No. 883,773. PATENTED APR. 7, 1908.

F. F. ASHMORE.

HYDRAULIC JACK.

APPLICATION FILED JULY 24, 1907.

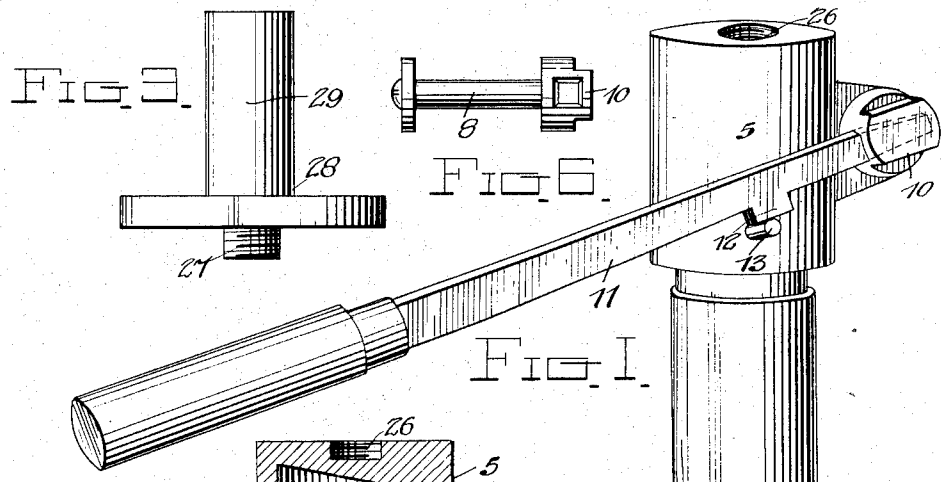


FIG. 1.

FIG. 2.

FIG. 3.

FIG. 6.

FIG. 4.

FIG. 5.

Witnesses

J. Milton Jester.

Myron F. Clear

Inventor

F. F. Ashmore,

By

O. L. Parker

Attorney

UNITED STATES PATENT OFFICE.

FRANK F. ASHMORE, OF OTTAWA, KANSAS.

HYDRAULIC JACK.

No. 883,773. Specification of Letters Patent. Patented April 7, 1908.

Application filed July 24, 1907. Serial No. 385,341.

To all whom it may concern:

Be it known that I, FRANK F. ASHMORE, a citizen of the United States, residing at Ottawa, in the county of Franklin and State of Kansas, have invented certain new and useful Improvements in Hydraulic Jacks, of which the following is a specification.

My invention relates to hydraulic jacks and particularly contemplates the provision of a device of this character embodying within itself an improved construction and provided with improved detachable elements for performing certain other functions supplemental to the functions of the jack.

My invention further and specifically resides in the following features of construction, arrangement and operation as will be hereinafter described with reference to the accompanying drawings forming a part of this specification, in which like numerals are used to designate like parts throughout the several figures, and in which

Figure 1 is a perspective view of my improved jacks, Fig. 2 is a vertical longitudinal sectional view taken therethrough, Fig. 3 is an elevation of the jack-head attachment to engage against an axle, Fig. 4 is an elevation slightly in perspective of a connecting bar for use when detaching a wheel, Fig. 5 is a perspective view of the spoke engaging head for adjustable attachment upon the connecting bar shown in Fig. 4, and Fig. 6 is an elevation of the jacket operating crank shaft.

In the practical embodiment of my invention I provide an outer casing 1 threaded at its lower end within the bore of an enlarged base 2 having slotted ears 3 extending upwardly therefrom. The inner casing 4 is arranged to telescopically slide within the outer casing 1 and is threaded at its upper end within the enlarged head 5 having a chamber 6 formed therein and having a projecting portion 7 through which is rotatively journaled an operating shaft 8 carrying a crank 9 rigidly secured thereon and projecting centrally within the chamber 6. The operating shaft 8 is provided with a slotted enlarged end 10 adapted for the reception of the reduced end of the operating handle 11 having a lug 12 projecting therefrom and adapted to engage a lug 13 projecting from the jack head 5, to limit the downward movement of said handle when the same is normally operating to actuate the inner casing 4 upward and out of the outer casing 1.

The inner casing 4 is internally threaded at its lower end for engagement therein of a pump casting comprising an upwardly extending piston cylinder 14, an outlet valve 15 extending downwardly opposite said piston cylinder and an intake valve 16 arranged at one side of said piston cylinder 14. The intake and outlet valves, 15 and 16 respectively, as shown in the drawings, comprise ordinary ball valves normally held upon their seat by means of coil springs, that said valves may be of various other types without materially changing the working of the jack as will be seen. On the opposite side of the piston cylinder 14 from the intake valve 16 is arranged a relief valve 17 comprising a ball, spring seated upwardly against its seat and having a stem 18 projecting through a guide 19 formed integral with the piston cylinder 14 and extending upwardly slightly above said cylinder 14. The crank 9 rigidly connected to, and extending from the operating shaft 8 is pivotally connected at its end to the downwardly extending connecting rod 20 having pivotally connected at its lower end a piston 21 arranged to project within the cylinder 14.

The operation will thus be as follows. The handle 11 being moved alternately upward and downward as with an ordinary jack, the partial rotations thus given shaft 8 will oscillate the crank 9 and impart the reciprocatory movement to the connecting rod 20 and the piston 21 within the cylinder 14. It will be understood that the inner cylinder 4 comprises a storage chamber for the liquid or fluid used, and upon the upward movement of the piston 21 said fluid will be sucked within the cylinder 14 through the intake valve 16. In like manner, upon the downward movement of piston 21 said fluid within the cylinder 14 will be in turn, forced through the outlet valve 15 into the bore of the base 2 and into the outer casing 1 effecting thereby a gradual up-lifting of the inner cylinder 4 within the outer cylinder 1. To release the pressure under the inner cylinder 4, the piston 21 is provided with an integral collar 22 adapted to strike the stem 18 of the relief valve 17 to force said valve downwardly off its seat and allow the liquid to flow back therethrough from the outer casing 1 into the inner casing 4. Upon the normal actuation of the operating handle 11 its projection 12 will strike the lug 13 upon the jack head 5 to limit the downward movement of said handle and prevent the collar 22 of piston 21 from

striking the valve stem 18, and it is therefore necessary to reverse the handle 11 from the position shown in Fig. 1, thus turning its projection 12 upwardly, in order that a further downward movement may be had to allow said collar 22 and stem 19 to engage.

In order to effect the removal of the vehicle wheel which is sometimes very difficult, I provide an operating bar 23 bifurcated at one end for insertion about the upstanding ears 3 of the base 2 and provided with openings adapted to aline with the openings in said ears for the ready insertion of a pin to lock the same together. The operating bar 23 is provided with a series of openings 24 adjacent its other end, which is shaped to receive a spoke head 25 having openings arranged to be alined with selected ones of the openings 24 and to be locked therewith by a second pin. The operating bar 23 is adapted to project between the spokes of the wheel, with the head 25 lying thereagainst upon the inside of said wheel, while the jack proper is placed against the end of the axle and in alinement therewith, so that when the base 2 and the outer casing 1 move outwardly from the inner cylinder as they will do in this position, the wheel will be pulled from said axle. In this connection the jack head 5 may be provided with a threaded bore 26 adapted to receive a threaded projection 27 of a supplemental head 28 having an elongated extension 29 arranged to abut the end of the axle and of substantially the same diameter in order that the slide may be readily slipped from said axle upon said extension.

Having thus fully described my invention, I claim:

In a wagon or carriage jack, the combination of the inner and outer casings, one of which is adapted to abut the ends of the carriage axle, means for forcing said casings apart, connecting rods detachably carried by one of said casings and having a plurality of alined openings formed in its length, and wheel engaging elements adapted for connection within a selected one of said openings, substantially as described.

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

FRANK F. ASHMORE.

Witnesses:

J. B. TOPPING,

W. L. JACOBUS.