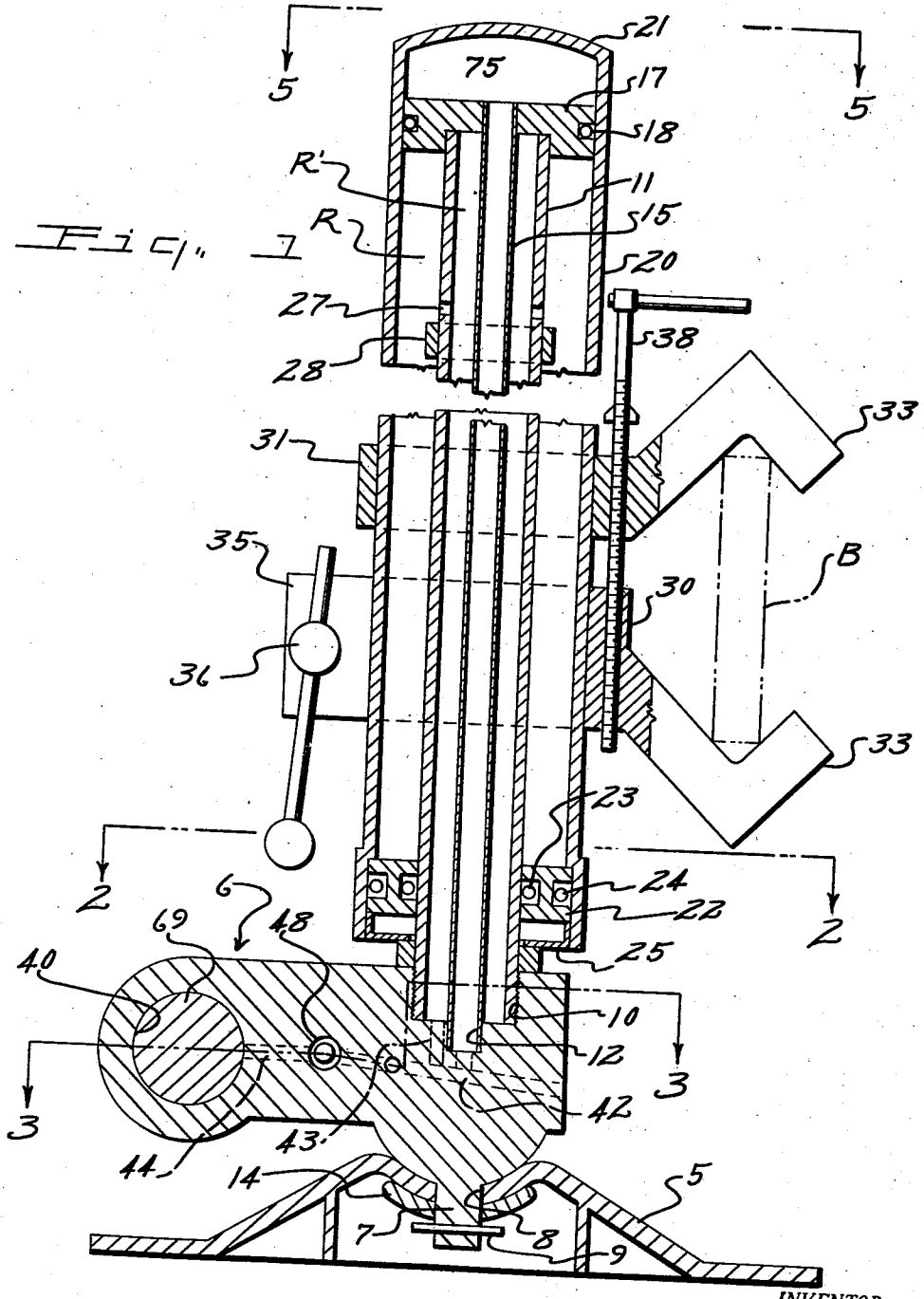
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HYDRAULIC BUMPER JACK

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Fig. 1



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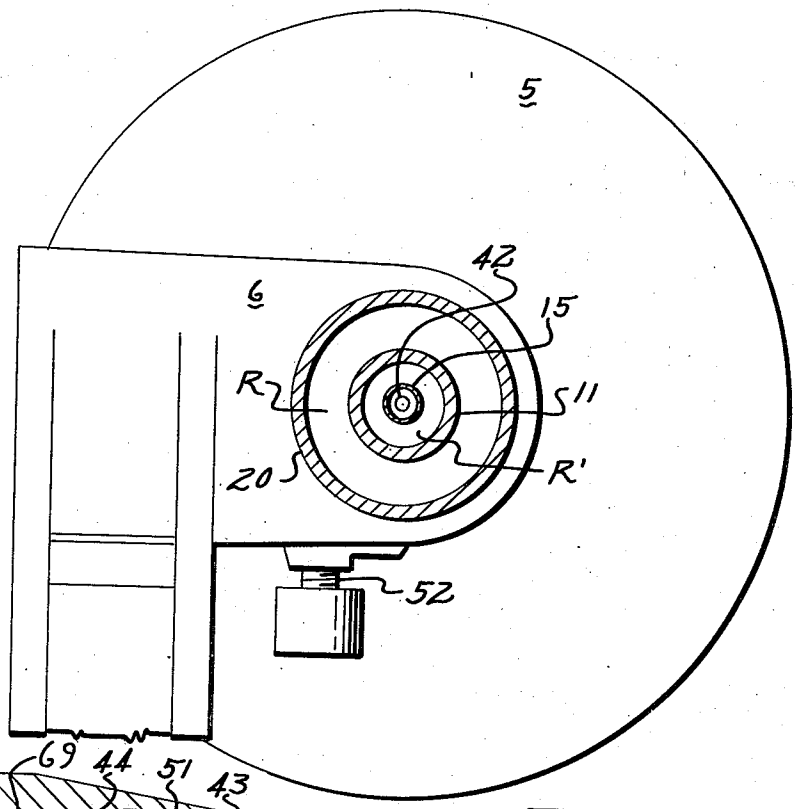


Fig. 2

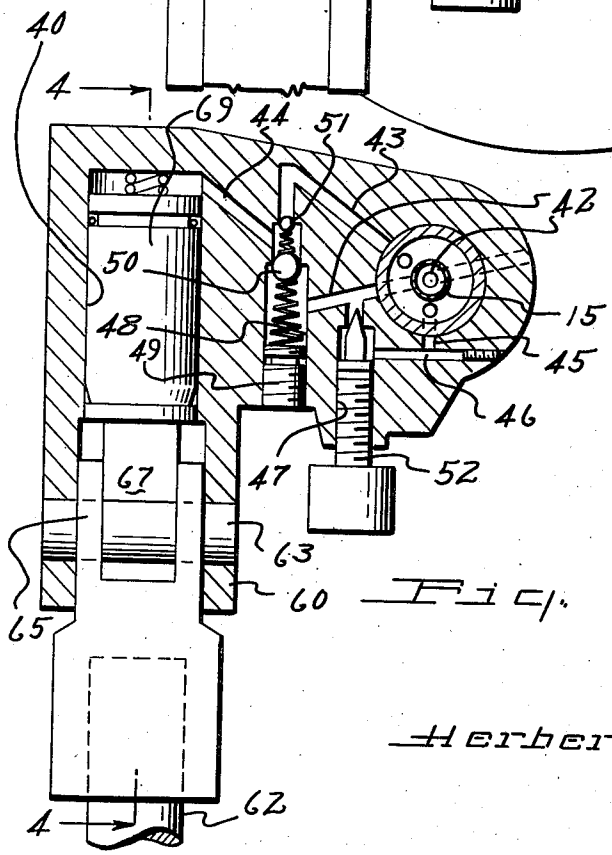


Fig. 3

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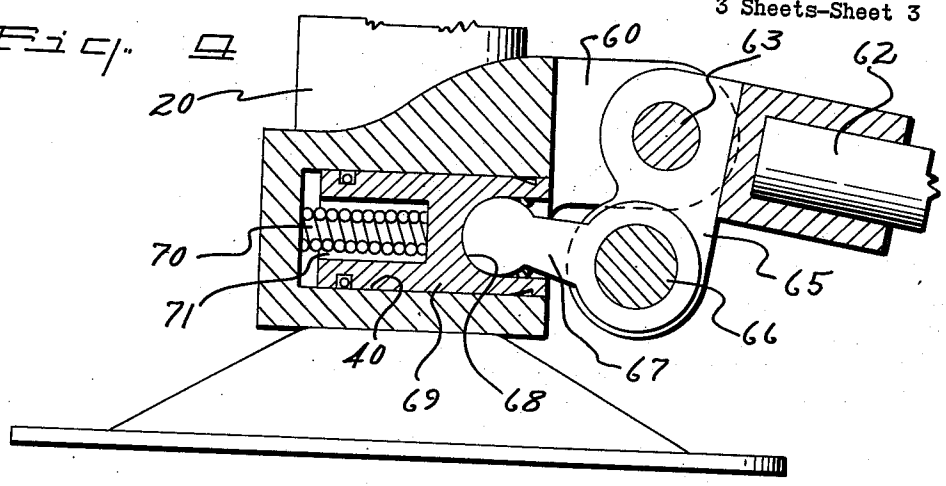
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HYDRAULIC BUMPER JACK

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Fig. 4



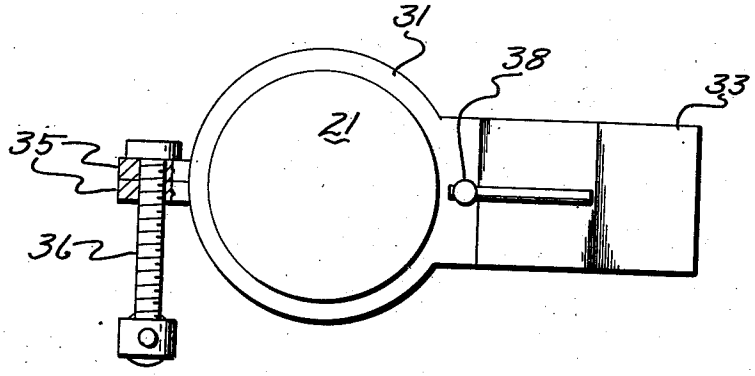


Fig. 5

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HYDRAULIC BUMPER JACK

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Application December 5, 1944, Serial No. 566,664

4 Claims. (Cl. 254—93)

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My invention relates to hydraulic jacks of the type particularly adapted to be attached to the bumper of a vehicle for lifting purposes, it being an object to provide a jack of this sort characterized by its simplicity and economy of construction as well as its durability and efficiency.

It is also an object to provide in such a jack novel means for securing it to the bumper of a vehicle to overcome the tendency of such a jack to allow the vehicle to swing sidewise after being elevated.

Another novel characteristic of my invention resides in the provision of a simple, economical and efficient reservoir construction.

For explanatory purposes, I show in the accompanying drawing and will now describe one specific embodiment of the invention, from which it will be obvious that the invention possesses still further novel object and features of advantage and that, within the scope of the appended claims, it may be embodied in other physical forms.

In the drawings,

Fig. 1 is a medial vertical section;

Fig. 2 is a section on line 2—2 of Fig. 1;

Fig. 3 is a section on line 3—3 of Fig. 1;

Fig. 4 is a section on line 4—4 of Fig. 3; and

Fig. 5 is an end view taken on line 5—5 of Fig. 1.

The numeral 5 designates the base to which the body 6 of the jack is secured by means of a depending lug 7 passing through an opening 8 in the base and being secured against escape by a cross pin 9. The bottom end of the body 6 is of semispherical shape and the lug 7 is of round cross section so that the body may rotate relative to the base. A washer 14 is interposed between the bottom of the base and pin 9 around the lug 7.

The body presents an outwardly opening socket 10 within which the bottom end of a perpendicular inner cylinder 11 is threaded, and axially of the socket there is a recess 12 within which the lower end of a fluid passing tube 15 is secured. The top end of the cylinder 11 is closed by a cap 17 carrying in an annular recess a sealing ring 18, the tube 15 extending upwardly through the cap 17. The cap 17 also serves as a spacer for the cylinder 11 and tube 15.

Telescopically mounted on the cylinder 11 I provide an outer cylinder or sleeve 20 having a closed top end 21 and carrying an inner ring 22 adjacent its bottom end, which latter ring has annular seal rings 23, 24 for sealing engagement with the cylinder 11 and the outer cylinder 20, respectively. The ring 22 is mounted in an enlarged diameter portion of the cylinder 20 and is held

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therein against outward escape by a retaining member 25.

The interior of the cylinders 11 and 20 below the cap 17 provides fluid reservoirs R and R' adapted to contain hydraulic fluid, the reservoirs being in communication with each other through openings 27 in cylinder 11. An annular stop ring 28 is secured on cylinder 11 to be engaged by ring 22 to limit extensive movement of the device, that is, to limit movement of the outer cylinder 20 axially upwardly on the inner cylinder 11.

For attaching the jack to the bumper of a vehicle I mount on the cylinder 20 a pair of collars 30, 31 which are adjustable axially of the cylinder 20 as well as relative to each other, each of the collars having V-shaped opposed arms 33 for engagement with the opposite edges of a bumper B.

The collar 30 is transversely split and presents at each side of the split a flange 35, which flanges are clamped together by the screw 36 to secure the collar 30 in adjusted position on the cylinder 20.

The collar 31 is slidably adjustably mounted on the cylinder 20 and may be clamped towards the collar 30, to confine the bumper therebetween, by means of the screw 38, the lower end of which threadedly engages the collar 30.

Referring more particularly to Figs. 3 and 4 the body provides a pumping cylinder 40, fluid passageways 42, 43, 44, 45, 46, and valve bores 47, 48, the latter bore being closed at its top end by a plug 49. In bore 48 ball check valves 50, 51 seat towards the reservoir and a needle valve 52 is threadedly mounted in bore 47 for controlling the passageway 42.

The body has bifurcations 60 directly over the outer end of the cylinder 40, between which the inner end of a pumping lever 62 is pivotally mounted by a cross pin 63. The lever has a depending arm 65 which is pivotally connected by pin 66 with the outer end of connecting rod 67, the inner end of the connecting rod being spherical and engaging in a complementary recess 68 in the outer end of a pumping piston 69, the piston being mounted to reciprocate in the cylinder 40. A coil spring 70 bears at one end against the inner end of cylinder 40 and bears at its other end against the inner end portion of piston 69, fitting in a recess 71 in the inner end of the piston to urge the piston outwardly of the cylinder.

In operation the jack is placed in upright position besides the bumper of a vehicle and the collars 30, 31 adjusted to secure the bumper between the arms 33. Operation of the lever 62 reciprocates piston 69. Upon each outward or suction stroke of the piston fluid is drawn from

the reservoir through passageway **43**, past check valve **51** and through passageway **44** and upon each inward or pressure stroke of the piston the fluid thus drawn into the cylinder **40** is forced past check valve **50**, through passageway **42** and tube **15** into the pressure chamber **75** defined by the top end of the cylinder **20** and the cap **17**. The pressure in chamber **75** thus moves the outer cylinder **20** and the carried collars upwardly to lift the vehicle, and inasmuch as the bumper is clamped between the arms **33** the jack will not tilt sidewise despite the fact that the base is of relatively small diameter.

To lower the jack the needle valve **52** is screwed outwardly to open the passageways **45**, **46** to passageway **42**, thus allowing fluid to pass back through tube **15** into the reservoir.

I claim:

1. In a hydraulic bumper jack, a body carrying an upright cylinder, a piston secured to the top end portion of said cylinder, an outer cylinder slidably mounted on the first-named cylinder for axial movement relative thereto and forming with the first-named cylinder a fluid reservoir, the outer cylinder having an end wall defining with the piston a pressure chamber, pressure-generating means in the body, valve-controlled means providing communication between the reservoir and pressure-generating means, second valve-controlled means providing communication between the pressure-generating means and the pressure chamber, third valve-controlled means for releasing fluid from the pressure chamber to the reservoir, and bumper-engaging means slidably adjustably mounted on the outer cylinder.

2. The device of claim 1 wherein the bumper-engaging means comprises a pair of collars relatively adjustably movable axially of the outer cylinder, and a bumper-engaging arm carried by each collar whereby to clamp a bumper therebetween.

3. The device of claim 1 wherein the bumper-engaging means comprises a transversely split collar on the outer cylinder, screw means for clamping said collar about said cylinder, a second collar carried by the outer cylinder, said collars being relatively adjustably movable axially of the outer cylinder, and screw means cooperating with the collars to urge them towards each other whereby to clamp a bumper therebetween, each of the collars presenting a bumper-engaging arm.

4. In a bumper jack, a base, a cylinder carried by the base for movement perpendicular thereto, means for moving the cylinder relative to the base, and bumper clamping means comprising a pair of collars slidably carried by the cylinder for relative movement axially of the cylinder, a laterally projecting bumper-engaging arm carried by each collar, screw means for securing one of the collars in adjusted position on the cylinder and screw means carried by one of the collars and threadedly engaging the other whereby to draw the collars towards each other and thereby clamp a bumper therebetween.

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