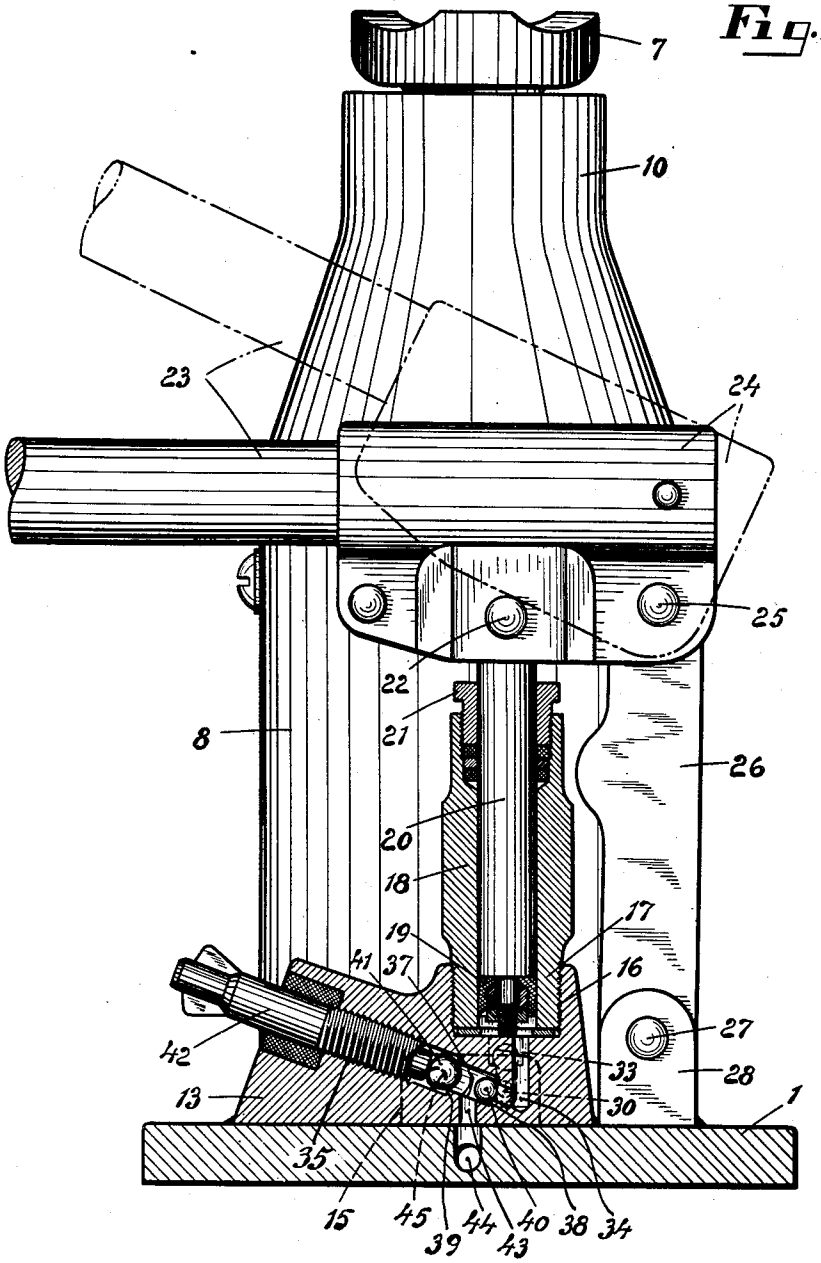
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HYDRAULIC JACKS

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Fig. 1



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HYDRAULIC JACKS

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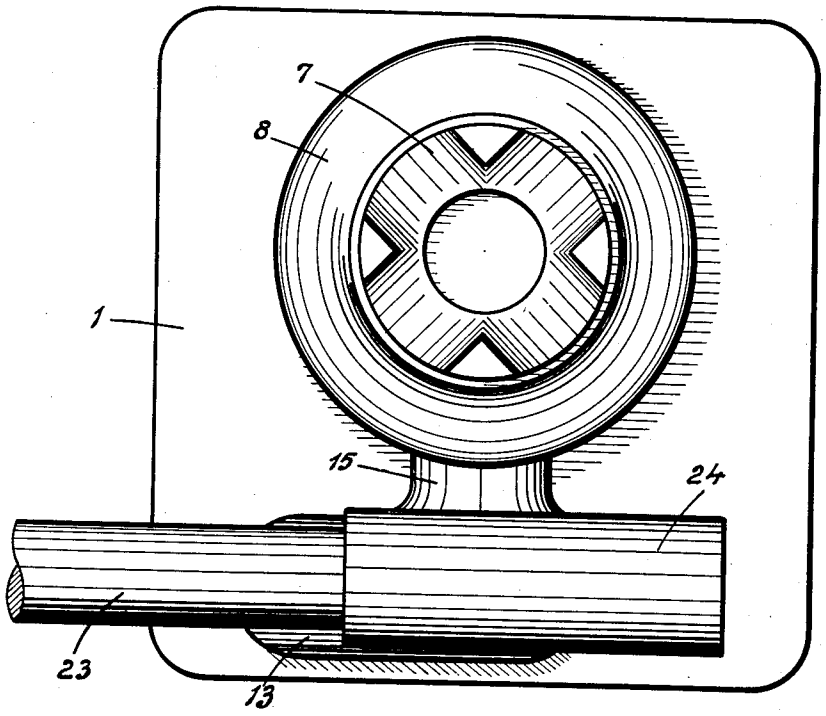


Fig. 2

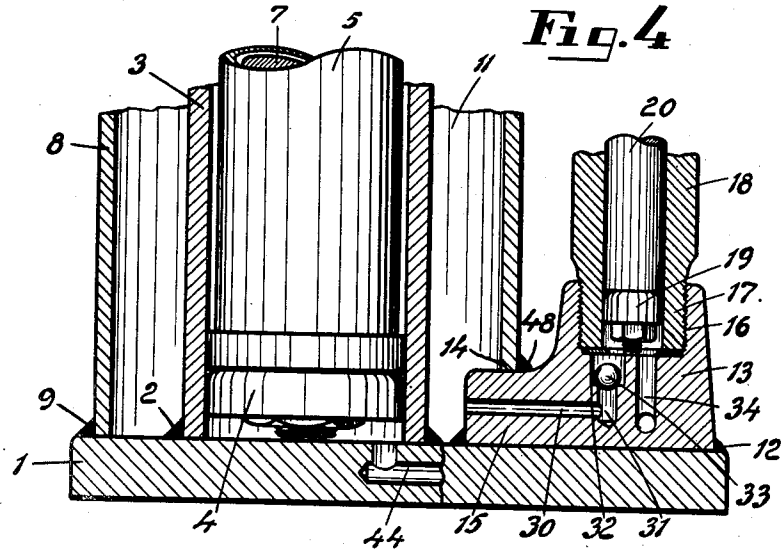


Fig. 4

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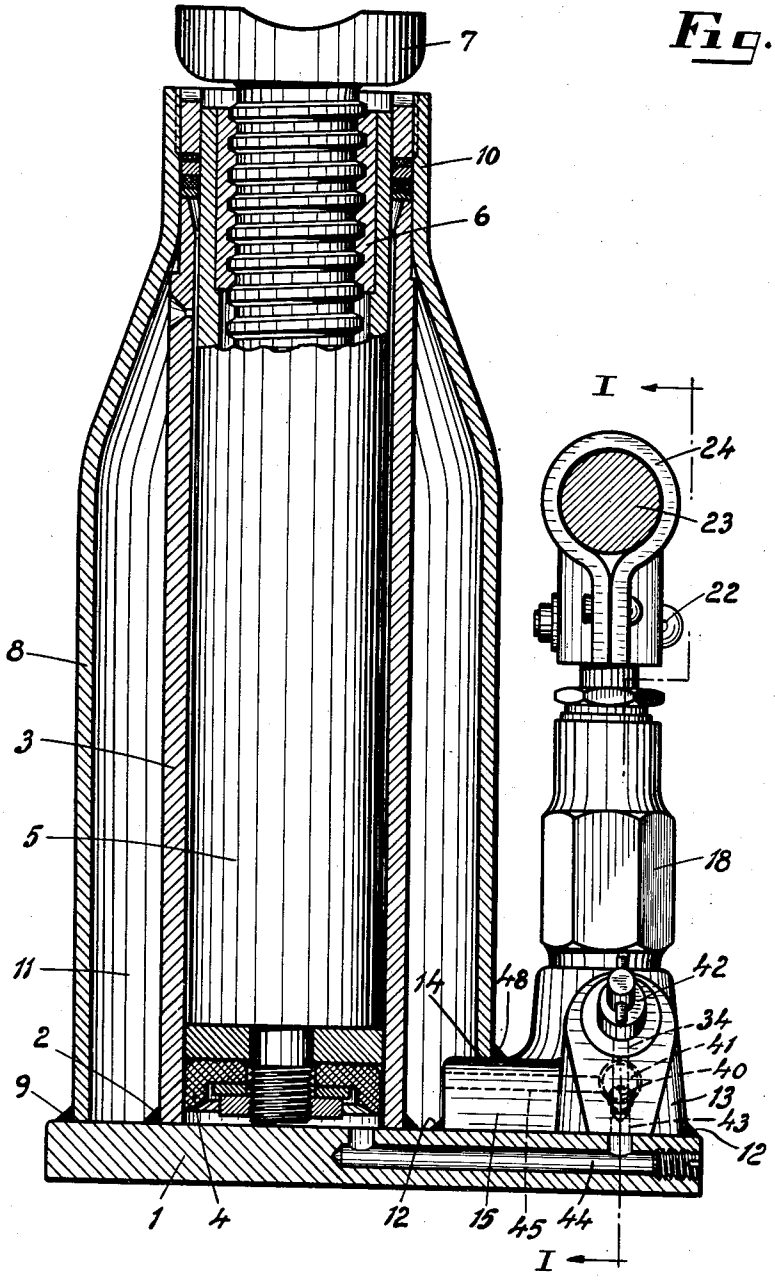
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HYDRAULIC JACKS

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Fig. 3



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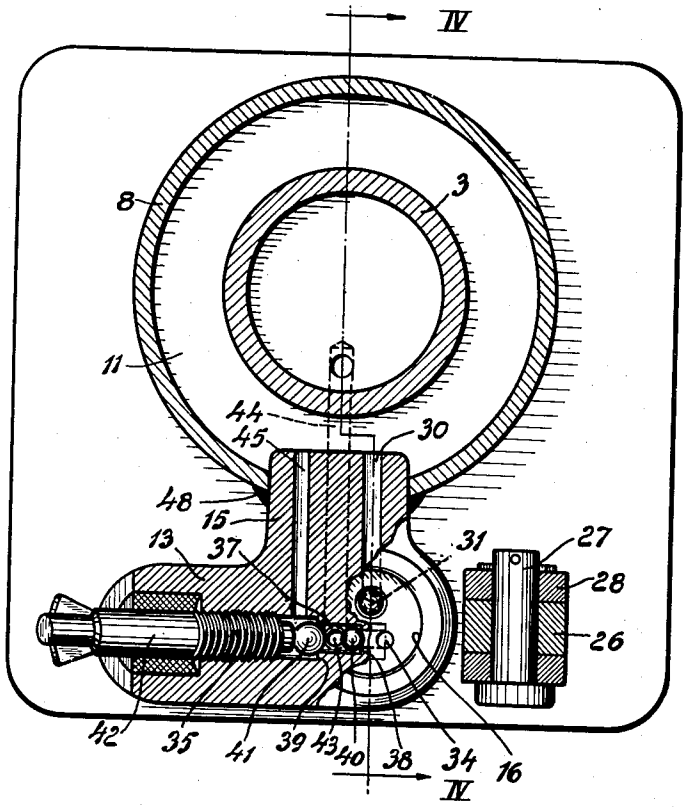
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Fig. 5



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2,828,611

HYDRAULIC JACKS

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Application November 1, 1955, Serial No. 544,309

Claims priority, application Sweden November 3, 1954

1 Claim. (Cl. 60—52)

This invention relates to hydraulic jacks of the kind having a base plate from which there projects upwardly a cylinder for a lifting piston, a cylinder for a pump piston and a casing surrounding the first-mentioned cylinder, wherein the pump cylinder, through a suction channel having a check valve, communicates with the space between the lifting piston cylinder and the casing, which space forms a container for a pressure medium, and through a channel system, provided with a check valve comprising a ball valve and a seat, communicates with the lifting piston cylinder, and wherein the last-mentioned cylinder in order to lower the lifting piston may be connected to the pressure medium container through a channel, which is controlled by a valve operable by means of a screw displaceable along a threaded channel and accessible from the outside of the jack.

The object of the invention is to obtain a simplification of the channel and valve system and thereby a less costly jack.

The invention is broadly characterised in that the threaded channel is provided with an extension which is connected to the pump cylinder by its inner end in which is formed the seat for a ball valve disposed in said extenson, the outer end of which is provided with a second seat, coaxial with the first-mentioned seat, for a ball valve which may be pressed against its seat by means of the screw, a channel communicating with the pressure medium container being connected to said extension outside the last-mentioned seat, and a channel communicating with the lifting piston cylinder being connected to the extension between the coaxial seats.

One embodiment of the invention is illustrated in the accompanying drawings in which:

Figure 1 is a side view of a jack according to the invention and with certain parts broken away along the line I—I in Figure 3;

Figure 2 is a plan view of the jack;

Figure 3 is an axial cross section through certain parts of the jack;

Figure 4 is a vertical cross section through the lower part of the lifting piston cylinder, the casing and the pump cylinder, and

Figure 5 is a horizontal cross section through certain parts of the jack with the pump cylinder and the piston removed.

In the drawings, numeral 1 designates a rectangular base plate to which, by means of a welding seam 2 (Figure 3) is secured the lower end of an upwardly projecting cylinder 3 in which is displaceable a piston 5 shaped as a cylinder which is provided at the lower end with a sealing ring 4. In the upper end of the piston there is inserted an internally threaded bushing 6 in which is displaceable a screw provided at its upper end with an abutting head 7 for the load which is to be lifted by the jack. The cylinder 3 is surrounded by a cylindrical casing 8, having greater diameter than the cylinder 3, the lower end of said casing being secured to the base plate 1 by means of a welding seam 9, and the upper

narrower end portion 10 of the casing being sealed to the upper end of the cylinder 3. The space 11 between the cylinder 3 and the casing 8 serves as a container for the pressure medium (oil) by means of which the jack is operated. To the top surface of the base plate 1 and at the side of the casing 8 there is secured by means of a welding seam 12 an upwardly projecting piece 13 formed with a lateral projection 15, the free end of which is inserted in the pressure medium container 11 through a recess 14 in the bottom edge of the casing 8. At the top of the piece 13 there is a cylindrical, screw-threaded recess 16 into which the bottom end 17 of the pump cylinder 18 is screwed. A pump piston 20 having a packing 19 is slideable therein and its top end projects out of the cylinder 18 which is provided with a sealing device 21 for the piston. The top end of the piston 20 is connected by means of a pin 22 to a sleeve 24 adapted to receive the end portion of a lever 23, and by means of a pin 25 the sleeve 24 is pivoted to the top end of a link 26 the lower end of which is secured by means of a pin 27 pivoted to two ears 28 secured to the base plate 1, so that the pump piston 20 can be imparted a reciprocating movement by means of the lever 23. In the bottom of the recess 16 debouches an angular channel the horizontal branch 30 of which passes through the projection 15 of the piece 13 to the pressure medium container 11 and the vertical branch 31 of which is formed with a seat 32 for a ball valve 33. In the bottom of the recess 16 there communicates a vertical channel 34. From a side surface of the aforesaid projecting piece 13 is bored a screw-threaded channel 35 inclined to the horizontal, which continues in an extension 37, the diameter of which is determined so as to form two angular seats 38 and 39 in a stepwise arrangement, the one, 38, of which is located at the inner end of the extension 37, while the other one, 39, is disposed at the outer end of the extension 37. The ball of a valve 40 co-operates with the inner seat 38, while the outer seat 39 co-operates with the ball of a valve 41, which by means of a screw 42, accessible from the outside and displaceable in the screw-threaded channel 35, can be pressed against the seat 39. In the extension 37 a channel 43 opens between the seats 38 and 39 and this channel 43 is connected to one end of an angular channel 44 formed in the base plate 1 and communicating with the cylinder 3 under the lifting piston 5. To the channel 35 a channel 45 is connected outside the seat 39, said channel 45 passing through the projection 15 of the piece 13 and leading to the pressure medium container 11.

As the pump piston 20 is reciprocated by means of the lever 23 pressure medium is pressed into the cylinder 3 under the lifting piston 5 forcing this upwardly, and by undoing the screw 42 the vlave ball 41 is permitted to move off its seat 39, whereby communication is established between the cylinder space under the lifting piston 5 and the pressure medium container 11, so that the lifting piston is enabled to descend.

After that the piece 13 with its channels has been welded to the base plate, the casing 8 is secured to the base plate by means of the welding seam 9 and to the projection 15 of the piece 13 by means of the welding seam 48.

The invention is not limited to the embodiment described and illustrated but may be varied in details.

What we claim is:

An improvement in hydraulic jacks comprising a flat straight base plate, a cylinder having an open end fixedly mounted on and closed by said plate, a piston slidably mounted in said cylinder, a casing surrounding said cylinder providing a container therewith for a pressure medium, said casing having a recess in the edge of its end

mounted on said plate providing a side opening therethrough, a piece fixedly mounted on said plate and projecting therefrom, said piece having a lateral projection with the end thereof extending through said casing opening into said pressure medium container and closing said casing opening, said lateral projection having a pair of channels extending therein and both channels opening at the end of said lateral projection in said container, said projecting piece having a threaded recess, a pump having its inlet end threaded and mounted in said piece recess in threaded engagement therewith, a lever pivotally connected to said pump for operating the same and also being pivotally connected to said plate, said piece further having a second pair of channels both opening at one end into said piece recess in communication with said pump inlet, said piece having one of said second pair of channels in communication with one of said first pair of channels, a ball valve provided in said one of said second pair of channels for permitting the flow in said channel only towards said pump, said projecting piece having a threaded channel opening at the outside surface of said piece and having the other of said first pair of channels in communication therewith, said piece threaded channel having an extension of relatively smaller diameter, said piece further having a bore connecting said extension in communication with the other of said

second pair of channels and which bore is of relatively smaller diameter than said extension, a ball mounted in said threaded channel for closing said threaded channel to said extension, a screw extending in said threaded channel in threaded engagement therewith for pressing said ball into its extension closing position, a second ball positioned in said extension for permitting flow into said extension only from said bore, said plate having a channel provided therein opening at one end into said cylinder open end and at its opposite end beneath said piece and said piece having a connecting channel placing said plate channel in communication with said threaded channel extension whereby pressure medium drawn in by said pump can be forced to said cylinder piston for raising purposes and passed to said container upon turning said screw releasing said first ball for lowering said piston.

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