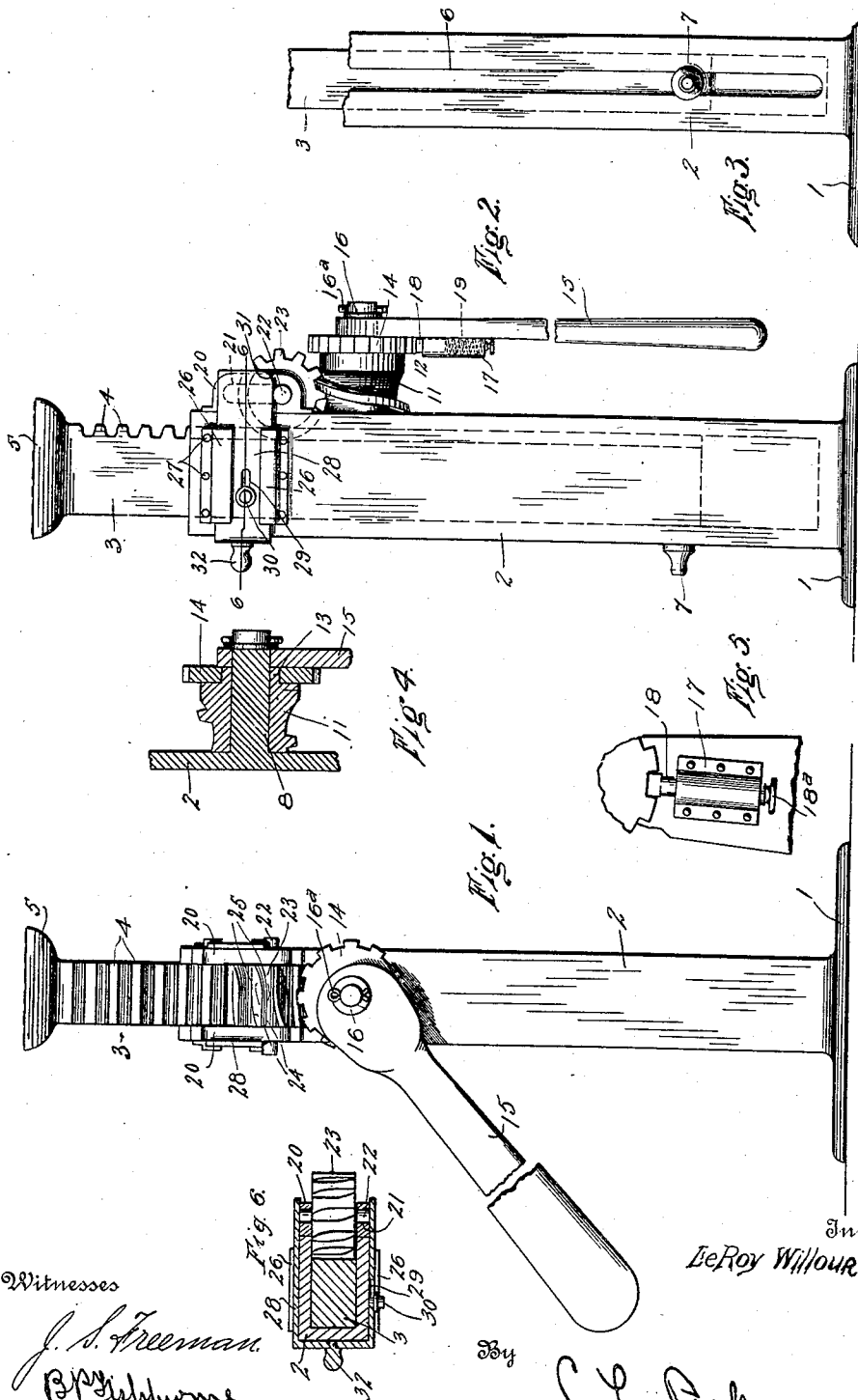


LE ROY WILLOUR.
JACK.
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968,223.

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Witnesses

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JACK.

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To all whom it may concern:

Be it known that I, LE ROY WILLOUR, citizen of the United States, residing at Ashland, in the county of Ashland and State of Ohio, have invented certain new and useful Improvements in Jacks, of which the following is a specification.

My invention relates to jacks, and more particularly to a jack designed to be used in connection with automobiles.

An important object of this invention is to provide a jack so constructed that the rack-bar may be quickly raised for engagement with a load before the same is operated to elevate the load.

A further object of my invention is to provide a device of the above character which is compact, strong, and positive in its operation.

My invention consists generally in the arrangement and combination of parts to be hereinafter described.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same, Figure 1 is a front elevation of the jack. Fig. 2 is a side elevation of the same. Fig. 3 is a rear elevation of the same. Fig. 4 is an enlarged sectional view through the worm gear and associated members. Fig. 5 is an enlarged detail view of the pawl and associated members. Fig. 6 is a horizontal cross-section taken of line 6-6 of Fig. 2.

In the drawings illustrating a preferred embodiment of my invention, the numeral 1 designates a base centrally upon which is formed an upright 2. This upright is provided with a suitable axial opening for the reception of a rack-bar, 3, which is provided upon one side with teeth 4 as shown. The rack-bar 3 is mounted within the upright 2 to reciprocate, and this rack-bar is provided at its upper end with a head 5. The rear wall of the upright 2 is provided with a longitudinally arranged slot 6 as shown in Fig. 3, and disposed within this slot is a knob 7 which is fixedly secured to the lower end of the rack-bar 3. The forward wall of the upright 2 is provided near its upper end with a projection or trunnion 8, which is disposed at right angles to said upright. Rotatably mounted upon this trunnion is a worm gear 11 which has a forwardly extending reduced portion 13 which is square in cross

section and cast integral with said worm gear. Upon the square portion 13 is arranged a ratchet-wheel 14, which is accordingly non-rotatable with relation to the worm gear 11. An operating handle or lever 15 is rotatably mounted upon the free end of the trunnion 8 as shown and is held in place by a washer 16, mounted upon said trunnion and which is in turn held in place by means of a cotter pin 16^a. The operating handle 15 is provided with a housing 17, within which is slidably mounted a pawl 18 which engages the ratchet-wheel 14. The pawl 18 is urged into engagement with the ratchet-wheel 14 by means of a coil spring 19, which is disposed within the housing 17. The pawl 18 extends outwardly beyond the housing 17 and is provided with a suitable head 18^a, by which said pawl is actuated.

The upright 2 is provided near its upper end and above the worm gear 11 with spaced ears 20, each of which is provided with a vertically disposed slot 21. Within the slots 21 is rotatably mounted a horizontally arranged shaft 22, upon which is mounted a gear wheel 23. This gear wheel 23 as shown, is disposed between the ears 20 and is adapted to permanently mesh with the teeth 4 of the rack-bar 3. The gear wheel 23 is further adapted to normally mesh with the worm gear 11 as shown in Fig. 2. As the gear wheel 23 has to engage the straight teeth 4 of the rack-bar 3 and the spiral tooth of the worm gear 11, I form the teeth of said gear wheel 23 with diametrically opposite curved edges 24, and straight edges 25, as illustrated in Fig. 1. It is to be understood that the straight edges 25 cooperate with the teeth 4 of the rack-bar 3, and the curved edges 24 cooperate with the spiral tooth of the worm gear 11. The upright 2 is provided near its upper end and upon opposite sides with horizontally arranged spaced superposed brackets 26, which are secured to this upright by means of bolts 27 or the like. The brackets 26 slidably support a U-shaped member 28, which is provided upon each of its sides with a longitudinal opening 29, within which is disposed a pin 30, which in turn is fixedly secured to the upright 2. Each of the sides of the U-shaped member 28 are adapted to be arranged upon the shaft 22 as shown in Fig. 2, for preventing the accidental displacement of the same. Each of

the sides of the U-shaped member 28 is preferably rounded off as at 31, whereby the same may be easily forced upon the shaft 22. The U-shaped member 28 has a knob 32
 5 fixedly secured thereto, whereby the same may be moved horizontally toward or away from the shaft 22. As shown in Fig. 2 the sides of the U-shaped member 28 are disposed upon the shaft 22, and when desired
 10 the operator may by grasping the knob 32, draw said U-shaped member rearwardly until its sides are out of engagement with the shaft 22. This rearward movement of the U-shaped member 28 is limited by the
 15 pin 30, which is disposed within the slot 29.

In the operation of the jack the U-shaped member is moved so that its sides are out of engagement with the shaft 22, whereby said shaft is free to move vertically within the
 20 slots 21. The operator then grasps the knob 7 and raises the rack-bar 3 until the head 5 comes in engagement with the load. As the rack-bar is being raised the pinion 23 in engagement with the same will be elevated
 25 sufficiently to disengage the worm gear 11, thus permitting the rack-bar 3 to be raised without the rotation of said worm gear. After the rack-bar has been sufficiently raised, the gear wheel 23 is permitted to
 30 mesh with the worm gear 11 and the U-shaped member 28 is moved to engage the shaft 22 as illustrated in Fig. 2. The handle 15 is then oscillated upwardly to cause the rotation of the ratchet-wheel 14, which
 35 rotation is accordingly imparted to the worm gear 11, whereby the gear wheel 23 is rotated and the rack bar 3 accordingly elevated. The operator then draws the pawl 18 out of engagement with the ratchet wheel
 40 14, to allow the lever 15 to be oscillated downwardly without rotating said ratchet wheel in an opposite direction. It is to be understood that the pawl 18 may be employed to rotate the ratchet wheel 14 in
 45 either direction to raise or lower the rack bar 3 as desired. It is also obvious that when the rack bar 3 has been moved to its uppermost position, the operator may move the U-shaped member 28 out of engagement
 50 with the shaft 22, and then raise the shaft 22 sufficiently to disengage the gear wheel 23 from the worm gear 11, whereby the rack bar 3 may be quickly lowered without the rotation of the worm gear 11.

55 I wish it understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same, and that certain changes may be made

in the form and shape of portions of the same, without departing from the spirit of
 60 my invention as specified in the annexed claims.

Having fully described my invention, I claim:

1. In a device of the character described, 65 a frame, a rack-bar slidably mounted therein, ears provided with elongated slots arranged upon said frame, a shaft rotatably mounted within said slots, a gear wheel carried by said shaft and in operative engage- 70 ment with said rack-bar, a substantially U-shaped member for normally retaining said shaft in its lowermost position, a worm gear meshing with said gear wheel, and means for actuating said worm gear. 75

2. In a lifting jack, an upright, a rack-bar slidably mounted therein, said upright being provided with ears having elongated slots, a shaft rotatably mounted within said elongated slots, a gear wheel mounted upon 80 said shaft to engage said rack bar, releasable means to positively hold said shaft in its lowermost position, a worm gear to mesh with said gear wheel when the latter is in its lowermost position, and means to actuate 85 said worm gear.

3. In a device of the character described, an upright a rack-bar having slidable engagement therewith, a stud shaft connected to said upright, a worm gear rotatably 90 mounted thereon, a gear-wheel mounted to mesh with said rack-bar and movable into and out of engagement with said worm gear, a device for normally holding said gear wheel in engagement with said worm gear, 95 and means to rotate said worm gear.

4. In a lifting jack, a standard, a rack-bar having slidable engagement therewith, a worm gear rotatably mounted upon said standard, said standard being provided with 100 ears having elongated slots, a shaft rotatably mounted within these slots, a gear wheel mounted upon said shaft, to mesh with said rack bar and be moved into and out of engagement with said worm gear, a 105 member slidably mounted upon said standard to engage said shaft to hold the same in its lowermost position, and means to rotate said worm gear.

In testimony whereof I affix my signature 110 in presence of two witnesses.

LE ROY WILLOUR.

Witnesses:

C. G. PHILLIPS,
 J. A. SHEARER.