April 6, 1926. 1,579,913

H. E. BRONSON

HYDRAULIC JACK

Filed Dec. 31, 1923

Fig. 1.

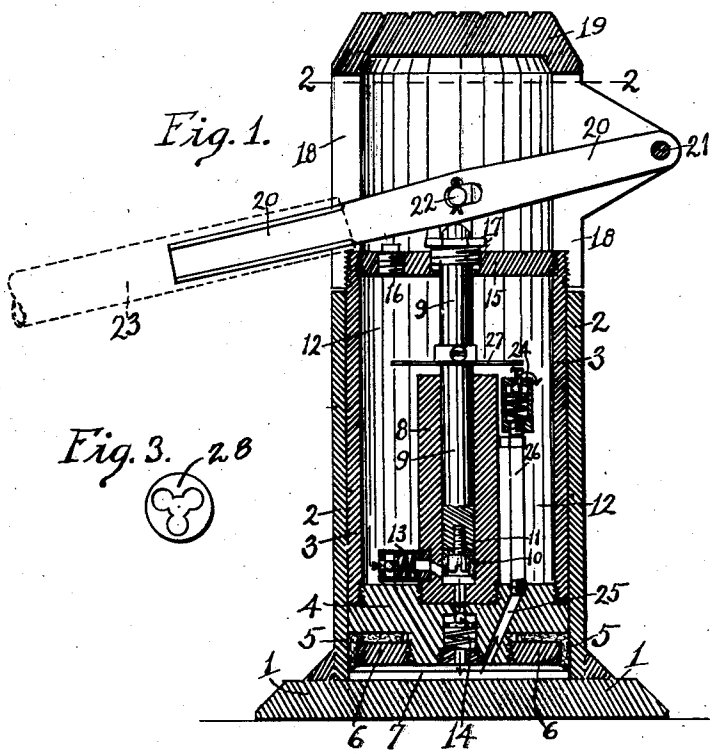
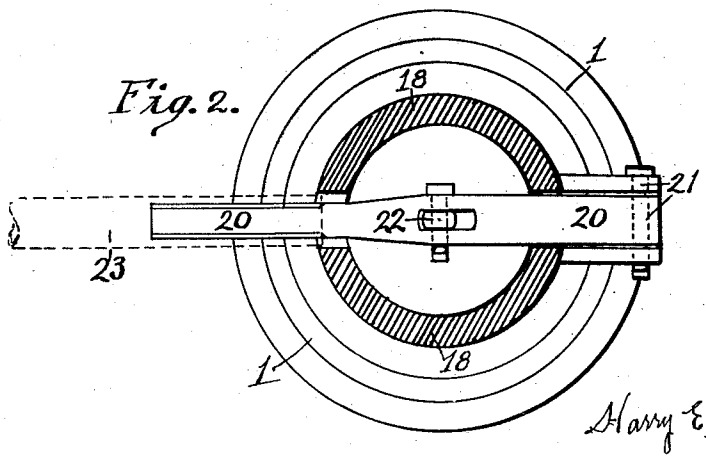


Fig. 3. 28

Fig. 2.



Harry E. Bronson Inventor

Patented Apr. 6, 1926. 1,579,913

UNITED STATES PATENT OFFICE.

HARRY E. BRONSON, OF TACOMA, WASHINGTON.

HYDRAULIC JACK.

Application filed December 31, 1923. Serial No. 683,743.

To all whom it may concern:

Be it known that I, HARRY E. BRONSON, a citizen of the United States, residing at the city of Tacoma, in the county of Pierce and State of Washington, have invented a new and useful Hydraulic Jack, of which the following is a specification.

My invention relates more particularly to hydraulic jacks used for rebrassing car journals. It is also designed to raise heavy articles of any nature. The objects of my invention are, first, to provide a hydraulic jack equally as powerful, has less weight and is more durable than similar jacks now made; second, to make a hydraulic jack that is more simple in construction, and third, to secure a hydraulic jack that is prompt in action and adaptable to various uses.

I attain these objects by means of the device illustrated in the accompanying drawing in which—

Figure 1 is a vertical section of the jack;
Figure 2 is a plan section on the line 2—2;
Figure 3 is an enlarged view of the check-valve disk hereinafter referred to.

Similar characters refer to similar parts of the several views.

Heretofore hydraulic jacks have been more or less clumsy in construction and their operating mechanism somewhat complex and liable to injury or failure. In my invention I have devised a hydraulic jack that is easily constructed with the simplest and most direct mechanism, all of which, including the power liquid, is enclosed within the body of the jack where it cannot be injured or get out of order.

My invention has a ground or base plate 1, to which is brazed or electric welded an upright cylinder 2 constituting a chamber to receive the actuating liquid and also receiving the ram. Inside of this cylinder 2 is a cylindrical member 3 on the lower end of which is threaded a piston head 4, the cylindrical or hollow ram member 3 being supported or carried by the piston head. On the under side of this piston head 4 is fitted a packing ring or gasket 5 securely held in place by an annular disk 6 threaded on a central part of the piston head 4, all of which may be seen in Figure 1. The space 7 between the piston head 4 and bottom of the cylinder 2 forms the chamber receiving the hydraulic agent or liquid that acts against the piston head of the ram to lift the latter in lifting the load.

Inside of the cylindrical piston or ram 3 is placed a pump cylinder 8 securely threaded into the center of the piston head 4. Within this cylinder 8 is operatively fitted a pump piston or plunger 9 with a packing ring 10 fixed to its lower end by a head screw 11. The chamber 12 of the hollow ram 3 holds the liquid that is forced by the pump from the chamber into the receiving chamber of the cylinder 2 beneath the ram in the lifting operation of the jack, and which passes back again into the ram chamber in the lowering operation of the jack. The pump cylinder 8 and piston 9 are made operative by means of the intake check valve 13 and the discharge check valve 14 whereby the liquid is taken from the reservoir 12 and forced into the chamber 7 below the piston head 4 whereby a high pressure is secured and a great lifting power is imparted to the cylindrical ram 3.

The upper end of the cylindrical piston 3 is closed with a disk top 15 screwed to its inner periphery. This disk top 15 is provided with a threaded opening and stopper 16 through which the reservoir 12 may be filled. The pump piston or plunger 9 is encircled with a proper packing ring and annular nut 17 where it passes through the disk top 15.

The jack head 18 with a serrated crown 19 is threaded on the outer periphery of the upper end of the cylindrical piston 3. In this jack head is mounted the pump handle or lever 20 pivotally mounted at 21 and attached to the pump piston at 22. The jack can now be operated with this handle or lever 20 until the crown 19 begins to take the weight to be lifted after which a pipe handle of suitable length is slipped on the handle 20 as indicated at 23, and the jack be pumped up with great power.

After the weight has been lifted to the extent desired, the jack is lowered by means of a relief check valve 24 connected with the pressure chamber 7 through a hole 25 drilled through the cylinder head 4 to which is threaded a pipe extension 26 on which is mounted the release check valve 24. This check valve 24 is released by means of a disk plate 27 mounted on the pump piston 9 and suitably adjusted to press down the ball of the check valve 24 by contacting the head of a pin extension therefrom as may be seen in Figure 1. It will be seen that the pipe handle extension on its downward stroke

contacts the upper end of the cylindrical piston 3 just before the disk 27 contacts the release pin of check valve 24, but when slipped off, the pump handle 20 can then be pushed down about one-eighth of an inch lower which will make the disk 27 release the check valve 24 and the liquid from the pressure chamber 7 will return to the reservoir 12 and the jack head will be lowered till free of the load thereon.

The drawing indicates each of the check valves 13, 14 and 24 to be spring actuated, the ball in each being carried on a disk 28 having a clover-leaf shaped opening which allows the liquid to pass freely around each ball when pushed back from its seat. By means of this spring actuated disk, each check valve will act promptly and freely. This disk is shown in Figure 3. The liquid to be used in my jack is preferably to be oil as commonly used in hydraulic jacks.

It will be observed that the pipe 26, through which the liquid is returned from the compression reservoir or chamber beneath the ram piston head to the hollow chamber of the ram above its piston head, delivers the returning liquid into the ram chamber at a substantial distance above the ram piston head so that in its return it may be delivered above the body of the liquid in the ram chamber instead of passing through a body of the liquid and thus a speedier return of the ram to its lowermost position is obtained.

It will also be observed that the top closure or head 15 of the hollow ram is independent of the jack-head member so that the jack-head can be detached from the ram when necessary for any reason and the liquid within the hollow ram still be confined therein without spilling or waste under different positions of the ram or jack.

While my hydraulic jack as shown and described is designed for rebrassing car journals and making repairs thereto, it is to be observed I do not limit its use to this one specialty but reserve the right to make my jack for lifting the axles of automobiles or any other vehicle, and to lift heavy weights of any kind where hydraulic jacks are required. I reserve the right to make any size and form of jack as circumstances may require and my improvements be applied therein.

My invention is to be made of materials suitable to its use. Its construction is simple and economical. Its parts can be easily put together and taken apart when necessary. Its operation is direct and powerful.

Having described my invention, I claim—

1. A hydraulic jack comprising a cylinder to receive a compression liquid, a hollow ram reciprocable in said cylinder having a closure at one end and provided at the other end with a valved piston-head to control the passage of liquid back and forth between the interior of the ram and the cylinder in which the ram reciprocates, a pump positioned within the ram for forcing the liquid from the ram into the chamber of the enclosing cylinder beneath the piston head of the ram, a jack-head demountably mounted on the upper end of the ram independently of its closure at that end, said closure serving to confine the compression liquid within the hollow-ram when the jack-head is mounted and also when demounted, and an operating lever mounted on the jackhead and connected with a member of the pump to actuate the pump.

2. A hydraulic jack comprising a cylinder to receive a compression liquid, a hollow ram reciprocable in said cylinder and provided at one end with a valved piston-head to control the passage of liquid back and forth between the interior of the ram and the cylinder in which the ram reciprocates, a pump positioned within the ram and demountably connected to the piston-head of the ram for forcing the liquid from the ram into the chamber of the enclosing cylinder beneath the piston-head of the ram, a jack-head mounted on the ram, and a lever mounted on the jack-head and operatively connected with a member of the pump to actuate the pump.

3. A hydraulic jack comprising a cylinder to receive a compression liquid, a hollow ram reciprocable in said cylinder and provided at one end with a piston-head formed with a passage-way for liquid to pass from the ram to the space beneath the piston-head and another passageway for liquid to pass from beneath the piston-head to the interior of the ram, a liquid conduit leading from the last named passage-way and terminating in the ram at a substantial distance from the piston-head to discharge the return liquid above the body of liquid in the ram, a pump mounted on the piston-head and having valve-controlled passage-ways for communication with the interior of the ram and enclosing cylinder, said liquid conduit and passage-ways being provided with ball-valves seating against spring-pressed disks formed with laterally extending openings, a jack-head mounted on the ram, and a lever mounted on the jack-head and operatively connected with a member of the pump to actuate the pump.

4. A hydraulic jack comprising a cylinder to receive a compression fluid, a hollow ram reciprocable in said cylinder and provided at one end with a piston-head formed with a passage-way for liquid to pass from the ram to the space beneath the piston-head and another passage-way for liquid to pass from beneath the piston-head to the interior of the ram, a liquid conduit leading from the last named passage-way and terminating in the ram at a substantial distance from the pis-

ton-head and provided with a valve at its discharge end, a pump within the ram mounted on the piston-head and having a valve-controlled passage-way for communication with the interior of the ram and enclosing cylinder, a jack-head mounted on the ram, a lever mounted on the jack-head and operatively connected with a member of the pump to actuate the pump, a member attached to a plunger element of the pump and lying in the path of the valve to the extended liquid conduit, and displaceable means associated with the pump operating lever to normally prevent contact between the plunger attached element and valve of the extended liquid conduit and adapted to be displaced to permit contact to open said valve.

HARRY E. BRONSON.