

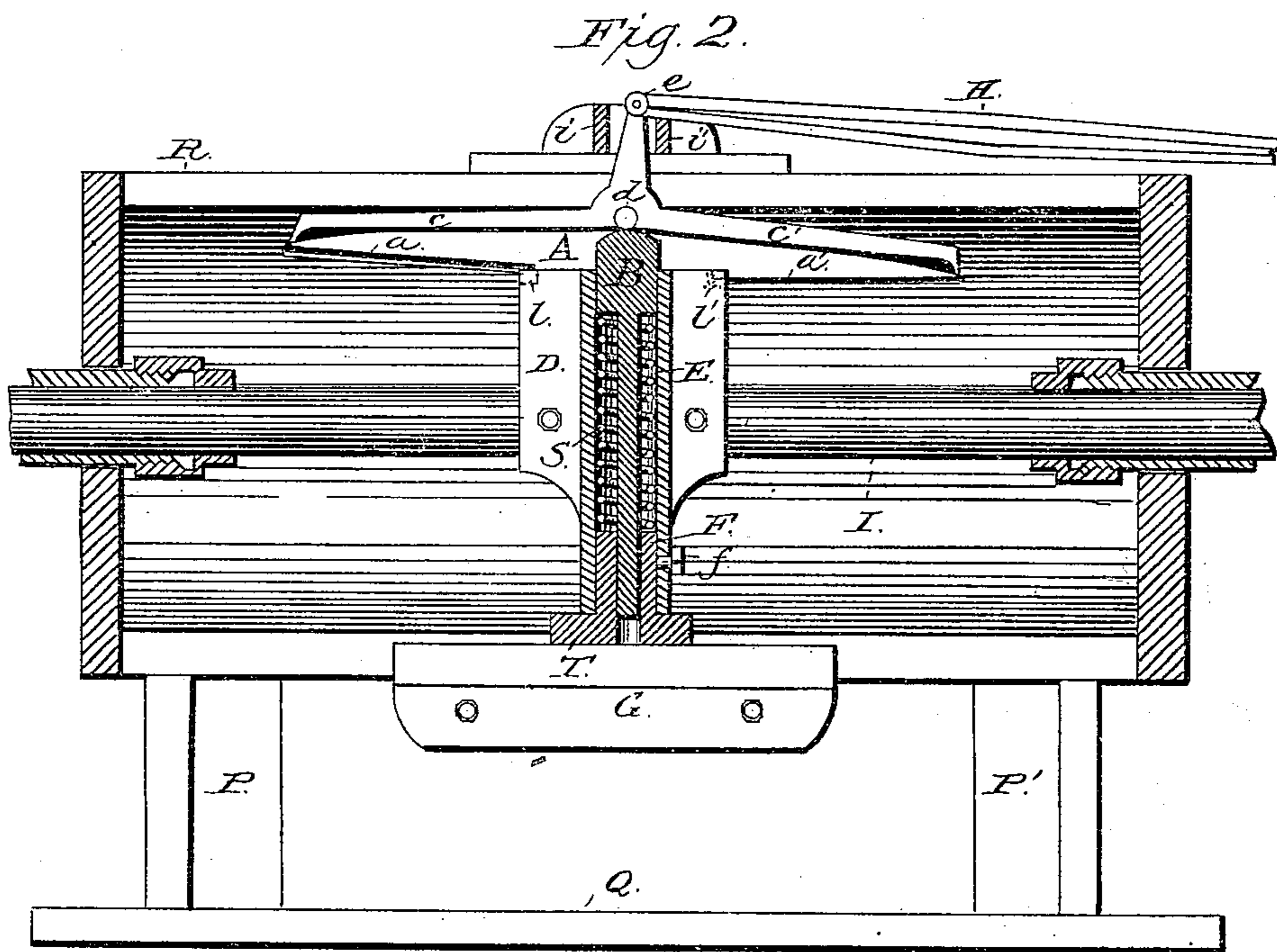
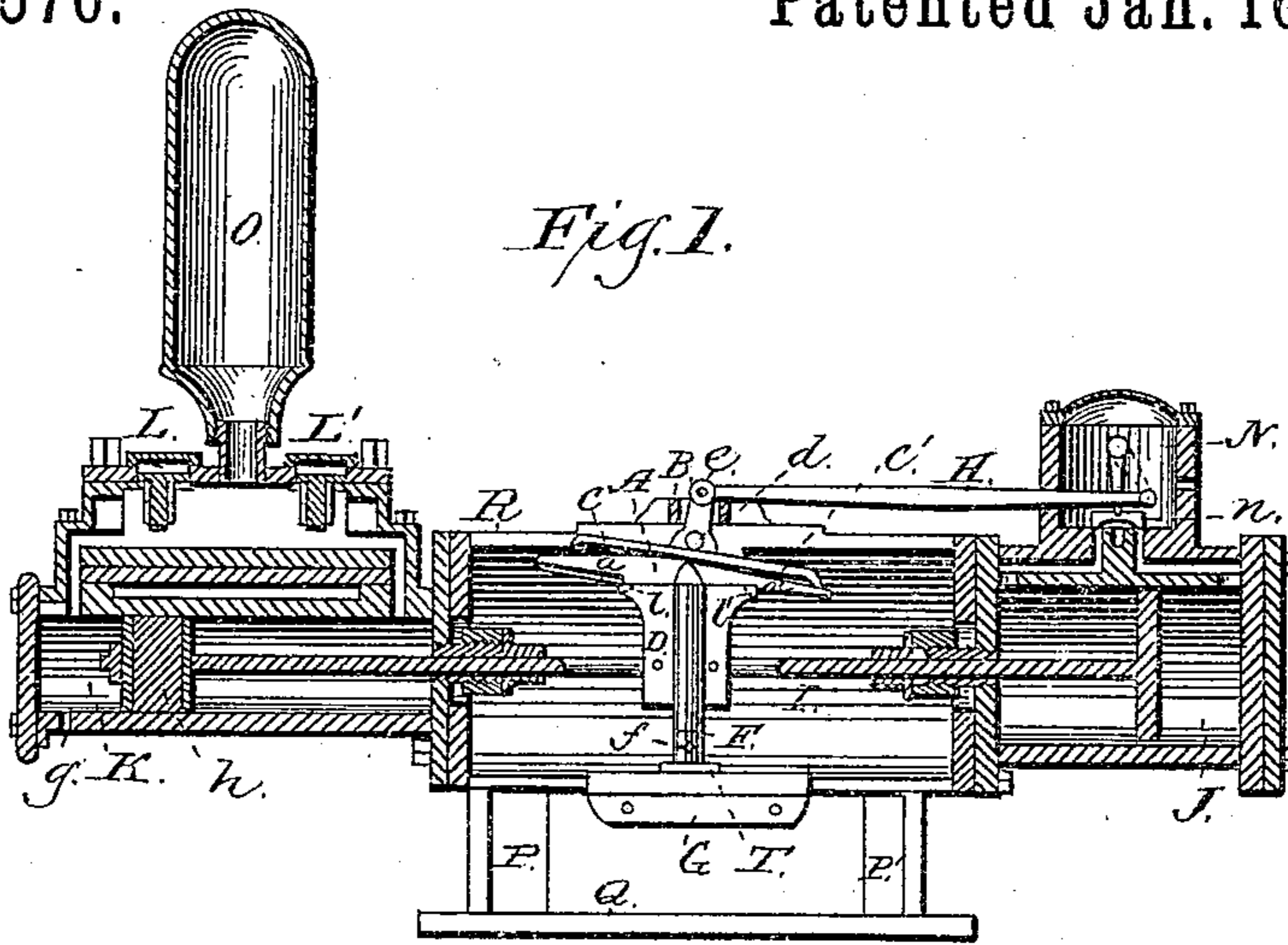
(No Model.)

A. J. BLAKESLEE.

VALVE GEAR FOR STEAM PUMPING ENGINES.

No. 270,576.

Patented Jan. 16, 1883.



Witnesses;

E. Sherman
St. J. Clark.

Inventor

Albert J. Blakeslee
By H. S. Singer
Atty.

UNITED STATES PATENT OFFICE.

ALBERT J. BLAKESLEE, OF DUQUOIN, ILLINOIS.

VALVE-GEAR FOR STEAM PUMPING-ENGINES.

SPECIFICATION forming part of Letters Patent No. 270,576, dated January 16, 1883.

Application filed January 25, 1882. (No model.)

To all whom it may concern:

Be it known that I, ALBERT J. BLAKESLEE, of Duquoin, in the county of Perry and State of Illinois, have invented a new and useful Improvement in Valve-Movements for Steam-Pumps and Steam Pumping-Engines; and I do declare the following to be a full, clear, and exact description thereof.

My invention relates to the valve-movements of direct-acting steam-pumps and steam pumping-engines, and is for the purpose of so operating the steam-valve of a steam-pump as to open and close the steam-ports and exhaust by a direct and instantaneous movement of the valve, so as to at once open the steam-port to its full size and capacity and at the same instant fully throw open the exhaust for the escape of the spent steam from the opposite end of the cylinder, thus insuring the best possible results, without waste, from a given amount of steam used. I attain this end by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of the entire steam-pump on a line drawn through the center thereof, except as to the valve-movement, which is shown in perspective. Fig. 2 is a vertical section of the central portion or body of the steam-pump (shown on a larger scale) sectioned so as to present a detailed view of the different parts of my valve-movement.

Similar letters refer to similar parts throughout both views.

R is the body of the steam-pump, supported upon the legs P P' and base Q, and having the steam-cylinder J attached to one of the ends thereof, and the water-cylinder K attached to the other.

A is a rocking arm or lever pivoted and moving freely upon the stud *d*, attached to the body of the pump R, and connected to the valve-rod H by the pin or joint *e*, said rocking lever A having thereon the projection or rib C C', the under side of C C' forming a bearing for the movable piece or bolt B, hereinafter referred to. *a a'* are tapering projections or ribs on the face of the rocking lever A, which engage the lugs *l l'* on the inner surface of the hollow arm D, hereinafter described. D is a hollow arm attached to the piston-rod I, and having a vertical recess therein to receive and carry the movable spring-bolt B.

B is a spring-bolt fitting and working in a recess, E, in the arm D, which bolt B is actuated and constantly forced upward against the rib C C' by the coiled spring S, encircling the same.

T is an adjustable foot attached to the hollow arm D by means of the set-screw *f*, and rests on and moves in the slide G, attached to the lower edge of the body of the pump R for the purpose of acting as a support and guide for the hollow arm D.

In Fig. 2, *i i'* is elastic packing placed in recesses made for that purpose, and acting as stops or bumpers, limiting the movement of the rocking lever A.

N is the steam-chest, attached to the steam-cylinder J.

n is an ordinary steam-valve for opening and closing the steam-ports.

L L' show two of the water-valves, (two others not being shown,) there being four water-valves arranged in the four corners of the water box or chest of the pump on the same horizontal plane.

O is an ordinary air-chamber attached to the water box or chest to equalize the flow of the stream of the fluid pumped.

In operating this pump, as the piston travels on the backward stroke the lug *l'* on the inner surface of the hollow arm D engages the upper surface of the tapering rib *a'* and at the end of the stroke runs off the outer end of *a'*, thereby releasing the rocking arm A, which is immediately forced upward by the spring-bolt B, acting upon the rib C', instantly moving the steam-valve *n* and admitting steam to the opposite end of the cylinder J, and at the same instant the lug *l* engages with the upper side of the rib *a*, when the piston starts on its return-stroke and continues until the lug *l* runs off of the outer end of the rib *a*, when the spring-bolt B, operating upon the rib C, again moves the valve *n*, admitting the steam to the other end of the cylinder J. This movement is instantaneous, throwing open the port instantly to its full capacity, and vice versa, at each movement of the piston forward and back.

In operation this valve-movement so operates that each movement of the steam-valve is instantaneous, and at once throws open the port to its full size and continues it in this po-

sition throughout the full stroke, and when the end of the stroke is reached the opposite port is in like manner thrown open for the admission of steam, and at the same instant the exhaust is thrown fully open, so as to employ the full supply of steam desired, and not lose any of the force by the speed of the pump being decreased as it nears the end of its stroke from lack of steam-supply, but maintaining the full power of the pump up to the instant the stroke changes, and then instantly transferring the force undiminished to the other end of the cylinder, thus securing the best possible results from a given amount of steam used in a direct-acting steam-pump.

What I claim as new is—

1. The rocking lever A, having the ribs C C' and a a' thereon, said rocking lever A being pivoted to the valve-rod H, in combination with the hollow arm D, secured to the piston-rod I, said hollow arm D being provided with the spring-bolt B, engaging the ribs C C', and the lugs l l', engaging the ribs a a', construct-

ed and operating substantially as and for the purpose set forth.

2. The combination, with the steam-valve of a steam-pump, of the valve-rod H, the rocking lever A, and the hollow arm D, provided with the spring-bolt B, attached to the piston-rod I, constructed and operating together substantially as and for the purpose set forth.

3. The combination, with the valve-rod H of a steam-pump, of the rocking lever A, the stops or bumpers i i', and the hollow arm D, secured to the piston-rod I, said hollow arm being provided with an inclosed spring-bolt, B, and the adjustable foot T, working in the slide G, when constructed substantially as and for the purpose set forth.

In testimony whereof I, the said ALBERT J. BLAKESLEE, have hereunto set my hand.

ALBERT J. BLAKESLEE.

Witnesses:

EDWARD S. HOOLE,
ELI T. BLAKESLEE.