Jan. 12, 1926. 1,569,589

C. S. STOCKER

HYDRAULIC JACK

Filed July 9, 1924 2 Sheets-Sheet 1

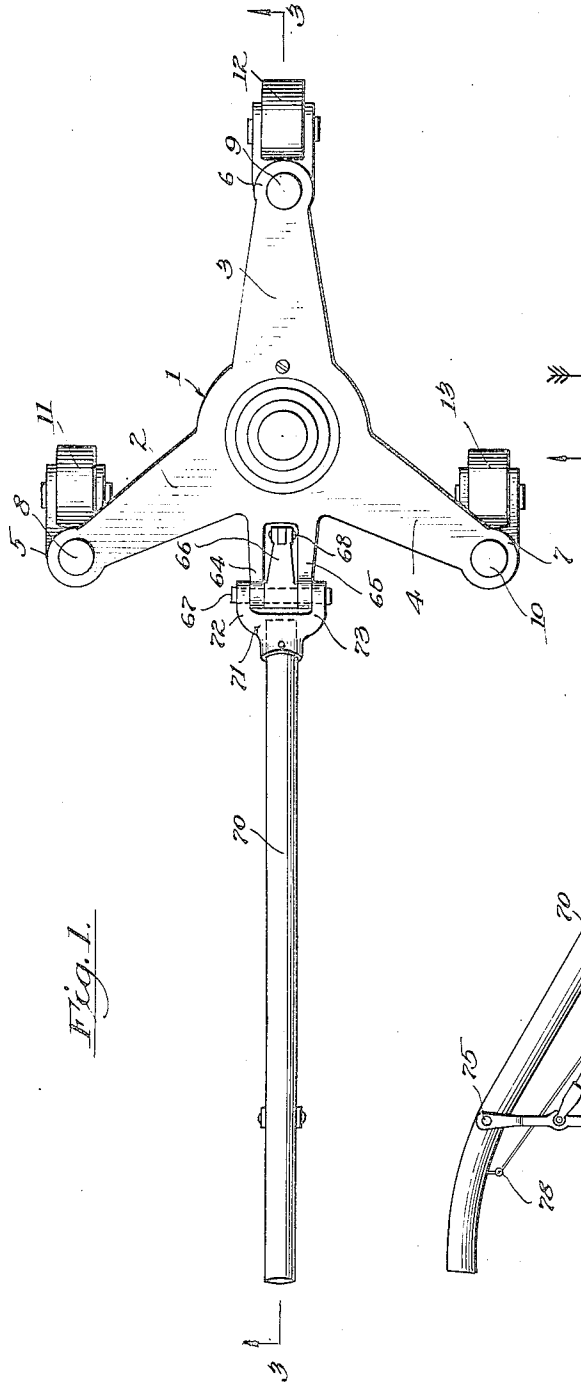


Fig. 1.

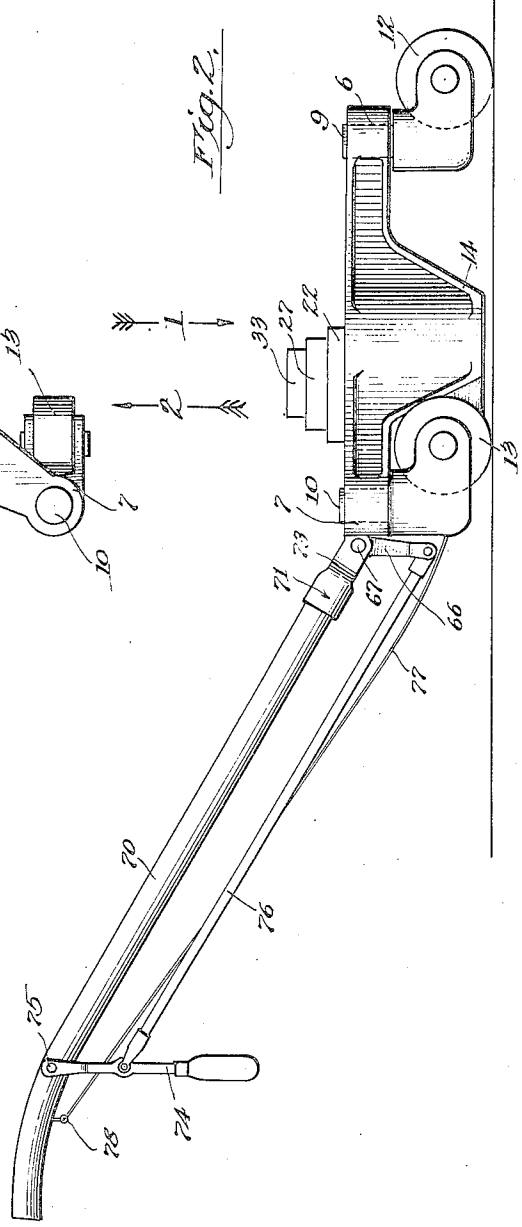


Fig. 2.

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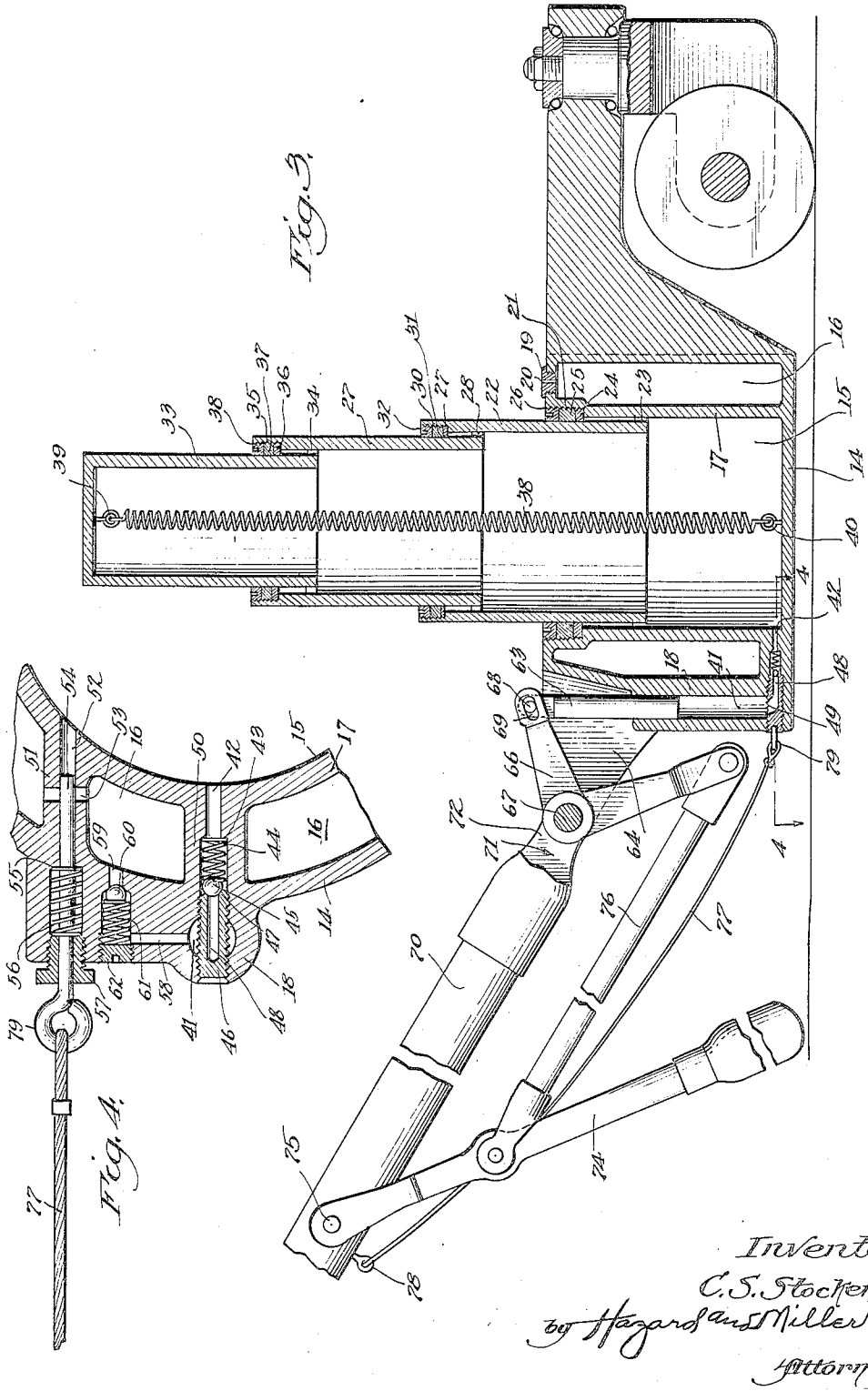


Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

CHARLES S. STOCKER, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO J. M. BRENNAN, OF LOS ANGELES, CALIFORNIA.

HYDRAULIC JACK.

Application filed July 9, 1924. Serial No. 724,970.

To all whom it may concern:

Be it known that I, CHARLES S. STOCKER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Hydraulic Jacks, of which the following is a specification.

This invention relates to hydraulic jacks, and consists of the novel features herein shown, described and claimed.

An object is to make a hydraulic jack mounted on casters and having a tongue, and especially useful in garages and the like for manipulating motor vehicles.

Other objects and advantages will appear from the drawings and specification.

The drawings illustrate the construction and operation of a hydraulic jack embodying the principles of my invention.

Figure 1 is a top plan view as seen looking in the direction of the arrow 1 in Fig. 2.

Fig. 2 is a side elevation looking in the direction indicated by the arrow 2 in Fig. 1.

Fig. 3 is an enlarged sectional elevation on a plane parallel with Fig. 2 and on the line 3—3 of Fig. 1, and looking in the direction indicated by the arrows.

Fig. 4 is an enlarged fragmentary sectional detail on the line 4—4 of Fig. 3.

The details of construction and operation shown in the drawings are as follows:

The main frame 1 has three equal radial arms 2, 3 and 4. Vertical bearings 5, 6 and 7 are formed at the outer ends of the arms 2, 3 and 4 and the stems 8, 9 and 10 of casters 11, 12 and 13 are inserted upwardly through the bearings 5, 6 and 7.

The frame 1 is enlarged and extended downwardly to form a housing 14 having a vertical circular central chamber 15 open at its top, an annular chamber 16 extending around the wall 17 of the chamber 15 and a pump casing 18. The chamber 16 is entirely enclosed and a removable plug 19 at the top provides means for filling the chambers 15 and 16 and may have an air vent 20. The chamber 15 is counter-bored from the upper end to form a seat 21. A hydraulic cylinder 22 fits loosely in the chamber 15 and has stop lugs 23 extending outwardly at its lower end. The cylinder 22 is inserted downwardly into the chamber 15. A packing supporting ring 24 is inserted downwardly around the cylinder 22 into the seat 21 and fits closely upon the cylinder 22. A packing 25 is inserted downwardly into the seat 21 against the ring 24 and a retaining ring 26 is screwed into the seat 21 against the packing 25 so as to make a tight sliding joint between the cylinder 22 and the main frame.

A second cylinder 27 fits loosely in the cylinder 22 and has retaining lugs 28 extending outwardly around its lower end. A packing supporting ring 29 is inserted downwardly around the cylinder 27 into a counter-bore 30 of the cylinder 22. A packing 31 is inserted against the ring 29 and a retaining ring 32 is screwed into the seat 30 against the packing 31 so as to make a tight sliding fit between the cylinders 22 and 27. The stop lugs 23 will engage the ring 24 to limit the upward movement of the cylinder 22 and the stop lugs 28 will engage the ring 29 to limit the upward movement of the cylinder 27.

In a like manner the third cylinder 33 fits loosely in the cylinder 27 and has lugs 34 extending outwardly from its lower end. A counter-bore 35 is formed in the upper end of the cylinder 27. A ring 36 is inserted downwardly around the cylinder 33 into the counter-bore 35. A packing 37 is inserted against the ring 36 and a retaining ring 38 is screwed into the counter-bore 35 against the packing 37 so as to make a tight sliding joint between the cylinder 27 and the cylinder 33 and so as to limit the upward movement of the cylinder 33. A retractile coil spring 38 connects an eye bolt 39 at the top of the cylinder 33 to a similar eye bolt 40 at the bottom of the chamber 15, the tension of the spring being exerted to telescope the cylinders 33, 27 and 22 into the chamber 15.

The annular chamber 16 is entirely separated from the chamber 15 except through ports as shown in Fig. 4. The pump casing 18 is a lug extending from the housing and has a vertical piston chamber 41. A port 42 extends from the bottom of the chamber 41 to the bottom of the chamber 15. The outer end of the port 42 is enlarged to form a spring seat 43, a spring 44 is placed against the seat 43, a ball 45 is placed against the spring 44, and a plug 46 is screwed into the outer end of the bore 42 and has a spring seat 47 fitting against the ball 45. The plug 46 is bored longitudinally to form a pas-

sage 48 in line with the small end of the port 42 and the plug is bored from one side to form a continuation 49 of the passage 48 so as to connect the chamber 41 to the chamber 15 and make an inlet check valve to hold the pressure in the chamber 15. The port 42 passes through a bridge 50 at the bottom of the chamber 16. A second bridge 51 passes under the bottom of the chamber 16 and a port 52 extends through the bridge 51 and a cross port 53 connects the port 52 with the chamber 16. A valve 54 fits in the port 52 crosswise of the port 53 to stop the circulation from the chamber 15 to the chamber 16 and so that when the valve 54 is pulled outwardly beyond the cross port 53 there is a free connection limited by the size of the port 52 between the chamber 15 and the chamber 16. The outer end of the port 52 is counterbored to form a chamber to receive the spring seat 55, a spring 56 is placed around the valve 54 against the spring seat 55, and a plug 57 fits around the valve 54 and is screwed into the bore against the spring 56. The spring seat 55 may be a pin inserted through the valve 54 so as to connect the spring 56 to the valve. A port 58 leads from the bottom of the chamber 41 to a port 59 leading into the chamber 16. A part of the port 59 is enlarged to form a seat for the ball valve 60 and a spring 61 is placed against the ball and the plug 62 screwed into the outer end of the enlarged bore.

A piston 63 operates in the chamber 41 and when the piston 63 is moved upwardly oil or other suitable fluid will be sucked from the chamber 16 past the check valve 60 into the chamber 41 and when the piston 63 is moved downwardly the check valve 60 will hold and the oil will pass the check valve 45 into the chamber 15.

Arms 64 and 65 extend from the main frame 1. A bell crank lever 66 is mounted between the outer ends of the arms 64 and 65 upon the pivot pin 67 and one end of the lever is bifurcated to straddle the upper end of the piston 63 and a pin 68 is fixed through the upper end of the piston 63 and operates in slots 69 formed transversely through the bifurcations of the lever 66, so that when the bell crank lever 66 is rocked upon the pivots 67 the piston 63 is operated.

A tongue 70 has a head 71 with bearings 72 and 73 fitting upon the outer ends of the pivots 67. A hand lever 74 is connected to the outer end of the tongue 70 by a pivot 75 and a link 76 connects the hand lever 74 to the lower arms of the bell crank lever 66 so that when the hand lever 74 is manually operated back and forth the piston 63 is operated. A cord 77 connects an eye bolt 78 upon the handle 70 to the eye 79 upon the valve 54 so that when the cord 77 is pulled the valve 54 moves outwardly past the port 53 and so that when the cord 77 is released the spring 56 will return the valve 54 to a position crosswise of the port 53.

In the practical operation, the chambers 15 and 16 are filled with oil or other suitable liquid to the desired extent, and the cylinders 22, 27 and 33 are normally telescoped into the chamber 15. By manipulating the tongue 70 the jack may be placed in any suitable position, as under a vehicle axle. Then the hand lever 74 is manually operated to pump oil from the chamber 16 into the chamber 15 and raise the cylinders 22, 27 and 33 to raise the load to the desired extent. When it is desired to lower the load and remove the jack the cord 77 is pulled to operate the valve 54 and allow the oil in the chamber 15 to run back into the chamber 16. The spring 38 will assist in pulling the cylinders 33, 27 and 22 downwardly and force the oil to circulate through the port 52 to the chamber 16.

Various changes may be made without departing from the spirit of the invention as claimed.

I claim:

A hydraulic jack comprising a main frame mounted on casters and having a central housing forming a central chamber open at the top and an annular enclosed chamber around the central chamber, a tongue pivotally connected to the frame, a bell crank lever mounted upon the pivot, a pump cylinder, a piston in the pump cylinder and connected to the bell crank lever, a hand lever mounted upon the free end of the tongue, a link connecting the hand lever to the bell crank lever, means forming connections between the central chamber, the annular chamber and the pump cylinder so as to pump a liquid from the annular chamber to the central chamber, a plurality of telescoping cylinders mounted in the central chamber and adapted to be raised by the fluid pumped into the central chamber, and there being means for allowing the fluid to flow back from the central chamber to the annular chamber and allow the cylinders to descend.

In testimony whereof I have signed my name to this specification.

CHARLES S. STOCKER.