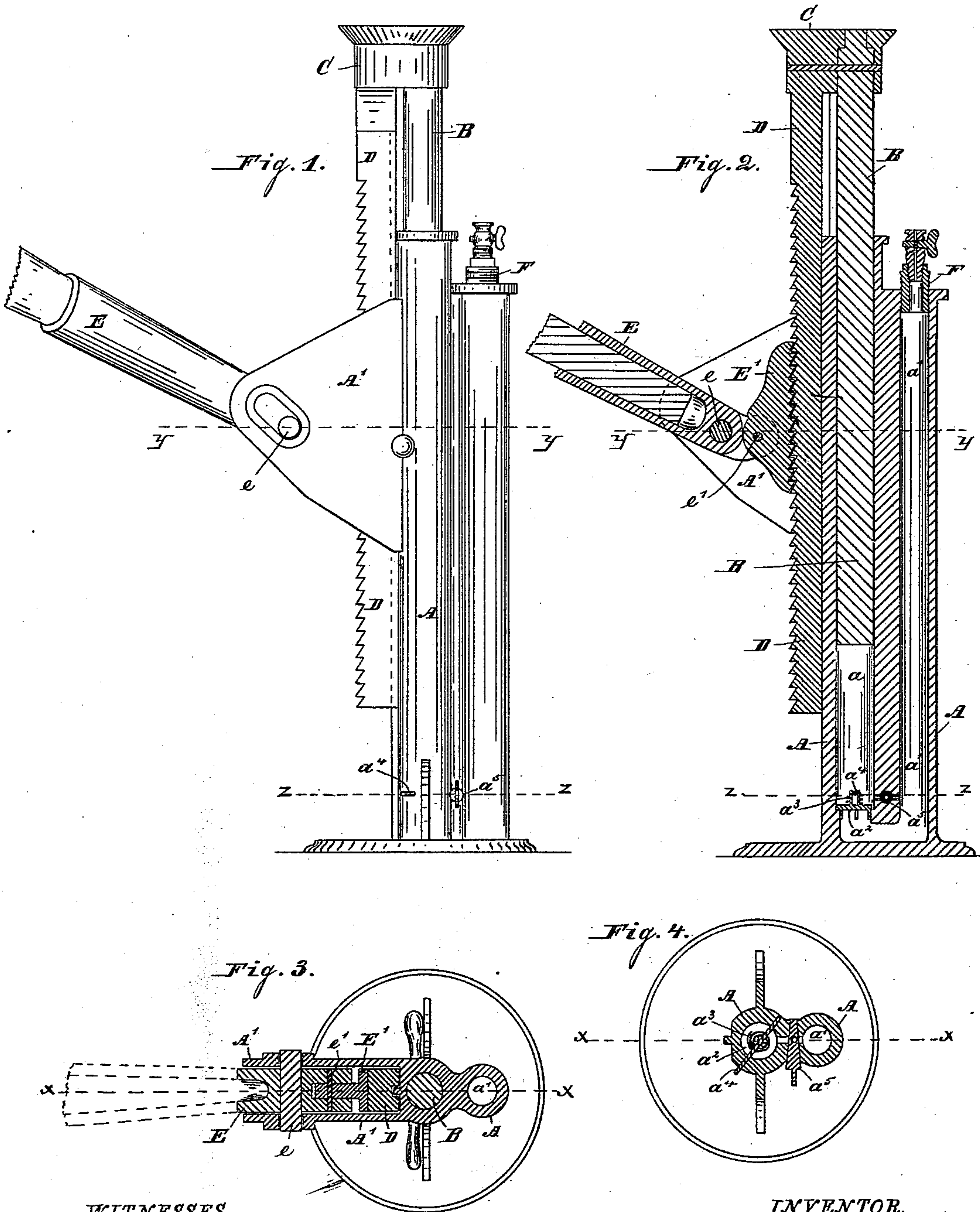


(No Model.)

I. HOGELAND.  
LIFTING JACK.

No. 259,393.

Patented June 13, 1882.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

ISRAEL HOGELAND, OF INDIANAPOLIS, INDIANA, ASSIGNOR OF ONE-HALF  
TO GEORGE P. ANDERSON, OF SAME PLACE.

## LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 259,393, dated June 13, 1882.

Application filed October 31, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, ISRAEL HOGELAND, of the city of Indianapolis, county of Marion, and State of Indiana, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification.

My said invention consists of a lifting-jack wherein the lifting is done by a lever applied to a rack-bar attached to the lifting-head, as is common, but wherein the said lifting-head is sustained by a column of fluid upon which a piston, which is also attached to said lifting-head, rests, as will hereinafter be more specifically set forth and claimed.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a side elevation of my improved jack; Fig. 2, a vertical section thereof on the dotted line  $xx$  in Fig. 3; Fig. 3, a horizontal section, looking downwardly from the dotted line  $yy$ ; and Fig. 4, a horizontal section, looking downwardly from the dotted line  $zz$ .

In said drawings, the portion marked A is the main casting of the jack, which is in substantially the form of a double cylinder, as shown, and has wings A' A' upon its sides, in which are bearings for the lever by which the jack is operated.

The portion marked B is the piston, which moves up and down in the cylinder  $a$ , and is supported by the oil or other fluid therein when the jack is being operated.

The portion marked C is the lifting-head, which is mounted upon the tops of the piston B and the rack-bar D and connects said two parts together.

The portion marked D is a rack-bar connected to the lifting-head C and passing down outside the cylinder A, against which it rests, between the arms A' A', where it engages with the lever.

The portion marked E is the lever by which the lifting-head is forced upward, and which rests on a pivot,  $e$ , in bearings in the arms A'. It preferably has a toothed head, E', pivoted thereto by the pivot  $e'$ , which engages with the rack-bar D, though a segment-shaped head on the lever itself would answer substantially

the same purpose. The form of the bearings being elongated allows the lever to recede slightly, as is necessary, while the head E', being mounted on a pivot, can be turned back, so as to be entirely disengaged from the rack when the lever is dropped down. The pivot  $e'$ , however, is not intended to serve any further purpose than that of securing the lever E and head E' from becoming disengaged, as the end of said lever enters a recess in said head, as shown by the dotted line in Fig. 2, and lifts directly against it, which is much safer than lifting upon the pivot.

The cylinders  $a$  and  $a'$  are connected together at the bottom by a passage way, through which the oil or other liquid will freely flow. At a point therein, preferably close to the bottom of the cylinder  $a$ , is a valve,  $a^2$ . It is preferably mounted upon a plain seat and has pins or guides projecting upwardly in the form of a fork, between which a pin,  $a^4$ , passes across the cylinder  $a$ , and thus prevents said valve from being thrown out of position. A small spring,  $a^3$ , may surround these upwardly-projecting pins, as shown, beneath the pin  $a^4$ , and the valve may be thus forcibly held to its seat, except when lifted by the greater force of the liquid when the jack is operated.

An orifice is formed between the cylinders  $a$  and  $a'$ , through the wall in the casting A, which divides them at a point just above the valve. This orifice is opened or closed by the cock  $a^5$ .

A plug, F, should be inserted in the top of the cylinder  $a'$  to keep out the dirt, and a stop-cock may, if desired, be inserted therein, so that said cylinder may be entirely closed when the jack is not in use.

The operation of my said invention is as follows: When it is desired to use the jack the piston B is lowered nearly to the bottom of the cylinder  $a$  and the remaining portion of said cylinder and the cylinder  $a'$  is filled with a liquid, (preferably oil.) The jack is then set under the object to be lifted and the lifting-head is forced upward by manipulating the lever E in the usual manner, as will be readily understood, the cock  $a^5$  being closed during the lifting process. As the parts D, C, and B are lifted by the lever the oil flows into the



space vacated by the piston B, and its egress being prevented by the check-valve  $a^2$  sustains said parts in the position to which they are lifted while the lever is being lowered to engage with the rack D lower down, and so on until the required height is attained.

When it is desired to lower the jack it is only necessary to throw back the lever so that it will not engage with the rack-bar and turn the cock  $a^5$  open, when the oil will flow from the chamber  $a$  to the chamber  $a'$ , and the parts B, C, and D will sink of their own weight, or by the combined weight of themselves and the load thereon to the lowest point which they are by the construction of the jack permitted to reach.

The advantage of a jack of this construction over the ordinary form of jacks is that no dogs or pawls are necessary to hold the load when lifted at any point, while the ordinary rack and toothed lever can be employed. It is also superior in that the parts B C D are sustained in substantially exactly the position to which they are lifted, as the oil follows the piston closely and does not allow it to recede any perceptible distance.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In the main casting of a lifting-jack, a cylinder in which a piston moves, a second cylinder or receptacle containing a liquid, a check-valve located in the bottom of the first, or between the two cylinders, an orifice between said two cylinders above the valve, and a cock whereby said orifice may be either

opened or closed, whereby when the piston is raised the liquid may be caused to sustain the same, and afterward by opening the cock the piston may be allowed to descend, substantially as set forth.

2. The combination of the two cylinders, the liquid contained therein, the valve, the cock, the piston, the rack-bar connected at the top to said piston, and the lever whereby said rack-bar may be forced upward, substantially as described, and for the purpose specified.

3. The combination of the casting A, the cylinders  $a$   $a'$ , the valve  $a^2$ , the cock  $a^5$ , the piston B, head C, rack-bar D, lever E, and head E', substantially as described, and for the purposes specified.

4. In a lifting-jack, the piston B, adapted to be lifted by a lever and sustained or let down by the use of a liquid, substantially as described, and for the purpose specified.

5. In a lifting-jack, the combination, with the casting A, having wings A' A', of a lever, E, supported by a pivot,  $e$ , resting in elongated bearings in said wings, a head, E', having a recess into which the end of said lever enters, and a rack-bar connected with the lifting-head of the jack, with which said head E' engages, all substantially as shown and described, and for the purposes specified.

In witness whereof I have hereunto set my hand and seal at Indianapolis, Indiana, this 27th day of October, A. D. 1881.

ISRAEL HOGELAND. [L. S.]

In presence of—

C. BRADFORD,  
J. G. PAYNE.