

(No Model.)

T. O. HUTCHINSON.

HYDRAULIC JACK.

No. 280,315.

Patented June 26, 1883.

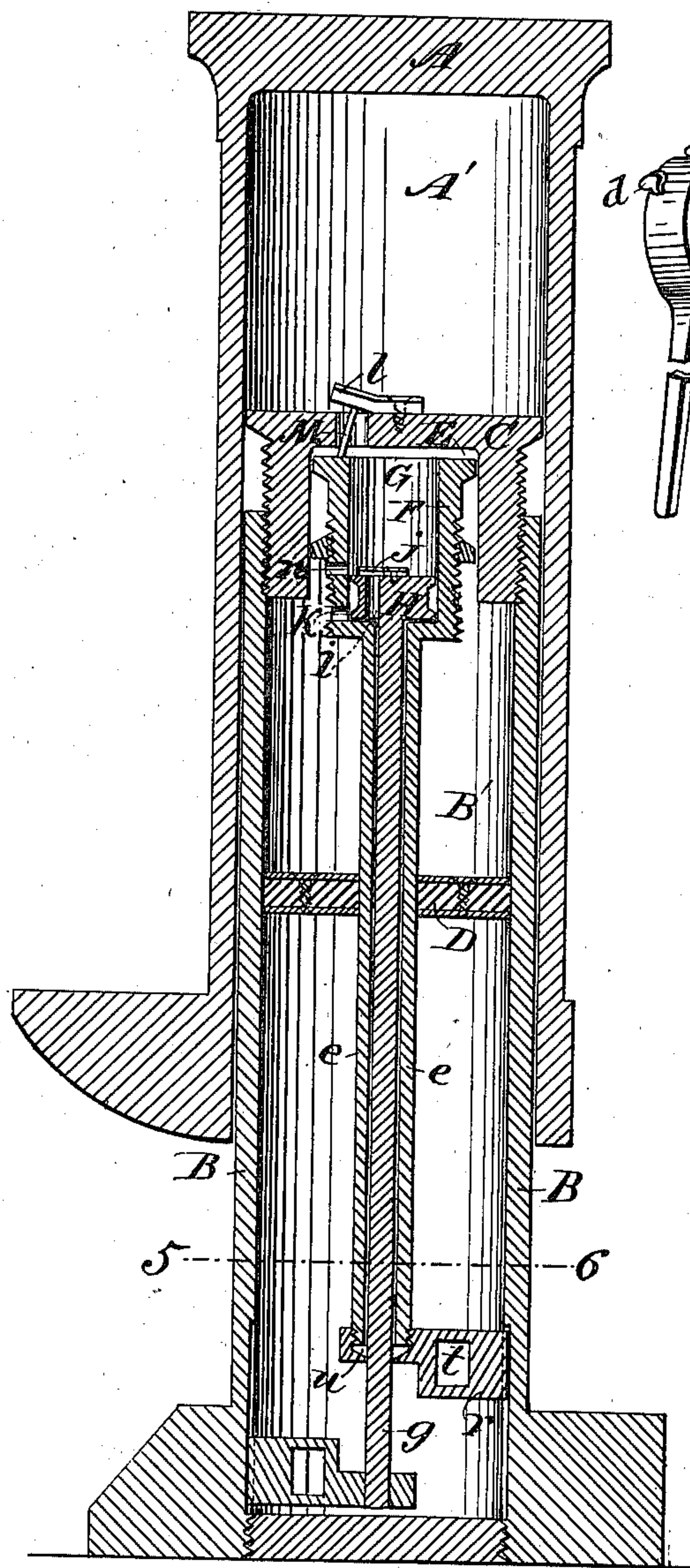


Fig. 1.

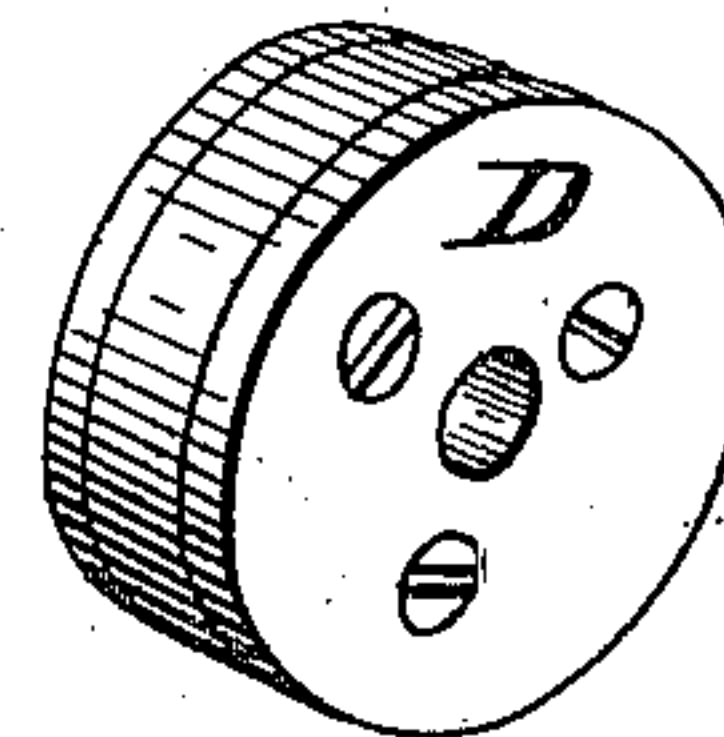
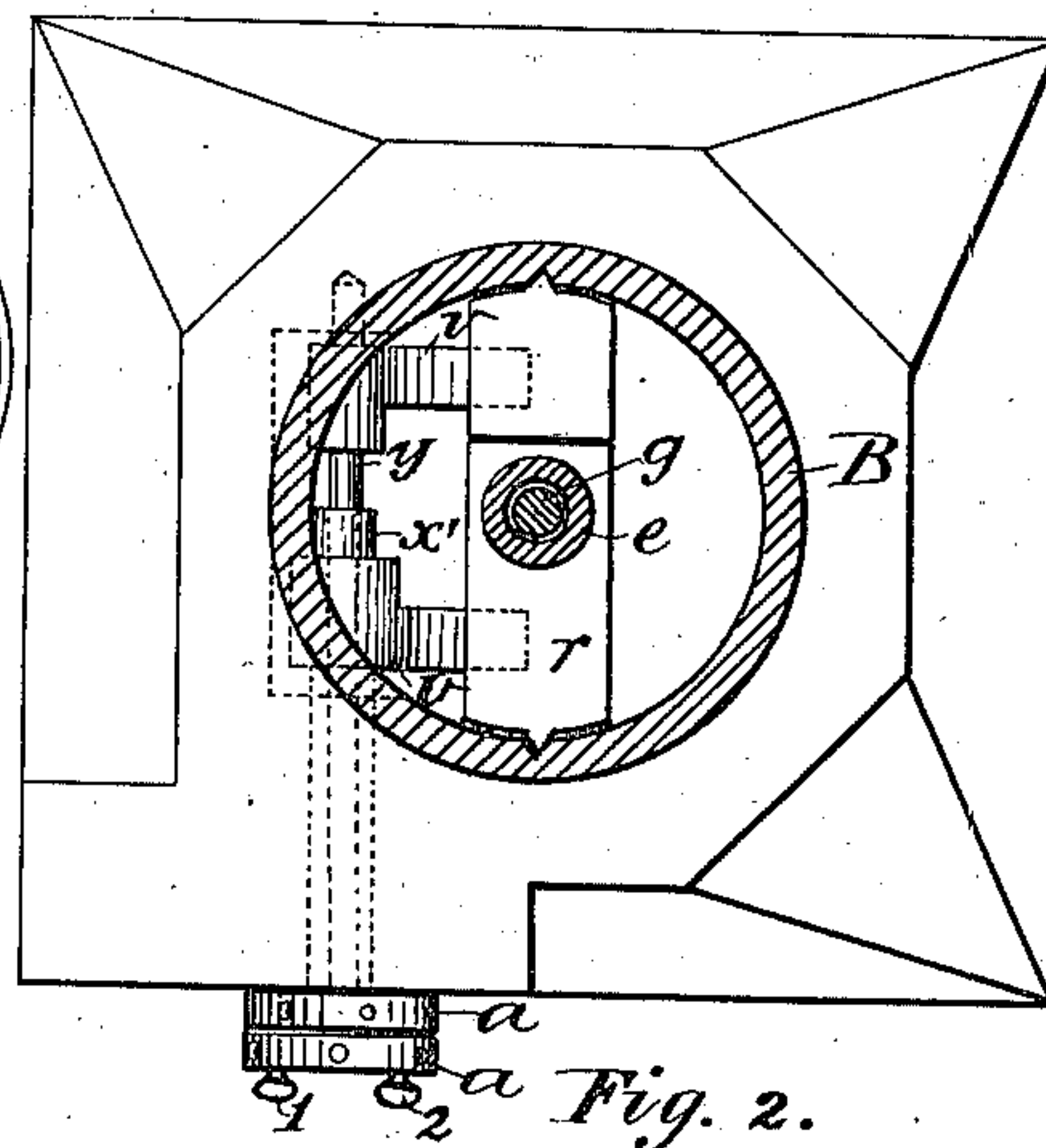
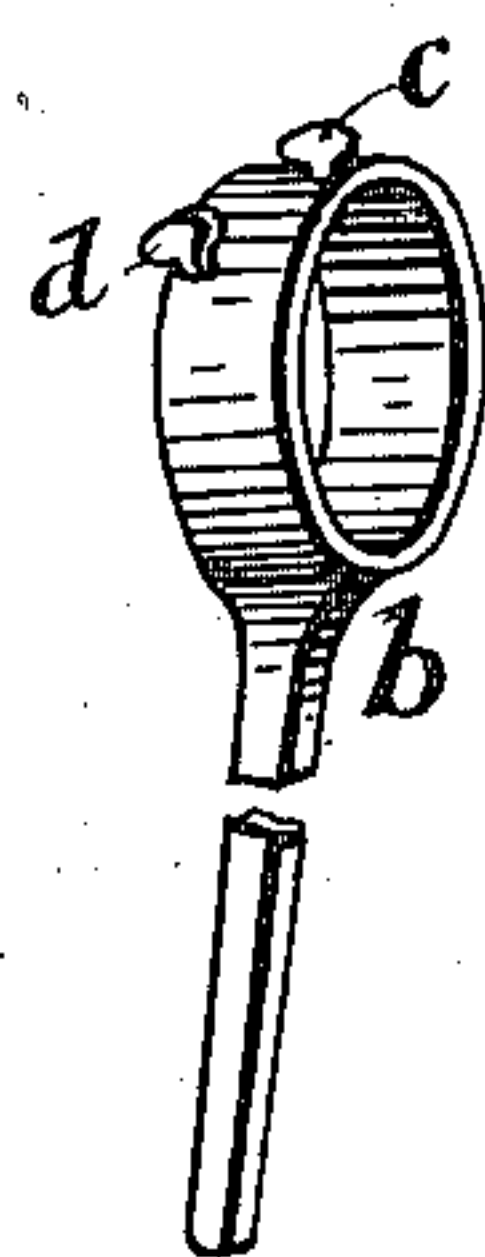


Fig. 3.

Witnesses.

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UNITED STATES PATENT OFFICE.

THOMAS O. HUTCHINSON, OF SALEM, ASSIGNOR OF ONE-HALF TO ADDISON C. GIBBS, OF PORTLAND, OREGON.

HYDRAULIC JACK.

SPECIFICATION forming part of Letters Patent No. 280,315, dated June 26, 1883.

Application filed February 9, 1883. (No model.)

To all whom it may concern:

Be it known that I, THOMAS O. HUTCHINSON, a citizen of the United States, residing at Salem, Marion county, in the State of Oregon, have invented certain new and useful Improvements in Hydraulic Jacks, by which they may be used in any position and by which the mode of accelerating speed is simplified and made more practical, of which the following is a specification, reference being had to the accompanying diagrams.

My invention consists, first, in a plug or follower so fitted into the reservoir as to make an air-tight stopper, and which, as the liquid is pumped out of the reservoir, is forced by the pressure of the atmosphere from without to follow the receding liquid, holding it in place so that it cannot fall away from the pumps, whatever be the position of the jack; second, in a combination of pistons in which a larger piston forms the cylinder for a smaller piston, whereby all the pistons may be operated together to produce the effect of one large piston, or the smaller piston may be operated alone to raise the jack more slowly, and consequently with greater power. One set of ingress and egress valves is sufficient for all of the pumps.

Figure 1 is a vertical section of the jack partly raised, showing the largest piston at the greatest height and the smallest one at its lowest point. Fig. 2 is a cross-section of the jack at the line 5 6. Fig. 3 is a perspective view of the follower.

A is the hoisting-cylinder of the jack:

B" is the ram, and B' is the reservoir therein, which is bored out true for the passage of the follower D.

C" is a plug, which is secured in the top of the ram to compress the packing in the space X, and to serve as the head of the ram. The plug C may also serve, as in the present instance, as the barrel for the larger piston F. The larger piston F serves as the barrel for the smaller piston H, which in turn may serve as the barrel for a smaller piston. (Not here represented.) The smaller piston H is provided with a port, *i*, and any common check-valve, J. The piston F is provided with two

ports, *n k*. *l* is the check-valve on the ram-plug C, which valve is provided with the stem *m*, protruding into the space E in the plug C.

e is the piston-rod of the piston F, and is hollow to admit of the passage of the piston-rod *g* of the piston H through it, and in case of a third pump and piston-rod, the rod *g* must also be hollow for the passage of said third rod, and so on. The inside rod is solid. The cross-head *r* is screwed on the hollow rod *e*, forming a stuffing-box, *u*, to prevent the escape of the liquid through said hollow-rod. This cross-head is furnished with the ordinary slot, *t*, for the reception of the ordinary rock-lever V, Fig. 2. The cross-head for the inside rod needs no stuffing-box, the rod being solid. The rock-shafts X' Y are hollow, except the inside one, which is solid, one working through the other, as shown in Fig. 2. The rock-shafts have each a wheel or circular head, *a*, on the outer end, of equal size. The handle or lever *b* has a circular opening in one end, which fits over the heads *a a*, and is of such width as to cover both, and is provided with thumb-screws *c d*, by which the lever *b* is fastened to either or both of the heads *a a*, whereby either or both of the rock-shafts X' Y may be rocked, and consequently any of the pistons operated.

Operation: When both pistons are used they are first moved to the end of their downstroke, when the water runs through the port *n* into the space E. On the next upstroke the piston H is first moved to cover the port *n*, to prevent the return of the water, when both pistons are operated to complete the stroke together, thereby forcing the water in the space E through the check-valve into the space A', which elevates the hoisting-cylinder A.

The operation of the piston H when used alone is as follows:

On the upstroke, as soon as it passes the port *n*, the water in the space E G is prevented from returning, and forced into the hoisting-cylinder through the check-valve *l*. On the downstroke a vacuum is formed above the piston H, which is filled by the water passing through the ports *k i* when the operation is repeated. Ordinarily the piston F is not given a full upstroke, and the check-valve *l* therefore pre-

vents the escape of any water from the space A'; but when the hoisting-cylinder A is elevated and it is desired to lower it, the piston F is given a full upstroke, and strikes the pin 5 M, which elevates the valve *l* and permits the water in the space A' to run back through the piston F and port *n* into the space B', from which it can be again used.

What I claim is—

10 1. In hydraulic jacks, the combination of a ram-head, two pistons, F H, one of the pistons serving as the barrel of the other and both operating with one set of valves, *l* J, substantially as described.

2. In hydraulic jacks, the combination of a 15 ram, B, having the reservoir B', a follower, D, and a pump, substantially as described.

3. In hydraulic jacks, the mechanism for operating two pistons together or independently, consisting of the rock-shafts X' Y, one within 20 the other, the lever *b*, the heads *a*, and the thumb-screws *c d*, substantially as described.

T. O. HUTCHINSON.

Witnesses:

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C. W. GIBBS.