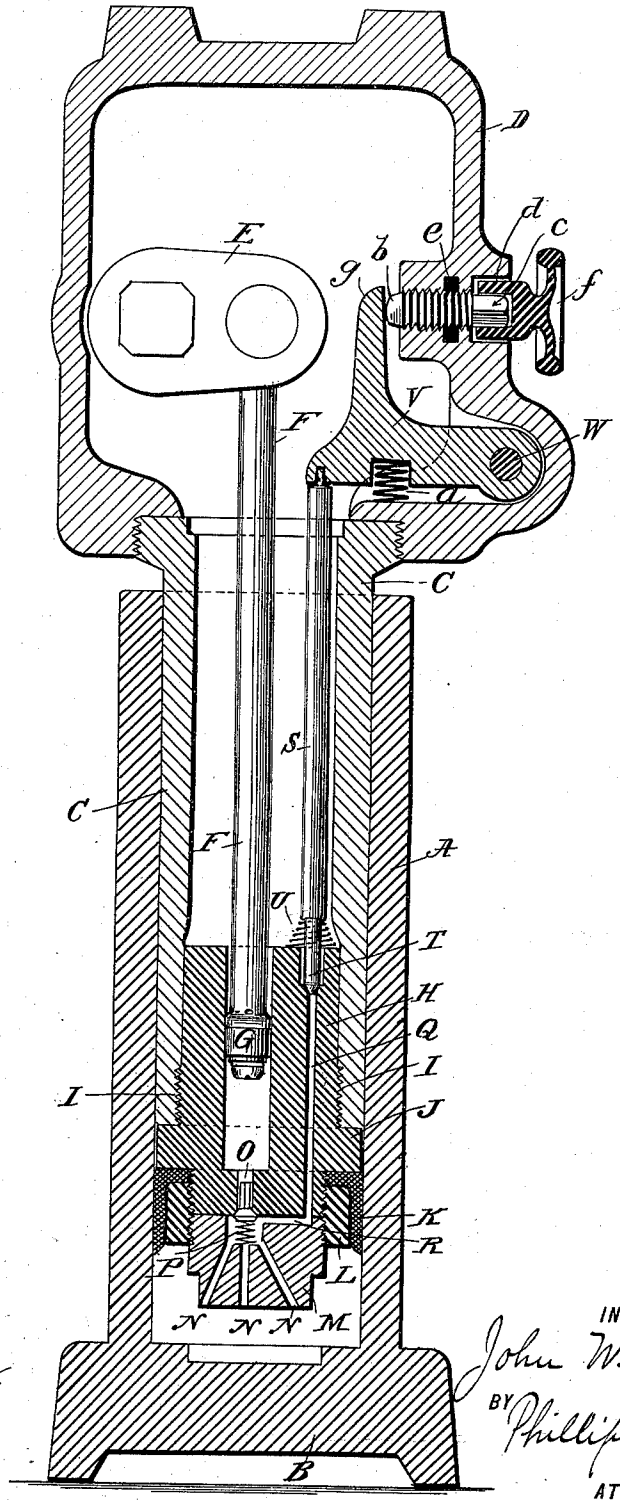
(No Model.)

J. WEEKS.

HYDRAULIC JACK.

No. 550,702. Patented Dec. 3, 1895.



WITNESSES:

Edw. C. Lockwood.

H. C. St. Barbe Jr.

INVENTOR

John Weeks

BY Phillips Abbott.

ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN WEEKS, OF NEW YORK, N. Y., ASSIGNOR TO JOHN F. DETTMAR, EXECUTOR OF RICHARD DUDGEON, DECEASED.

HYDRAULIC JACK.

SPECIFICATION forming part of Letters Patent No. 550,702, dated December 3, 1895.

Application filed August 27, 1895. Serial No. 560,688. (No model.)

To all whom it may concern:

Be it known that I, JOHN WEEKS, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Hydraulic Jacks, of which the following is a specification.

My invention relates to a new and useful improvement in hydraulic jacks, whereby the parts are so constructed and arranged that the operation of the jack is rendered more certain, absolute, and safe, and whereby it is adapted to use more safely than most forms of jacks now known in the hands of unskilled or even ignorant persons.

Generally stated the invention consists in making the parts in such manner that the pump is a pump pure and simple and is not complicated by any connection with or relation to the devices for lowering the jack, and the lowering devices are made separate by themselves and are operated by separate mechanism, and their construction is such that positive sealing of the liquid within the chamber under the rear of the jack is accomplished. When it is desired to lower the ram, the escape of this liquid can be adjusted even to infinitely-small degrees, so that the lowering may be rapid or exceedingly slow, as desired. This is sometimes of great importance.

The drawing hereof illustrates a vertical longitudinal section of a complete jack, the pump, plunger, and backflow valve-stem being shown in elevation.

A is the cylinder of the jack. B is the base. C is the ram. D is the head. E is the knuckle. F is the piston-rod. G is the piston. These parts are or may be the same as usual and are all provided with the usual parts. The details of some of them are not shown, since they are too well known to require special description.

H is the pump-block. It is provided with screw-threads I, which engage with corresponding threads in the ram C, whereby the pump-block is firmly held to the ram, but may be easily removed therefrom by simply unscrewing it.

J is an annular shoulder, which rests against the lower end of the ram to afford firm support for the pump-block against the pressure from below.

K is the usual cup-packing provided with a packing-ring L to seal the joint between the ram and the cylinder. The packing-ring L threads upon a downwardly-projecting portion of the pump-block and a portion of the ring extends below the pump-block, and to it is threaded a bonnet M, which is provided with the usual water-passages N N, &c.

O is the egress-valve from the bore of the pump to the chamber below the ram, and it is received within a recess in the upper side of the bonnet M, as usual. A small spiral spring P aids in reseating this valve.

Q is a vertical passage bored through the pump-block by the side of the bore of the pump proper, and, if desired, the bore of the pump may be set eccentric to the actual line of the pump-block, so as to leave more metal on one side than the other to provide space for this passage Q.

R is another passage made in the upper surface of the bonnet M, which connects with the lower end of the passage Q.

S is the stem for the egress-valve, the valve T itself being formed on its lower end, and it is seated at the upper end of the passage Q.

U is a spiral cone-shaped spring, (any other suitable form may be used,) which normally elevates the stem S, unseating the valve T at its end.

V is a bell-crank lever pivoted at W to the head of the jack and provided with a spring *a*, whereby it is normally tipped upwardly.

b is a screw plug or bolt having a squared end *c*, which is received within a recess *d* in the head of the jack, and the plug is provided with a packing *e*.

f is a detachable hand wheel or key having a squared socket adapted to fit over the squared end *c* of the screw-plug *d*. The inside end of the screw-plug bears against an upwardly-extending finger *g* of the bell-crank.

The operation of the invention is as follows: During the operation of pumping up the jack the lever (not shown) is manipulated in the ordinary way; but no care is necessary in so doing, because there is no possibility of striking the egress-valve O, its spindle being entirely below the lowermost portion of the

pump-bore, and a man, irrespective of his intelligence, can safely operate the machine, because there is no danger of his injuring it or of his striking the egress-valve, thus causing the load to "jump" or "shiver," as it is called. After the load has been lifted to the desired distance and it is desired to lower the jack then the operator or foreman takes the key *f* from his pocket or other suitable place and with it runs back the screw-plug *d*, whereupon pressure on the finger *g* of the bell-crank V is removed and the spring *a* and also the spring U elevate the devices V and S, thus removing the valve T on the end of the spindle S the desired distance from the upper end of the passage Q, whereupon the liquid from the chamber below the ram passes in reverse direction—*i. e.*, upwardly through the passages N N N, thence alternately through the passage R and vertically through the passage Q, and thence through the valve T back to the head of the jack. Consequently the pressure in the lower chamber being relieved the jack is lowered.

It will be particularly observed that under my invention the sealing of the lower chamber is rendered absolute, because the valve T is seated on the upper end of the channel Q, by the positive action of the screw-plug *b*, when manipulated by the key or hand-wheel *f*. Thus this may be made a securely-closed joint, more so than when the egress-valve is allowed to rest itself, as is now commonly the practice. Also, as before stated, no lack of experience on the part of the operator can injure either the pump or the egress-valve or the piston, and also (this is an important matter) the rapidity with which the liquid is allowed to escape from the lower chamber can be regulated with great exactness, more so than when this operation is performed by manipulation of the pumping-lever.

It will be obvious to those who are familiar with this art that modifications may be made in details of construction of the parts shown without departing from the essentials of the invention. I therefore do not limit myself to these details.

I claim—

1. In a hydraulic jack, the combination of a pump detachable from the ram, and which discharges into the chamber below the ram, a back flow passage made in the pump, separate and distinct from the bore thereof, a bonnet at the lower end of the pump having a water passage connected with the said back flow passage, a valve actuated by a bell crank and a screw plug actuated from the exterior of the jack, which operates said bell crank, for the purposes set forth.

2. In a hydraulic jack, the combination of a pump discharging into the chamber below the ram, a back flow passage made in the pump, separate and distinct from the bore thereof, a valve actuated from the exterior of the jack and a spring whose normal tendency is to unseat said valve, for the purposes set forth.

3. In a hydraulic jack, the combination of a pump discharging into the chamber below the ram, a back flow passage made in the pump, separate and distinct from the bore thereof, a valve which closes said back flow passage, a lever to close it, a spring to open it, and means operated from the exterior of the jack to actuate said lever, for the purposes set forth.

Signed at New York, in the county of New York and State of New York, this 23d day of August, A. D. 1895.

JOHN WEEKS.

Witnesses:
PHILLIPS ABBOTT,
H. H. ST. CLAIR, Jr.