

Sept. 3, 1940.

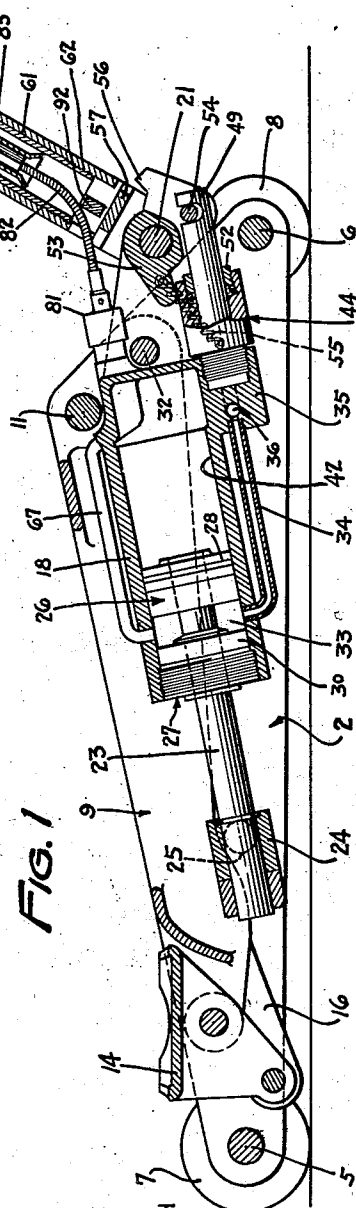
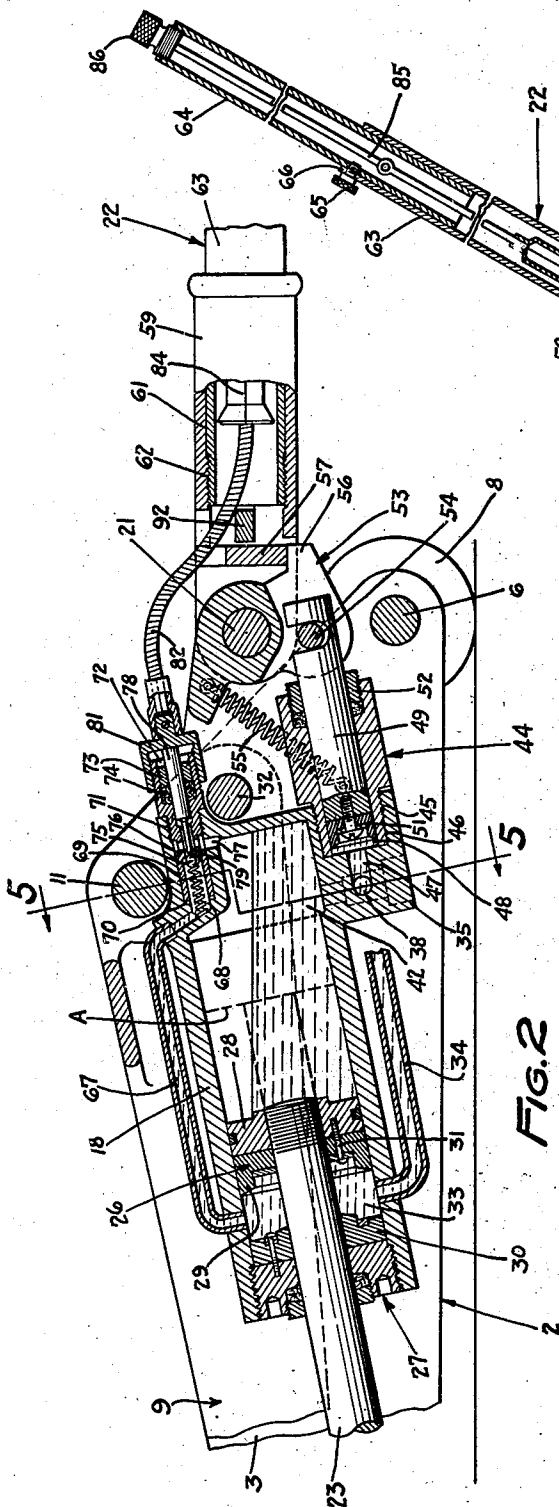
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2.213,285

LIFTING JACK

Filed Feb. 10, 1940

3 Sheets-Sheet 1



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2,213,285

LIFTING JACK

Filed Feb. 10, 1940

3 Sheets-Sheet 2

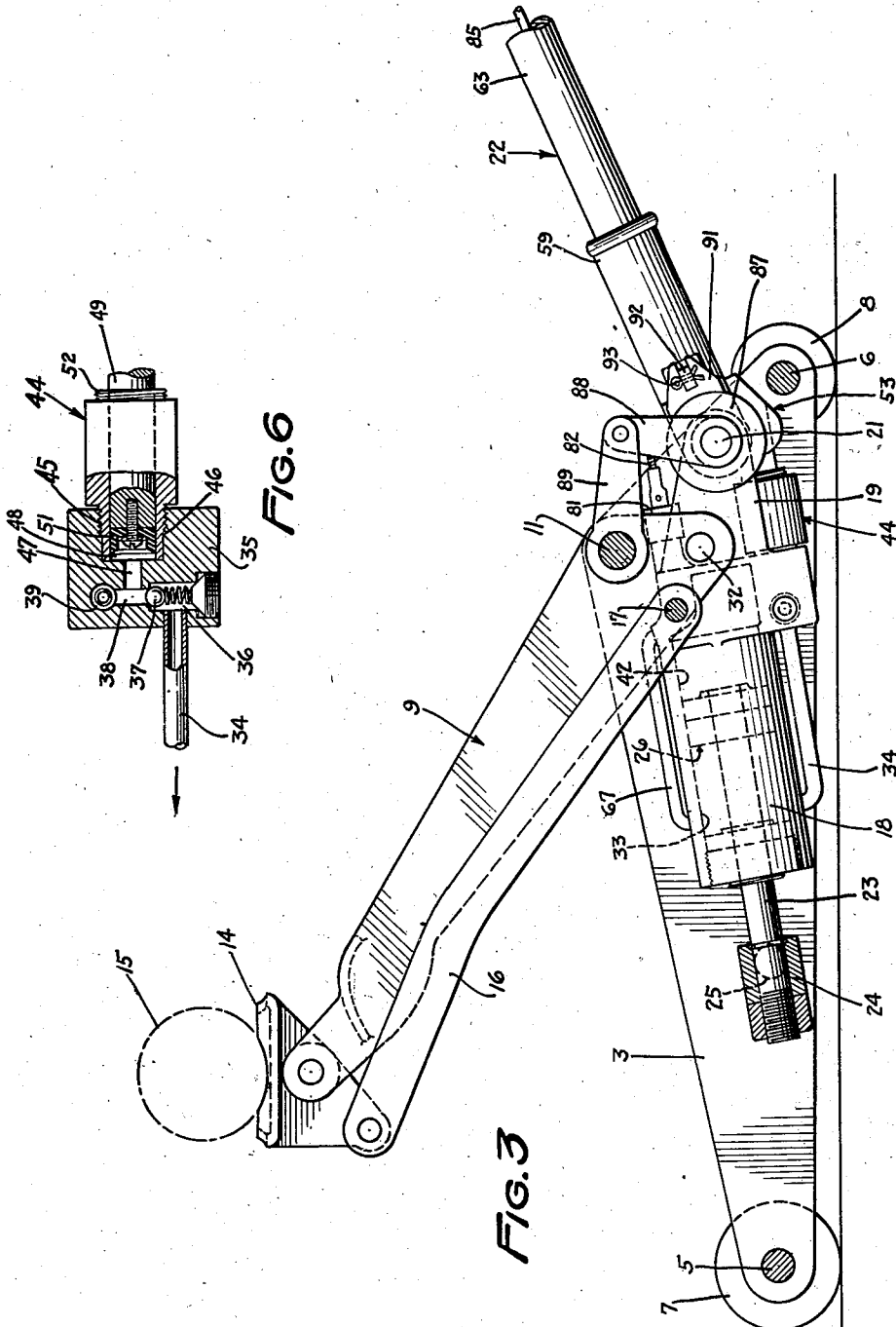


FIG. 3

FIG. 6

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2,213,285

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3 Sheets-Sheet 3

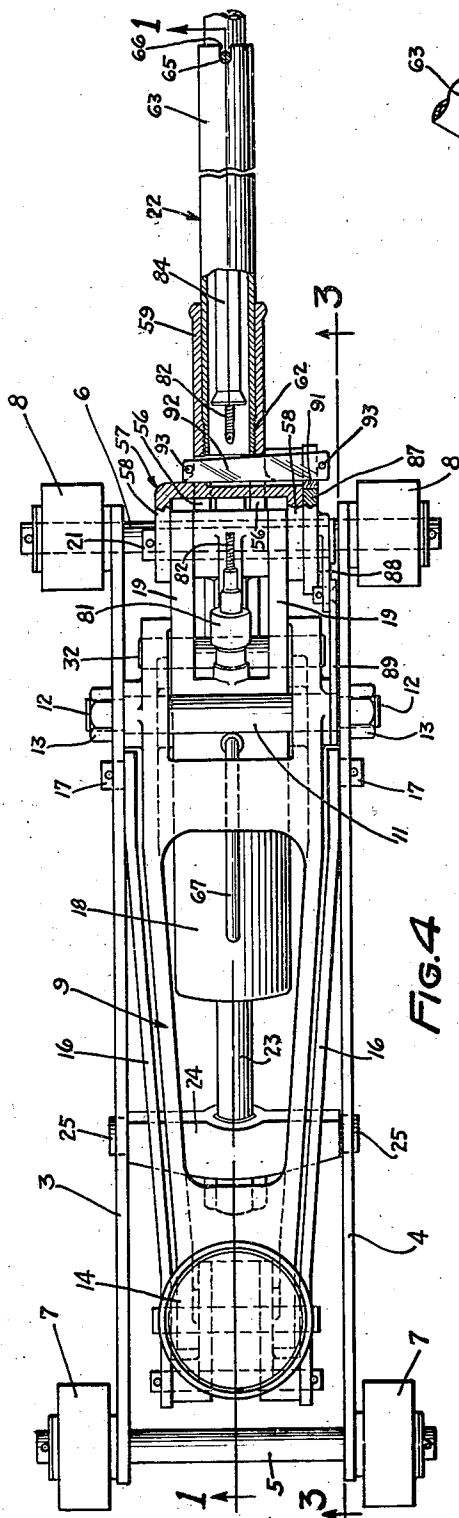


FIG. 4

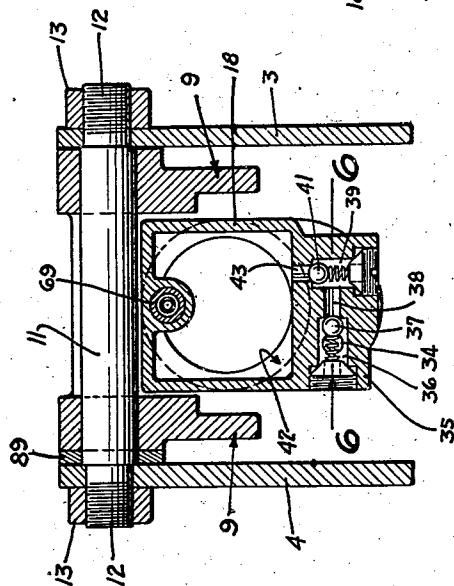


FIG. 5

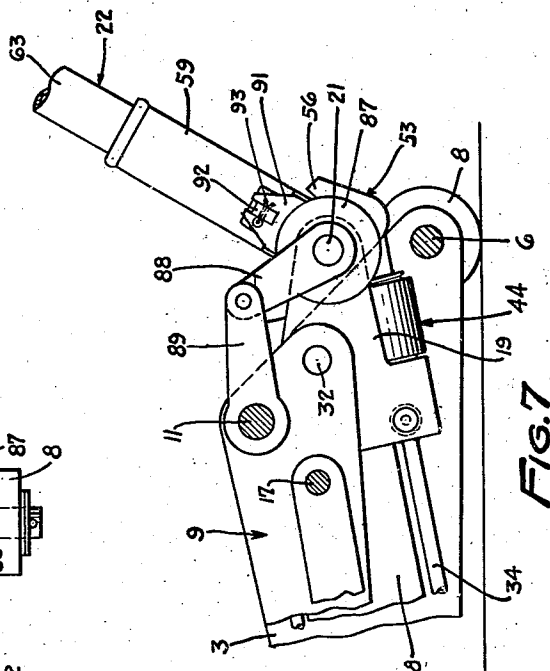


FIG. 6

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UNITED STATES PATENT OFFICE

2,213,285

LIFTING JACK

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Application February 10, 1940, Serial No. 318,282

12 Claims. (Cl. 254—2)

This invention relates to new and useful improvements in lifting jacks, and more particularly to such jacks of the hydraulic type, comprising a lifting member adapted to be moved into or out of engagement with a load.

Hydraulic lifting jacks, such as are commonly used in connection with automobiles and trucks, usually comprise an operating handle or member for actuating the pump means to move the lifting arm into or out of engagement with the load.

In such jacks it is usually necessary that the operating member or handle be operated a considerable time to move the lifting arm from its normal inoperative position into engagement with the load. This often requires considerable time and is objectionable. It is therefore desirable to provide a jack having an operating mechanism which is so constructed that the lifting member of the jack may be swung quickly into engagement with the load, with a minimum movement of the operating handle thereby expediting the operation of elevating the load to the desired height.

The novel lifting jack herein disclosed, has been designed in such a manner that the time required to move the lifting member from its normal inoperative position, into engagement with the load, may be accomplished by a single movement of the operating handle, thereby greatly facilitating the operation of moving the lifting member into engagement with the load, after which the operating handle may be operated in the usual manner to actuate the pump means and thereby force the fluid into one end of the cylinder against the piston head of the plunger, thereby to operate the lifting arm to elevate the load.

An object of the invention, therefore, is to provide a hydraulic jack, having a fluid circulating pump provided with an operating handle by means associated therewith, whereby the lifting member or head of the jack may be moved directly into engagement with the load by a single movement of the operating handle.

A further object of the invention is to provide a lifting jack comprising a suitable supporting frame having a lifting arm pivotally mounted thereon, and a cylinder being pivotally connected to the lifting arm and having a plunger operable therein, one end of which is pivotally connected to the supporting frame, and pump means having an operating handle mounted for pivotal movement to operate the pump means, and said handle having means selectively operable thereon for temporarily locking the handle against pumping

movement, and whereby the lifting member may be moved directly into engagement with the load, upon initial movement of the handle.

A further object resides in the provision of a hydraulic jack comprising a cylinder and plunger, and pump means for circulating the fluid within the cylinder to operate the jack, and said pump having an operating handle so arranged with respect to the pump means and cylinder that the force exerted on the handle to force the fluid into the cylinder to operate the lifting member is additive to the force of the fluid injected into the cylinder to operate the plunger.

Other objects of the invention reside in the simple and inexpensive construction of the jack, whereby it may be manufactured at small cost; in the arrangement of the handle and the means connected therewith for causing the lifting member to swing directly into engagement with the load, upon initial movement of the handle; in the means carried on the handle for operating the relief valve to release the fluid from the cylinder and permit the lifting member to return to its normal inoperative position, and whereby the release valve may be operated, regardless of the position of the handle with respect to the cylinder; in the unique arrangement of the cylinder and plunger, and the manner of pivotally supporting the operating handle on the cylinder, whereby the cylinder and operating handle may be constructed as a unit, independently of the lifting arm and supporting frame, thereby to facilitate manufacture; and in the novel arrangement of the check valves of the pump, whereby the fluid may circulate freely from one end of the cylinder to the other, when the handle is initially operated to move the lifting member directly into engagement with the load, and whereby the fluid will act as a check to prevent return movement of the lifting member, when the operating handle is released therefrom.

Other objects of the invention will appear from the following description and accompanying drawings and will be pointed out in the annexed claims.

In the accompanying drawings there has been disclosed a structure designed to carry out the various objects of the invention, but it is to be understood that the invention is not confined to the exact features shown as various changes may be made within the scope of the claims which follow.

In the drawings:

Figure 1 is a vertical sectional view on the line

1—1 of Figure 4, showing the lifting member in its normal inoperative position;

Figure 2 is an enlarged detail sectional view showing the operating handle in a lowered position;

Figure 3 is a longitudinal section on the line 3—3 of Figure 4, showing the lifting member moved into engagement with a load;

Figure 4 is a top view of Figure 1;

Figure 5 is a cross-sectional view on the line 5—5 of Figure 2, showing the pump check valves;

Figure 6 is a detail sectional view on the line 6—6 of Figure 5; and

Figure 7 is a view showing the means associated with the handle, whereby the lifting member may be moved directly into engagement with the load, upon initial movement of the operating handle.

The novel jack herein disclosed is shown comprising a suitable supporting frame, generally indicated by the numeral 2, and comprising side members 3 and 4 and axles 5 and 6 upon the outer ends of which suitable carrying wheels 7 and 8 are mounted, as shown in Figure 4. If desired, the side members 3 and 4 may be fixedly secured to the axles 5, whereby the members 3 and 4 and axles 5 and 6 cooperate to provide a rigid supporting structure for the load-lifting mechanism of the jack, subsequently to be described.

A lifting arm or member 9 is pivotally mounted on a cross rod 11, shown having reduced end portions 12 received in suitable apertures provided in the side frame members 3 and 4. The end portions 12 of the rod 11 are threaded to receive suitable securing nuts 13, as best shown in Figure 4.

The lifting arm 9 has pivotally mounted upon its outer or swinging end, a lifting head 14 adapted to engage a load 15, indicated in dotted lines in Figure 3. Links 16 each have one end pivotally connected to the lifting head 14 and their opposite ends to the side frame members 3 and 4 by suitable pivots 17, shown fixed to the links 16. The pivots 17 are received in suitable apertures provided in the side members 3 and 4 of the supporting frame.

The means provided for operating the lifting arm 9 is best shown in Figures 1, 2, and 4, and comprises a cylinder 18 provided at one end with spaced arms 19, which are apertured to receive a pivot pin 21 upon which a suitable operating handle, generally designed by the numeral 22, is pivotally mounted. A piston rod 23 has one end supported in a suitable cross head 24 having reduced terminals 25 pivotally mounted in the side frame members 3 and 4, as best shown in Figure 4. A piston head, generally indicated by the numeral 26, is secured to the opposite end of the piston rod 23 and is mounted for reciprocal movement within the bore of the cylinder 18, as clearly shown in Figures 1 and 2. The cylinder is provided at one end with a suitable head 27, bored to receive the piston rod 23, as shown in Figure 2. The cylinder head 27 is provided with suitable packing glands for preventing leakage around the piston rod 23, as is customary in devices of this general character. The cylinder head 27 is also preferably provided on its inner side with a suitable sealing element 30, to prevent the pressure fluid in the cylinder from escaping thru the joint between the cylinder head 27 and cylinder wall. The piston head, it will be noted by reference to Figure 2, comprises a metallic member 28 which is suitably secured to the plunger 23 and has a

leather cup or packing 29 secured thereto by suitable screws 31.

In the structure, as illustrated in Figures 1 and 2, the cylinder 18 is movable with respect to the piston head 26, the latter being fixed against longitudinal movement as a result of its connection with the cross head 24. The cylinder 18 is pivotally connected to the lifting arm 9 by a suitable transverse pivot pin 32, whereby when the cylinder is longitudinally moved in a direction towards the left, when viewed as shown in Figures 1 and 2, the lifting arm 9 will swing upwardly, as shown in Figure 3.

To thus operate the cylinder with respect to the piston head 26, means is provided for pumping an inelastic fluid into the space or chamber 33 provided between the cylinder head 27 and the piston 26. Such fluid circulating means is shown comprising a conduit 34 having one end in communication with the chamber 33, as shown in Figures 1 and 2. The opposite end of the conduit 34 is connected to a depending portion 35 of the cylinder 18. A valve chamber 36 is provided within the depending portion 35, as shown in Figure 6. A check valve 37 is provided within the valve chamber 36 and controls fluid circulation from the valve chamber 36 thru a passage 38, shown in Figure 6. The passage 38 establishes communication between the valve chamber 36 and a second valve chamber 39, having a check valve 41 therein for controlling fluid circulation from a chamber 42 through a suitable port 43, shown in Figure 5. The check valves 37 and 41 control the flow of fluid from the chamber 42 to the opposite end of the cylinder or chamber 33, when the pump means is operated.

A pump cylinder generally indicated by the numeral 44 is shown provided with a reduced threaded end portion 45, received in a threaded socket 46 provided in the depending portion 35 of the cylinder. A passage 47 establishes communication between the passage 38 and the bore 48 of the pump cylinder 44, as best shown in Figure 6. A piston 49 is mounted for reciprocal movement in the pump cylinder 44, and is provided at one end with a suitable packing 51, shown in Figure 2. A suitable packing gland 52 is provided in the outer end of the pump cylinder 44 to prevent leakage around the pump piston 49.

The means for operating the pump piston 49 is best shown in Figures 1 and 2, and comprises an actuating member, generally indicated by the numeral 53. This member is mounted for rocking movement on the cross pin 21 of the handle 22. The actuating member 53 is connected to the pump piston 49 by a suitable pin 54, which pin is received in a notch provided in the pump piston, whereby when the actuating member 53 is oscillated about the axis of the pivot pin 21, reciprocal movement is imparted to the pump piston 49. A suitable spring 55 has one end connected to the actuating member 53 and its opposite end to the pump cylinder 44 and constantly urges the actuating member in a direction to move the pump piston 49 outwardly to the position shown in Figure 1. The actuating member 53 is operated by oscillation of the operating handle 22.

To thus operate the actuating member 53, the latter is provided with a projection 56 adapted to be engaged by a yoke 57 having its spaced arms 58 mounted on the pivot pin 21. The yoke 57 is shown provided with a cylindrical portion 59 having a bore 61 therein for receiving the tubular operating handle 22. The bottom of the bore 61 is threaded as shown at 62 to receive the lower

threaded end portion of the tubular operating handle 22. When the operating handle is oscillated from the position shown in Figure 1 to that shown in Figure 2, the yoke 57 engages the projection 56 of the pump actuating member 53, whereby the member 53 is rocked upon the pivot pin 21 and thereby operates the pump piston 49 as will readily be understood by reference to Figures 1 and 2. Such operation of the pump 44 will cause fluid to be drawn from the chamber 42 in the cylinder into the conduit 34, from whence it is pumped into the chamber 33, and thereby imparts reciprocal movement to the cylinder with respect to the piston head 26. Such reciprocal movement of the cylinder will, as hereinbefore stated, impart swinging movement to the lifting arm 9, because of the arm 9 being connected to the cylinder by the pin 32.

The operating handle, as best illustrated in Figure 1, is preferably made of two sections 63 and 64, arranged in telescoping relation and secured together by a suitable lock screw 65, which for convenience, may be threaded into the wall of the section 64, as shown in Figure 1. A slot 66 is provided in the adjacent end of the handle section 63, adapted to receive the lock screw 65.

Means is provided for releasing the fluid from the chamber 33, in the cylinder when it is desired to lower the lifting arm out of engagement with the load 15. Such means is best illustrated in Figure 2, and comprises a conduit 67 having one end in communication with the chamber 33 and its opposite end communicating with a valve chamber 68, shown provided in a sleeve 69, mounted in a bore 70 provided in a portion of the cylinder 18. The sleeve 69 has a threaded portion 71 received in threaded engagement with the wall of the bore 70, as shown in Figure 2. The sleeve 69 has formed thereon a cup-shaped portion 72 which is internally threaded to receive a packing gland 73 and a suitable packing 74.

A spring-actuating check valve 75 is disposed within the valve chamber 68 and normally closes a passage 76 establishing communication between the valve chamber and a port 77 leading to the chamber 42 of the cylinder 18.

Means is provided for unseating the check valve 75 to permit the fluid in the cylinder chamber 33 to return to the storage chamber 42 when it is desired to lower the jack. Such means is shown comprising an actuating pin 78 which is mounted in the bore of the packing gland 73 and has a reduced end portion 79 extending into the passage 76 in alignment with the check valve 75. Axial movement of the pin 78 in one direction will unseat the check valve 75 and permit the fluid in the chamber 33 to return to the reservoir 42 via the conduit 67.

The means for actuating the pin 78 is shown comprising a cap 81, received in threaded engagement with the cup-shaped portion 72 of the sleeve 68. One end of a flexible shaft, generally indicated by the numeral 82 is secured to the cap 81 and its opposite end to an elongated head 83 which preferably is square in cross section. The head 83 is received in a correspondingly shaped sleeve member 84, mounted for rotary movement in the handle section 63, as shown in Figure 1. One end of an articulated operating stem 85 is secured to the sleeve 84. The other end of the stem 85 is provided with a finger knob 86, received in threaded engagement with the upper end of the handle section 64, as shown in Figure 1. Rotation of the finger knob 86 will impart

rotary movement to the flexible shaft 82 whereby the cap 81 is relatively rotated on the cup-shaped portion 72 of the valve cage sleeve 68, whereby axial movement is imparted to the cap 81 with respect to the head 73. Such relative axial movement of the cap 81 will impart longitudinal movement to the pin 78, whereby the check valve 75 may readily and conveniently be unseated to permit the fluid in the chamber 33 to return to the chamber 42, by the simple manipulation of the finger knob 86, conveniently located at the end of the operating handle 22. The flexible shaft 82 permits free swinging movement of the operating handle 22 without interfering with the operation of the release valve 75 and its operating mechanism.

Another important feature of the apparatus resides in the arrangement of the check valves 37 and 41, the springs of which are such that upon the slightest movement of the cylinder 18 with respect to the piston head 26, in a direction to elevate the lifting arm 9, a portion of the oil or fluid in the chamber 42 may pass freely through said check valves and the conduit 34, into the chamber 33 at the opposite end of the cylinder. The release valve 75 may be retained upon its seat by a relatively stiff spring, because this valve may be forcibly unseated by manipulation of the finger knob 86 on the operating handle.

Another feature of the invention resides in the means provided for moving the lifting head directly into engagement with the load, upon the initial movement of the operating handle. Such means is best shown in Figures 3, 4, and 7, and comprises a disk 87, which is loosely mounted on the pivot pin 21 of the operating handle, adjacent to one of the arms 58 of the handle yoke 57. The disk 87 has an arm 88 secured thereto, the outer end of which is pivotally connected to one end of an arm 89, loosely mounted on the pivot 11 of the lifting arm 9.

A friction shoe 91 is mounted on one end of a bar 92 which passes through suitable apertures provided in the cylindrical portion 59 of the operating handle, as best shown in Figure 4. The bar 92 is preferably tapered, as shown in Figure 4, and is retained in position by suitable cotter pins 93, received in apertures provided in the ends of the bar 92. The friction shoe 91 is adapted to be moved into frictional engagement with the periphery of the disk 87, thereby to lock the disk against relative rotation with respect to the operating handle 22. To thus move the friction shoe into frictional engagement with the disk 87, the section 63 of the operating handle is relatively rotated in the socket member 59, whereupon the threaded connection 62 provided between the lower end of the handle section 63 and the bottom of the socket member 59, will impart axial movement to the handle section 63 in the socket member 59. Such relative axial movement of the handle section 63 will cause the lower end thereof to engage the bar 92 and force it downwardly, whereupon the friction shoe 91 may frictionally engage the disk 87 with sufficient resistance to lock the handle 22 to the disk 87, whereby these two parts may be rotated as a unit upon the pivot pin 21.

When the operating handle is in the position shown in Figures 1 and 7, and the friction shoe 91 has been forced into frictional engagement with the disk 87, downward movement of the operating handle from the position shown in Figure 7 to that shown in Figure 3, will cause the cylinder 18 to move forwardly as a result of

the arm 88 being connected to the pivot pin 11 of the lifting arm by the arm 89. When the cylinder is thus moved forwardly, upon initial downward movement of the operating handle, a portion of the oil in the reservoir or storage chamber 42 will flow through the check valves 37 and 41, conduit 34, and into chamber 33 at the opposite end of the piston head 28, without restriction, until the lifting head 14 engages the load 15 as shown in Figure 3. When the lifting head 14 has thus been moved directly into engagement with the load, as indicated in Figure 3, by initial movement of the operating handle 22, the check valves 37 and 41 will immediately close and prevent return flow of the fluid from chamber 33 to the chamber 42, thru conduit 34, whereby the lifting head will be retained in engagement with the load. The operator then relatively rotates the handle 22 with respect to the socket member 59, in a direction to release the friction shoe 91, from the disk 87, after which the operating handle may readily be oscillated to actuate the fluid pump 44, thereby to forcibly pump additional fluid into the chamber 33 from the chamber 42. Continued oscillation of the operating handle 22 will cause the lifting head 14 to elevate the load 15 to the desired elevation.

The friction disk 87 and shoe 91 make it possible to quickly adjust the handle for swinging the lifting head 14 directly into engagement with the load, which is highly desirable in that the usual time required to move the lifting head into engagement with the load by operating a pump, is reduced to a minimum. After the lifting head has been moved directly into engagement with the load, by initial movement of the operating handle 22, the handle is operated in the usual manner to operate the fluid circulating pump 44 to elevate the load. When it is desired to lower the load, the operator simply rotates the hand knob 86 in a direction to move the cap 81 in a direction towards the release check valve 75, whereupon the valve opening pin 78 will engage the check valve 75 and move it out of engagement with its seat. The fluid in the chamber 33 is then free to return to the storage chamber through the open check valve 75.

The novel jack herein disclosed has been found very practical in actual operation. One of the important features of the invention, as hereinbefore stated, resides in the arrangement whereby the lifting head 14 may be moved directly into engagement with the load by a single downward movement of the operating handle, without operating the pump 44. In jacks of ordinary construction, it is necessary to operate the pump to gradually elevate the lifting head 14 from its normal inoperative position as shown, for example, in Figure 1, until the head reaches a position in engagement with the load, as shown in Figure 3. This may require several strokes of the pump handle and therefore requires considerable time. The friction disk and shoe 87 and 91, respectively, makes it possible to move the lifting head 14 from the position shown in Figure 1 directly into engagement with the load by a single stroke of the handle, which, to the best of my knowledge, has never heretofore been accomplished in the construction of a jack of this type.

Another important feature resides in the arrangement of the check valves 37 and 41, whereby they positively prevent fluid flow in one direction, but permit free and unrestricted flow in the opposite direction, or in a direction from the reservoir or chamber 42 to the chamber 33. The

cylinder 18, including the chambers 33 and 42, and the conduit 34 is filled with an inelastic fluid, such as oil, to substantially the level shown in Figure 2, whereby it will be noted that an air space is provided above the level of the oil. The amount of oil introduced into the cylinder is such that when the piston is in the dotted line position shown at A in Figure 2, an air space is provided over the oil level in chamber 42. The air in this space may be under a slight pressure because of the displacement of oil in chamber 33 by the piston rod 23. In other words, when the cylinder is moved relatively to the piston head 26 to transfer oil from chamber 42 into chamber 33, the piston rod 33 passing through chamber 33 will reduce the capacity of this chamber with respect to the capacity of the cylinder at the opposite side of the piston head. The pressure which may thus develop in chamber 42 is additive to the force of the fluid injected into the chamber 33 of the cylinder by manipulation of the pump handle 22, which therefore facilitates the operation of the pump.

The entire jack is extremely simple and inexpensive in construction and may be manufactured at small cost. Its operation is accomplished entirely by manipulation of the operating handle 22, as hereinbefore described. To facilitate shipment, the upper section 64 of the operating handle may readily be detached by simply unloosening the screw 65, whereupon the section 64, including the stem 85 and sleeve 84, may be withdrawn from the handle section 63, as will readily be understood.

I claim:

1. In combination with a lifting jack comprising a supporting frame, a lifting member, an actuating mechanism for the lifting member, and an operating member for the actuating mechanism, of means whereby the initial movement of the operating member may swing the lifting member directly into engagement with the load.

2. In combination with a lifting jack comprising a supporting frame, a lifting member, an actuating mechanism for the lifting member, and an operating handle for the actuating mechanism, of means whereby the initial movement of the operating handle may swing the lifting member directly into engagement with the load without operating the actuating mechanism.

3. In combination with a jack comprising a supporting frame, a lifting member, a hydraulic mechanism for actuating the lifting member including a fluid pump, and an operating handle for the pump, of means whereby the initial movement of the operating handle may swing the lifting member directly into engagement with the load without operating the fluid pump.

4. In combination with a lifting jack comprising a supporting frame, a lifting member, an actuating mechanism for the lifting member, and an operating handle for the actuating mechanism, of means carried by the operating handle and selectively operable to cause the initial movement of the operating handle to swing the lifting member directly into engagement with the load without operating the actuating mechanism.

5. In combination with a jack comprising a supporting frame, a lifting member, a hydraulic mechanism for actuating the lifting member including a fluid pump, and a pivotally mounted operating handle for the pump, of friction means associated with the handle and said lifting member adapted to be rendered operative by means carried on the handle, thereby to cause the lift-

ing member to be swung directly into engagement with the load by a single stroke of the operating handle.

6. A lifting jack comprising a supporting frame, a lifting member, a mechanism for actuating the lifting member including a pump, an operating handle for the actuating mechanism, and means whereby the lifting member may be swung into engagement with the load by manipulation of the operating handle and without operating the pump.

7. In a lifting jack, a suitable support, a lifting member pivoted at one end to the support, a cylinder pivoted to the lifting member and having a plunger operable therein, one end of which is pivotally connected to the support, an inelastic fluid in the cylinder, a pump for circulating the fluid within the cylinder to elevate the lifting member, an operating handle for actuating the pump means, and means independent of the pump for operatively connecting the operating handle to the lifting member whereby the lifting member may be moved into engagement with a load without operating the pump.

8. In a lifting jack, a suitable support, a lifting member pivoted at one end to the support, a cylinder pivoted to the lifting member and having a plunger operable therein, one end of which is pivotally connected to the support, an inelastic fluid in the cylinder, a pump for pumping fluid into one end of the cylinder to impart movement thereto relatively to the plunger, thereby to elevate the lifting member, an operating handle for the pump, and means whereby the lifting member may be moved directly into engagement with a load by a single stroke of the operating handle, after which the operating handle is operated to actuate the pump, whereby the lifting member may elevate the load.

9. In a jack, a suitable support, a lifting arm pivoted thereon, a cylinder pivotally connected to the lifting arm and having an inelastic fluid therein, a plunger operable in said cylinder and having one end secured to the support, whereby the plunger is locked against longitudinal movement, a pump for pumping the fluid into one end of the cylinder to elevate the lifting member, an operating handle for the pump mounted for pivotal movement with respect to the cylinder, and means whereby a single stroke of the operating handle may move the lifting member directly into engagement with the load, upon initial movement of the handle.

10. In a jack of the class described, a wheel supported frame, a lifting arm mounted for pivotal movement thereon about a transverse pivot, a cylinder having one end pivotally connected to the lifting arm, a reservoir, an inelastic fluid in said reservoir, a plunger having one end slidably supported in the cylinder and its opposite end connected to the supporting frame, a pump for pumping fluid from the reservoir into the cylinder, thereby to impart relative longitudinal movement to the plunger and cylinder in opposite di-

rections, whereby the lifting arm is elevated, a handle for operating the pump, a release valve, means on the pump handle for opening the release valve to permit the fluid to return to the reservoir, whereby the lifting arm may return to its normal inoperative position, said release valve operating means being so arranged that it may be operated at any point in the stroke of the operating handle.

11. In a jack of the class described, a wheel supported frame, a pivot pin mounted therein, a lifting arm mounted for swinging movement on said pivot pin, a cylinder having one end pivotally connected to the lifting arm and having a reservoir therein, an inelastic fluid in the reservoir, a plunger having one end slidably supported in the cylinder and its opposite end pivotally connected to the supporting frame, a pump for pumping fluid from the reservoir into the opposite end of the cylinder, thereby to impart relative longitudinal movement to the cylinder, thereby to elevate the lifting arm, a handle pivotally mounted on the cylinder and adapted to operate the pump, a release valve, means carried by the handle for opening said valve to permit the fluid to return to the reservoir, whereby the lifting arm may return to its normal inoperative position, and link means connecting said pivot pin with the handle and having means whereby the lifting arm may be moved directly into engagement with the load, by a single stroke of the handle and without effectively operating the pump.

12. In a jack of the class described, a supporting frame comprising spaced side members, a pivot pin mounted in the upper portion of the frame, a lifting member pivotally supported on said pin, a cylinder pivotally connected to the lifting arm at a point below said pivot pin, a plunger having one end slidably supported in the cylinder and its opposite end pivotally connected to the supporting frame, an inelastic fluid in the cylinder, a pump carried by the cylinder for pumping fluid from one end of the cylinder to the other, thereby to impart longitudinal movement to the cylinder with respect to the plunger, whereby the lifting member is elevated, a handle pivotally mounted on the cylinder, means for operatively connecting the handle to the pump, whereby oscillation of the handle will operate the pump, a pair of links mounted on the pivots of the lifting member and handle, respectively, and having their adjacent ends pivotally connected together, a friction disk secured to the link supported on the handle pivot, and a friction shoe carried by the handle and having means whereby it may be moved into frictional engagement with the friction disk, whereby movement of the handle may impart relative longitudinal movement to the cylinder and cause the lifting member to move directly into engagement with the load by a single stroke of the handle.

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