F. LYNT.

HYDRAULIC JACK.

APPLICATION FILED JUNE 14, 1912.

1,046,207.

Patented Dec. 3, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

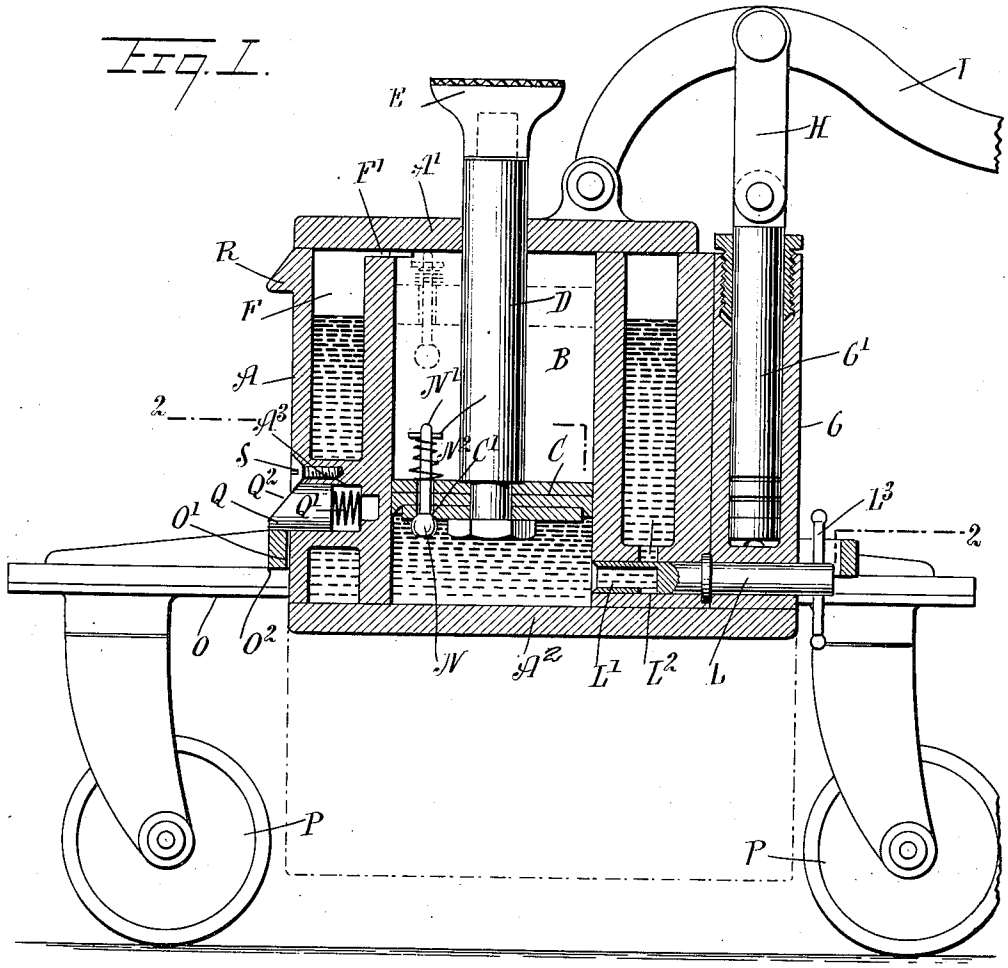
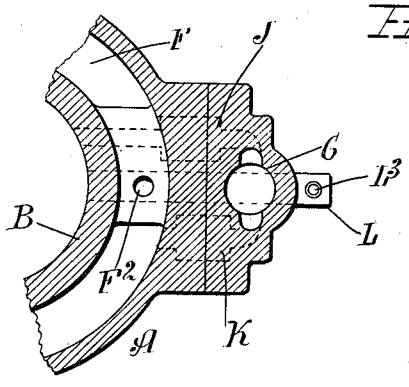


Fig. 4.



WITNESSES

H. J. Walker

Rud. J. Koske

INVENTOR

Frank Lynt

BY Munn & Co

ATTORNEYS

F. LYNT.

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2 SHEETS—SHEET 2.

Fig. 2.

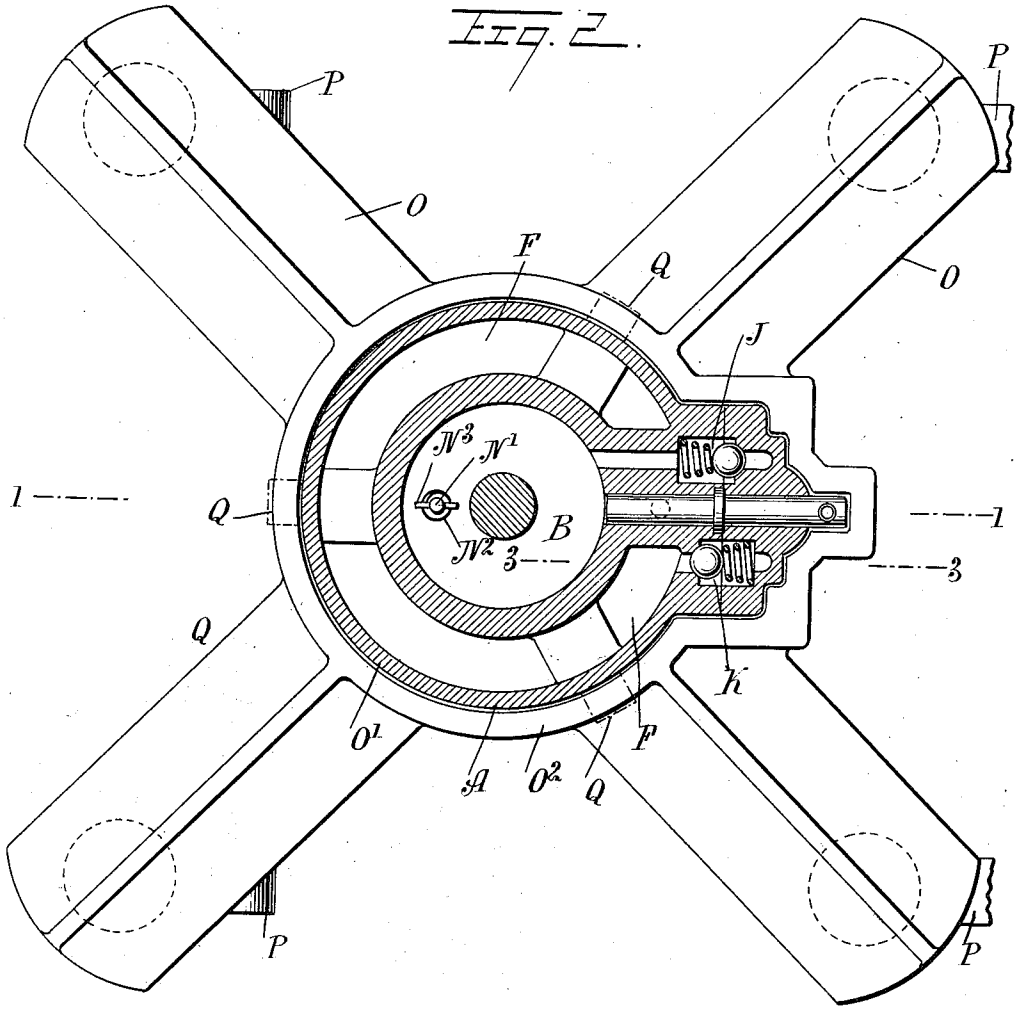
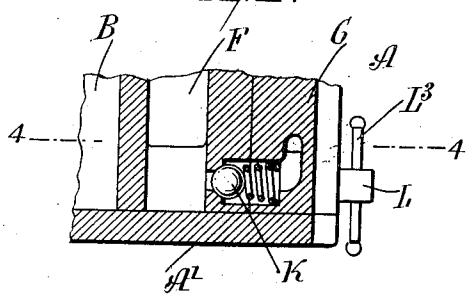


Fig. 3.



WITNESSES

H. T. Walker

Rudy. Hoskins

INVENTOR

Frank Lynt

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

FRANK LYNT, OF YONKERS, NEW YORK, ASSIGNOR OF ONE-HALF TO RICHARD W. GAFFNEY, OF YONKERS, NEW YORK.

HYDRAULIC JACK.

1,046,207. Specification of Letters Patent. Patented Dec. 3, 1912.

Application filed June 14, 1912. Serial No. 703,696.

To all whom it may concern:

Be it known that I, FRANK LYNT, a citizen of the United States, and a resident of Yonkers, in the county of Westchester and State of New York, have invented a new and Improved Hydraulic Jack, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved hydraulic jack for use on heavy trucks and the like and arranged to permit of conveniently raising the part without requiring much physical exertion on the part of the operator, to allow quick lowering, and to retain the liquid for re-use without danger of leakage.

For the purpose mentioned, use is made of a cylinder in which reciprocates a piston provided at its outer end with a head for engagement with an axle or other part to be raised, a reservoir surrounding the cylinder, a manually-controlled valve for connecting the lower end of the said cylinder with the lower end of the said reservoir, a pump, and valved connections between the pump and the said cylinder and the said reservoir. Use is also made of a supporting carriage and sets of lugs on the casing of a hydraulic jack, and arranged in different horizontal planes to support the hydraulic jack lower down or higher up on the carriage.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of the hydraulic jack, the section being on the line 1—1 of Fig. 2; Fig. 2 is a sectional plan view of the same on the line 2—2 of Fig. 1; Fig. 3 is a sectional side elevation of the valve connection between the reservoir and the pump; and Fig. 4 is a sectional plan view of part of the hydraulic jack, the section being on the line 4—4 of Fig. 3.

The casing A of the hydraulic jack is provided with a cylinder B in which reciprocates a piston C provided with a piston rod D extending upwardly and through the top A′ of the casing A, the upper end of the piston carrying a head E adapted to engage an axle or other part to be raised or lowered, as hereinafter more fully explained. A reservoir F surrounds the cylinder B and is closed at the upper and lower ends by the top A′ and the bottom A^2 of the casing and which top and bottom also close the upper and lower ends of the cylinder B, as will be readily understood by reference to Fig. 1. On one side of the casing A is arranged a vertically-disposed pump G having its piston G′ pivotally connected at the upper end by a link H with a lever I under the control of the operator and fulcrumed on the top A′ of the casing A. The lower end of the cylinder of the pump G has a valved connection J with the lower end of the cylinder B, and a valved connection K connects the lower end of the reservoir F with the lower end of the cylinder of the pump G. The valved connections J and K (see Fig. 2) are so arranged that when the pump piston G′ is drawn upward then an oil or other liquid contained in the reservoir F is drawn by way of the said valved connection K into the cylinder of the pump G. When the piston G′ is moved downward then the valved connection K closes and the valved connection J is opened so that the liquid contained in the cylinder of the pump G is forced out of the same into the lower end of the cylinder B to raise the piston C therein. Thus on alternately raising and lowering the piston G′ of the pump G the piston C in the cylinder B is gradually raised by the incoming liquid whereby the axle or other part is lifted. When it is desired to lower the part then the lower end of the cylinder B is connected with the lower end of the reservoir F to allow the liquid to flow from the cylinder B back into the reservoir F, and for this purpose use is made of a valve L mounted to turn in the lower portion of the casing A and having an inner hollow end L′ opening into the lower end of the cylinder B. The hollow end L′ is provided in its wall with a port L^2 adapted to register with a port F^2 leading to the reservoir F to allow the liquid to flow from the cylinder B into the reservoir F. When this takes place the weight of the part on top of the head E forces the piston C downward in the cylinder B, and this movement is gradual owing to the flow of the liquid from the cylinder B into the

reservoir F by way of the hollow end L′ of the valve L. The outer end of the valve L is provided with a slidable handle L^3 under the control of the operator for turning the valve L so as to move the same into an open or a closed position, it being understood that when the pump is used for raising the piston C then the valve L is in closed position, and when the piston C is moved downward at the time the pump G is inactive then the operator turns the valve L to connect the ports L^2 and F^2 with each other as before explained.

The piston C within the cylinder B is provided with a valve seat C′ adapted to connect the lower end of the cylinder B with the upper end thereof at the time the piston C reaches the predetermined uppermost position, and the said valve seat C′ is normally closed by a relief valve N adapted to be seated on the lower end of the valve seat C′. The relief valve N is provided with an upwardly extending stem N′ passing through the valve seat C′ and pressed on at its upper end by a spring N^2 resting on the top of the piston C and abutting with its upper end against a pin N^3 held on the upper end of the stem N′. When the piston C moves upward the valve N is held to its seat by the spring N^2 and the liquid pumped into the lower end of the cylinder B, and when the piston C reaches an uppermost position then the valve stem N′ moves in contact with the under side of the top A′ whereby the valve N is moved off the seat C′ to allow further liquid pumped into the lower end of the cylinder B to pass through the seat C′ into the upper end thereof. The upper ends of the cylinder B and the reservoir F are connected with each other at the opening F′ so that the liquid passing into the upper end of the cylinder B can flow by way of the opening F′ back into the reservoir F.

From the foregoing it will be seen that when the operator keeps on pumping liquid into the lower end of the cylinder B at the time the piston C has reached a predetermined uppermost position then the parts are not liable to be disturbed or otherwise injured as the liquid flows from the upper end of the cylinder B back into the reservoir F.

The casing A of the hydraulic jack is adjustably mounted on a carriage O provided with casters P to permit of conveniently moving the carriage and jack about with a view to properly locate the head E under the part to be lifted. The carriage O is provided with an opening O′ and into which fits slidingly the casing A, and the latter is provided with lower lugs Q and upper lugs R, either of which is adapted to be seated on the annular rim O^2 surrounding the opening O′ of the carriage O to support the casing A either higher up or lower down according to which of the lugs Q or R is in engagement with the flange O^2 at the time.

As shown in full lines in Fig. 1 the casing A is supported in uppermost position on the carriage by use of the lugs Q, each of which is mounted to slide laterally in a seat A^3 formed in the casing A, and each lug Q is pressed in an outward direction by a spring Q′ seated in the rear end of the seat A^3. The outer face Q^2 of each lug Q is beveled and is adapted to be engaged by the head of a screw S to limit the outward sliding movement of the corresponding lug Q. When the several lower lugs Q are in the position shown in Fig. 1 they project sufficiently beyond the casing to support the latter on the flange O^2, but when it is desired to lower the casing A then the lugs Q are given a half turn so that their beveled faces Q^2 engage the flange O^2 and are thus pushed inward to allow the casing A to slide down on the carriage O in which the lugs R are seated on the flange O^2 thus supporting the casing A in lowermost position.

It is understood that when the casing A is in lowermost position and the range of the jack is not sufficient to engage the part to be raised then the casing A is lifted in the opening O′ of the carriage O until the lugs Q are above the flange O^2 and then the lugs Q are turned to the position shown in Fig. 1 to support the casing on the flange O^2.

The hydraulic jack shown and described is very simple in construction and can be readily moved about and engaged with the part to be raised, and the parts are not liable to be injured after the piston has been raised to a predetermined height even should the operator keep on working the pump.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A hydraulic jack, comprising a casing provided with a cylinder and having a top and bottom closing the upper and lower ends of the cylinder, a piston reciprocating in the said cylinder and provided with a relief valve normally closed and adapted to open by contact with the top of the casing, a piston rod on the said piston and extending through the top of the casing, a head on the outer end of the said piston rod, a reservoir surrounding the said cylinder and also closed at its upper and lower ends by the top and bottom of the casing, the said reservoir being connected at its upper end directly with the upper end of the said cylinder, a pump having valved connections with the lower ends of the said cylinder and the said reservoir, and a valve mounted to turn in the lower part of the

casing and having a hollow inner end opening into the lower end of the cylinder, the said hollow end having a port adapted to register with a port in the bottom of the said reservoir.

2. In combination with a carriage provided with an opening, of a hydraulic jack having a casing slidingly fitting into the said opening, the said casing having upper and lower supporting lugs arranged in different horizontal planes and either set being adapted to be seated on the carriage.

3. In combination with a carriage provided with an opening, of a hydraulic jack having a casing slidingly fitting into the said opening, the said casing having upper and lower supporting lugs arranged in different horizontal planes and either set being adapted to be seated on the carriage, the upper set of lugs being integral on the casing and the lugs of the lower set of lugs having beveled outer ends and adapted to be turned in seats in the casing, and springs in the casing seats pressing the lower lugs outwardly.

4. In combination with a carriage provided with an opening, of a hydraulic jack having a casing slidingly fitting into the said opening, the said casing having upper and lower supporting lugs arranged in different horizontal planes and either set being adapted to be seated on the carriage, the upper set of lugs being integral on the casing and the lugs of the lower set of lugs having beveled outer ends and adapted to be turned in seats in the casing, springs in the casing seats pressing the lower lugs outwardly, and means to limit the outward movement of the said lower lugs.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK LYNT.

Witnesses:
ERNEST L. GALE, Jr.,
RICHARD W. GAFFNEY.