles or similar vehicles; the principal object of the invention being to provide a jack having a telescopically extendable handle which may serve, when extended, as a means whereby the jack may be placed in position beneath the axle of a vehicle or whereby it may be removed therefrom, thereby obviating the necessity of one getting down on the ground as is necessary when using jacks of the most common types.

It is also an object of the invention to provide a jack of the above described character wherein the jacking shaft is raised or lowered by an up and down movement of the handle which, through the intermediacy of a pair of selectively used clutch dogs, rotates a jack actuating gear. Also to provide, in connection with the handle, means for selectively retaining one or the other of the dogs functionally disengaged while the other effects the rotation of the gear in the proper direction to cause the jacking shaft to be raised or lowered.

Other objects of the invention reside in the details of construction of the various parts of the jack, and in the combination, whereby an efficient and serviceable device is provided.

In accomplishing these and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of a jack embodied by the present invention; the handle being only partly shown, and in section for better illustration.

Figure 2 is a plan view of the jack showing the handle extended.

Figure 3 is a transverse sectional view, taken on the line 3—3 in Figure 1.

Figure 4 is a transverse section taken on the line 4—4 in Figure 1.

Figure 5 is a detail sectional view, showing the manner of mounting the advancing gear on the jack stand.

Referring more in detail to the several views of the drawings wherein like reference numerals designate the same or like parts—

1 designates a jack stand, or base, and 2 a threaded jack shaft that is mounted vertically within the stand and is adapted to be raised or lowered therein. At its upper end the shaft is equipped with the usual shoe 3, and is provided longitudinally with a slot or groove 4 wherein a boss 5, formed on the interior of the stand, extends to prevent rotation of the shaft within the stand.

A beveled gear wheel 6 is mounted on the threaded portion of the jack shaft to seat rotatably upon the upper end of the stand 1 to retain the shaft 2 at the different positions to which it may be adjusted by the rotation of the gear. Another beveled gear wheel 7, is rotatably mounted upon a trunnion 8 on the side of the stand, that operates in mesh with the gear 6 and serves as a means whereby the latter gear may be rotated.

A short lever 10 is pivotally mounted upon the outer end of the trunnion 8, adjacent the gear 7, and pivotally mounted upon this lever are oppositely directed clutch or ratchet dogs 11 and 12 which are adapted to be moved into and from engagement with square cut peripheral teeth 13 adjacent the outer face of the gear 7 in order that the latter may be rotatably advanced upon operation of the jack handle, as presently described.

The dogs 11 and 12, which are pivotally supported, at points between their ends, and in spaced apart relation on the lever, have jaws at their inner ends for engaging the teeth of the advancing gear and have outer end portions 11′ and 12′ between which a coiled spring 14 is placed, to normally urge and yieldingly retain the clutch ends in engagement with the gear.

Since it is necessary, when the jack is being raised, that the clutch dog 11 be retained disengaged from the gear, and when it is being lowered, that the dog 12 be disengaged, I have provided means whereby the dogs may be positioned or controlled easily by certain manipulation of the handle.

The handle 15, which embodies a part of the present invention, comprises a plurality of telescopically connected tubular sections 15′, all of which, except the outer section, are equipped with longitudinally extending

slots 16 wherein studs 17, fixed on the inner ends of the sections, are extended to prevent rotation of the sections relative to each other. The inner end section of the handle is secured within the outer end of a sleeve 20 that is mounted rotatably upon the lever 10; the handle being secured by means of a set screw 21 that is threaded through the sleeve, and the sleeve is retained on the lever by means of a stud or pin 22 that extends through a circumferentially directed slot 23 in the sleeve and is fixed in the lever.

The inner end of the sleeve has an extended portion 25 at one side thereof which, upon rotation of the sleeve to its opposite limits as provided for by the slot 23, will engage the inner end portion of one or the other of the clutch dogs to retain the jaw end of the engaged dog from engagement with the gear 7 while the other dog is yieldingly retained in engagement therewith by means of the spring 14.

The handle, when extended to its full length, may be locked against telescoping, by turning the sections thereof in such manner as to move the studs 19 into offset seats or sockets 30 which are formed at the outer ends of the slots 16. Assuming that the various parts of the jack are so constructed and assembled, to use the jack for the purpose of raising a vehicle wheel from the ground, the operator first places the inner end of the inner handle section 15′ within the outer end of the sleeve 20 and secures it therein by tightening the set screw 21. He then draws out the handle sections to their full length where they are locked by turning the same to position the studs 17 within the sockets or seats 30. The handle then may be used as a means for pushing the jack beneath the axle of the vehicle and thus the necessity of the user getting down on the ground or beneath the vehicle is avoided. The handle then is rotated before or after the jack is placed to cause the extension 25 on the sleeve to engage the dog 11 to retain it disengaged from the gear while the dog 12 is left free.

To raise the vehicle, the handle 15 of the jack is moved up and down, permitting the dog 12, on downward movement of the handle to rotatably advance the gear 7, and this in turn rotates the gear 6 in the direction required to raise the shaft 2 against the vehicle axle.

To lower the jack, the handle is then rotated in such manner that the sleeve extension 25 is caused to release the dog 11, and to engage the dog 12 to raise it from functional engagement with the gear 7. Upon operation of the handle then, as before, causes the gears to be rotated in a reverse direction and the jack shaft to thereby be lowered. The jack may, when lowered, be drawn from beneath the vehicle by means of the handle, the handle detached therefrom and telescoped together so that it will require very little space for storage.

It is apparent that such a device may be easily operated; it can be more easily placed beneath a vehicle or removed from position than can the usual vehicle jack without the extension handle and, when collapsed, will require very little room for storage within a car.

It is further apparent that such a handle and clutch mechanism could be employed likewise as shown on various other types of vehicle jacks without departing from the spirit of the invention, and for this reason I do not wish to be limited to the details of construction shown.

Having thus described my invention, what I claim as new therein and desire to secure by Letters-Patent, is:

1. In a lifting jack, the combination with a base member, a jacking shaft mounted in said base and a toothed wheel mounted on said base operatively connected with said shaft and rotatable in opposite directions to adjust the said jacking shaft, of a lever pivotally mounted coaxially with and adjacent the said wheel, a pair of oppositely extended ratchet dogs pivotally mounted on said lever for advancing the said wheel in opposite directions by actuation of the lever, a sleeve rotatably mounted on the lever, an extension at the inner end of the sleeve engageable individually with said dogs on rotation of the sleeve to retain the engaged dog from operative engagement with the advancing wheel and a handle removably mounted in said sleeve whereby said lever may be operated and said sleeve rotated.

2. In a lifting jack, the combination with a base member, a jacking shaft mounted in said base, and a toothed wheel mounted on the base and operatively connected with said shaft and rotatable in opposite directions to adjust the said jacking shaft, of a lever pivotally mounted at one end coaxially with and adjacent the said wheel, a pair of ratchet dogs pivotally mounted on said lever, a yieldable means for normally retaining said dogs engaged with said wheel teeth, a sleeve rotatable about and fixed on the outer end of the lever, having an extension at its inner end individually engageable with the dogs on rotation of the sleeve to retain the one engaged from operative engagement with the adjusting wheel, and a telescopically extendible handle removably mounted within said sleeve as an extension of the lever, whereby said lever may be operated and said sleeve rotated.

Signed at Seattle, Washington, this 25th day of March, 1921.

WILLIAM HENDRY.