

(No Model.)

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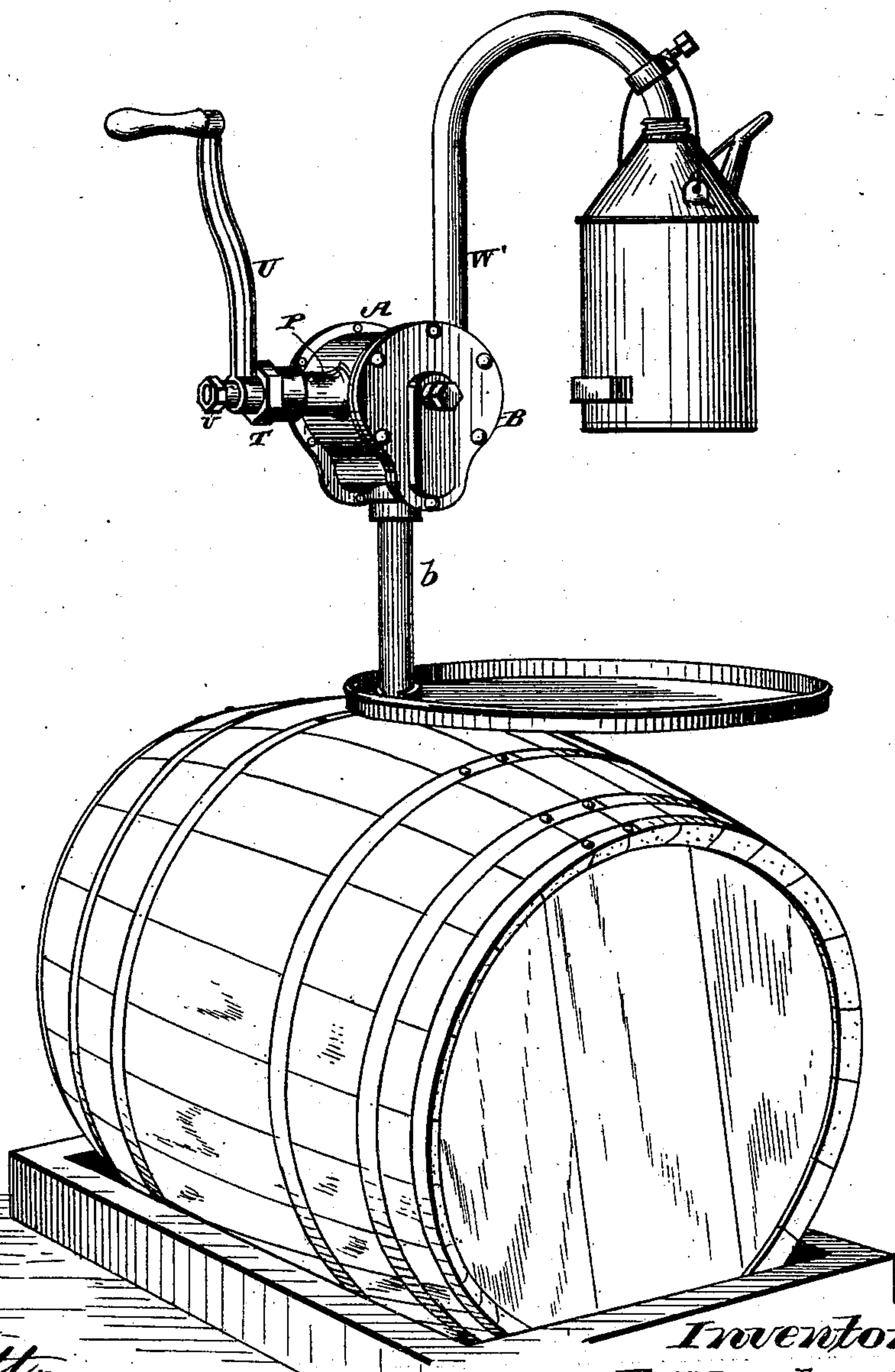
H. E. MARCHAND.

MEASURING PUMP.

No. 275,680.

Patented Apr. 10, 1883.

Fig. 1.



Witnesses.

Robert Gruett,

John S. Roan,

Inventor.

Henry E. Marchand.

By James L. Norris,

Atty.

(No Model.)

3 Sheets—Sheet 2.

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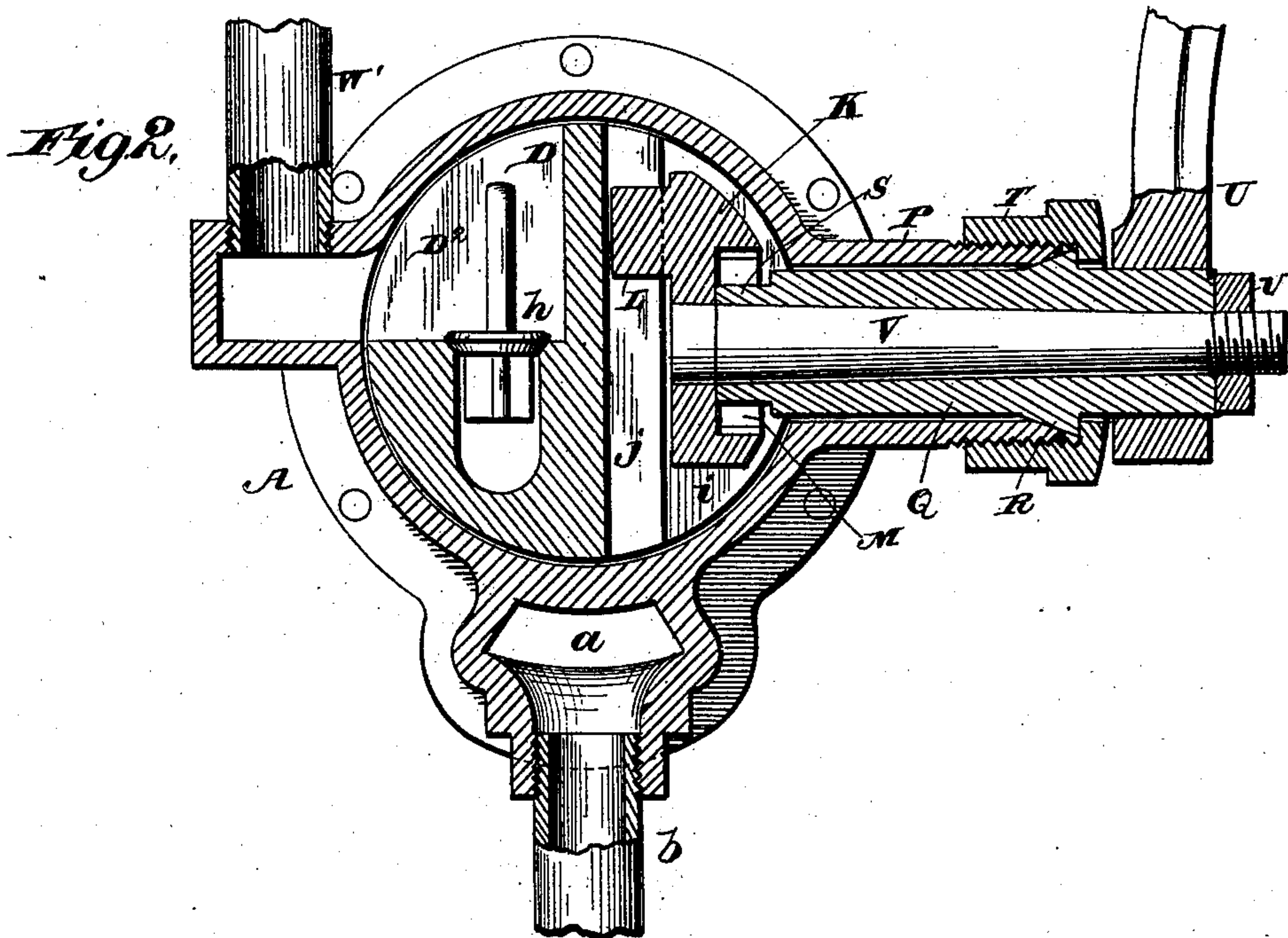
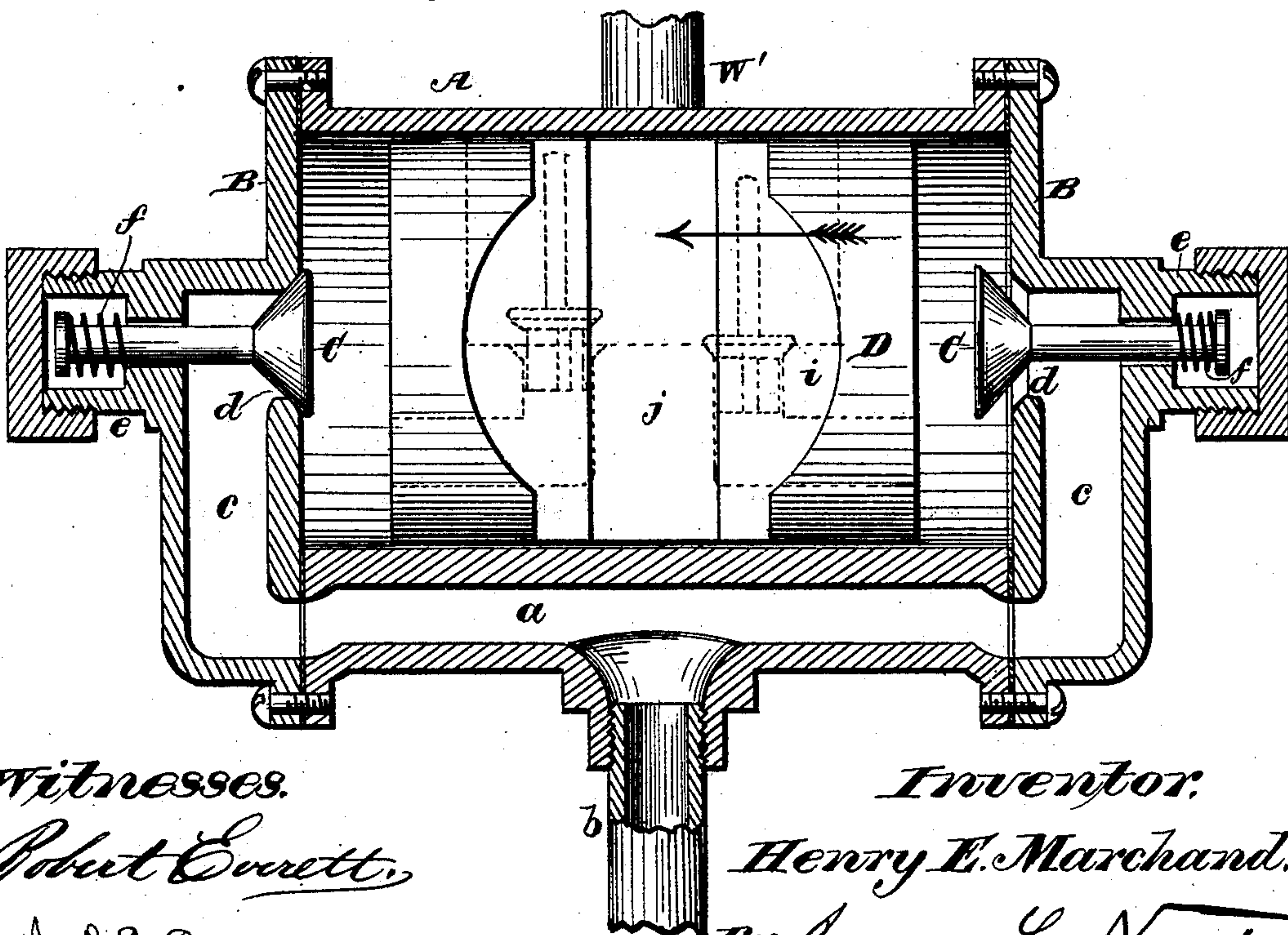


Fig. 3.



Witnesses.

Robert Everett,

John S. Roome,

Inventor.

Henry E. Marchand.

By James L. Norris,
Atty.

(No Model.)

3 Sheets—Sheet 3.

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Fig. 4.

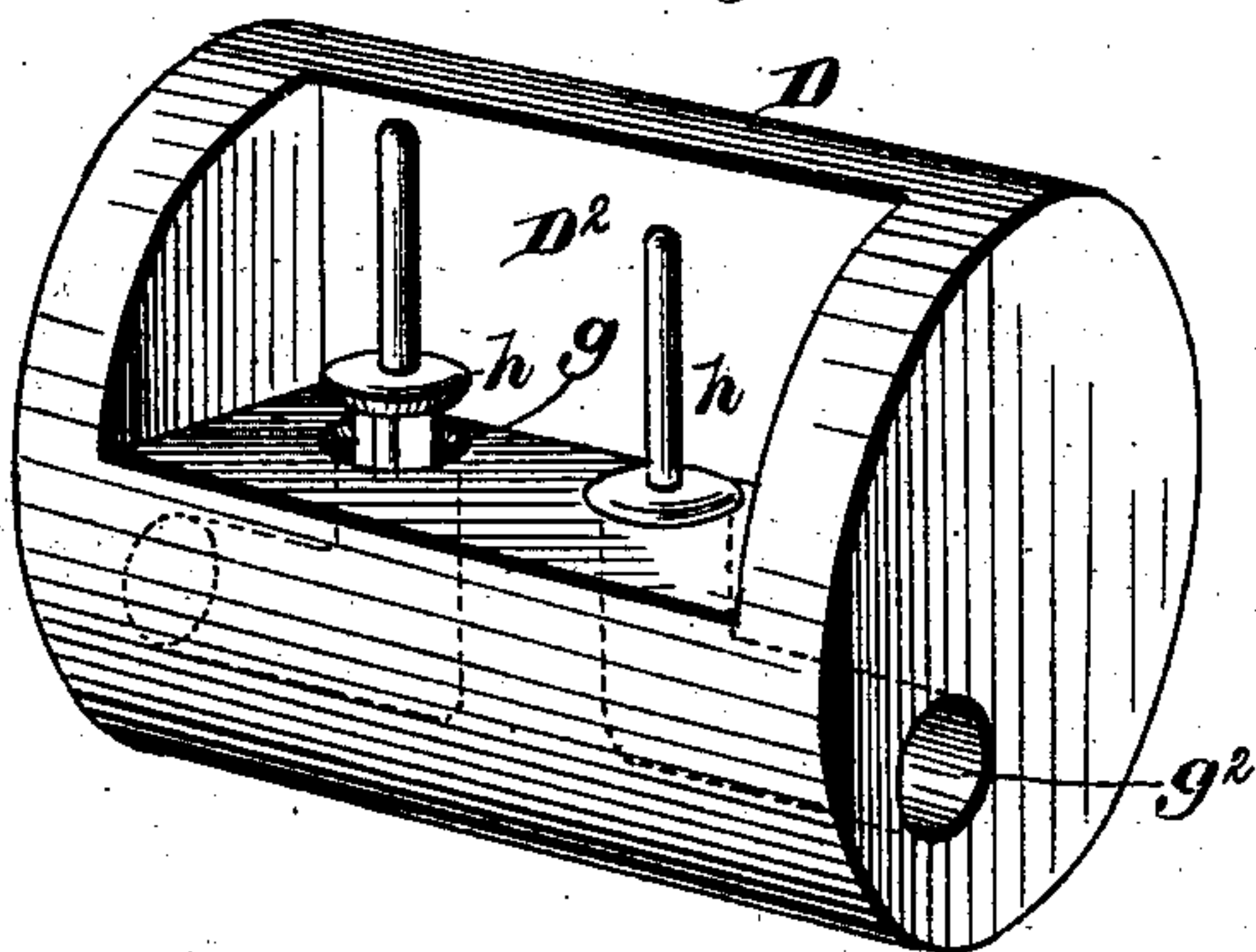


Fig. 5.

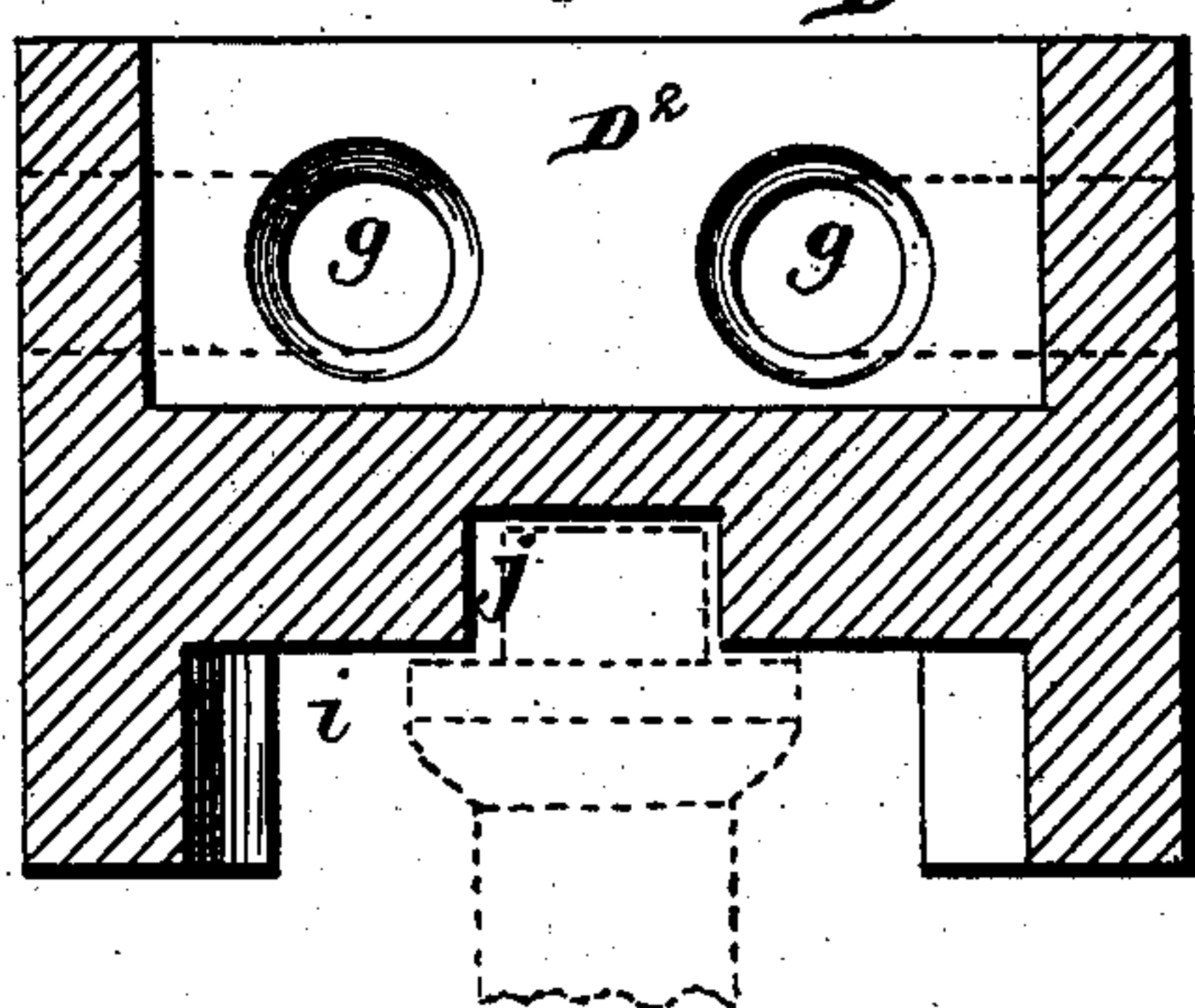


Fig. 6.

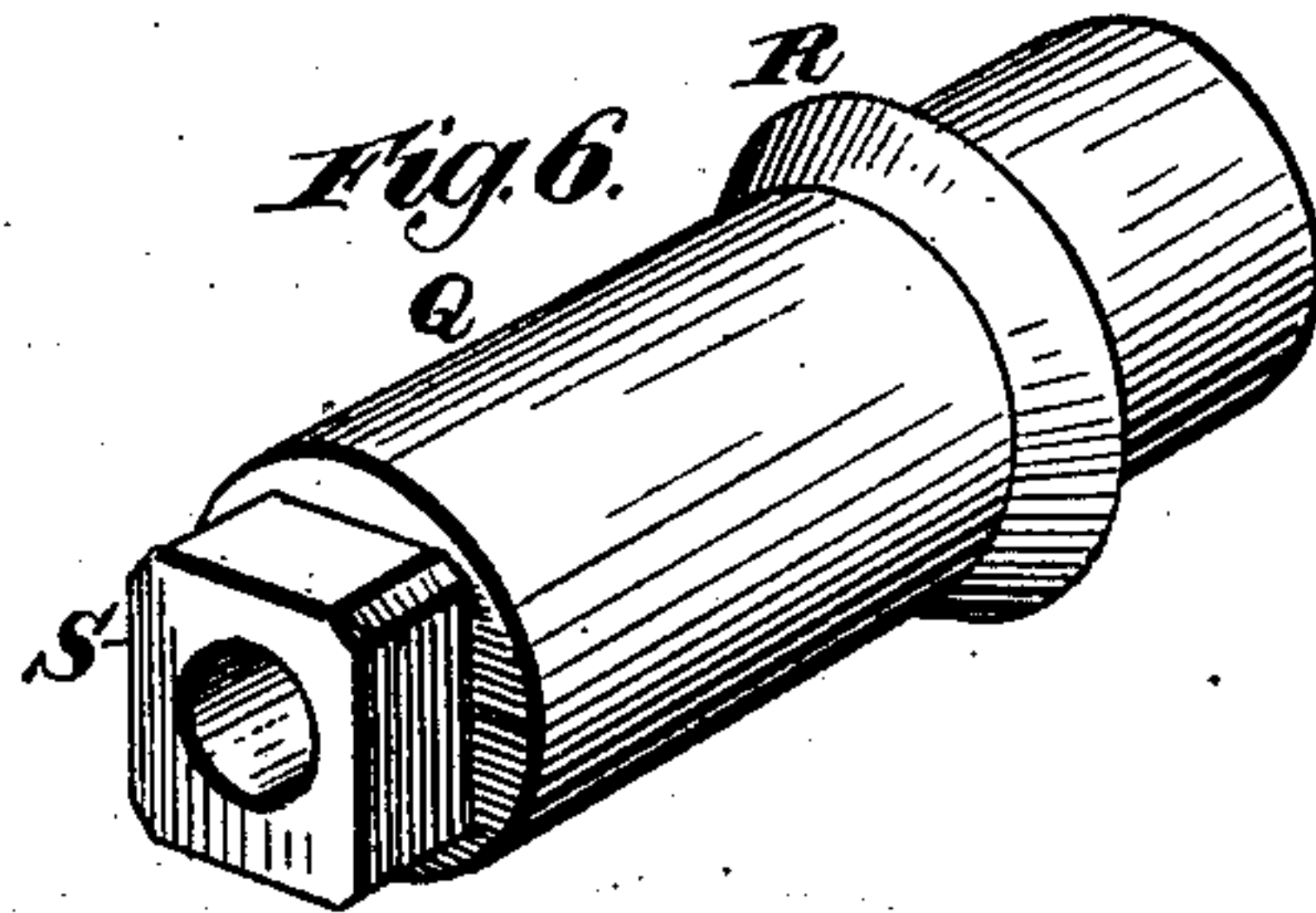


Fig. 7.

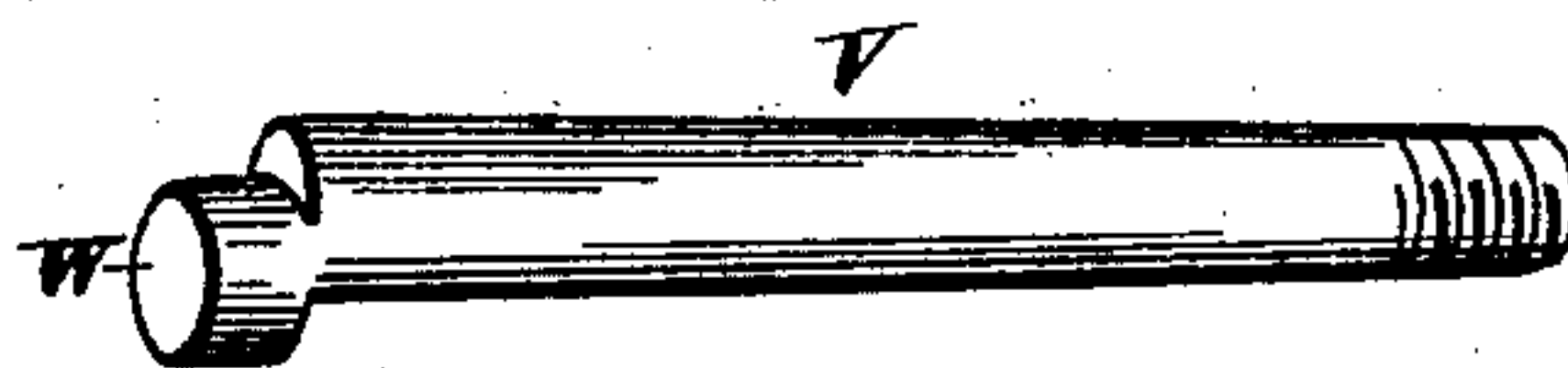


Fig. 8.

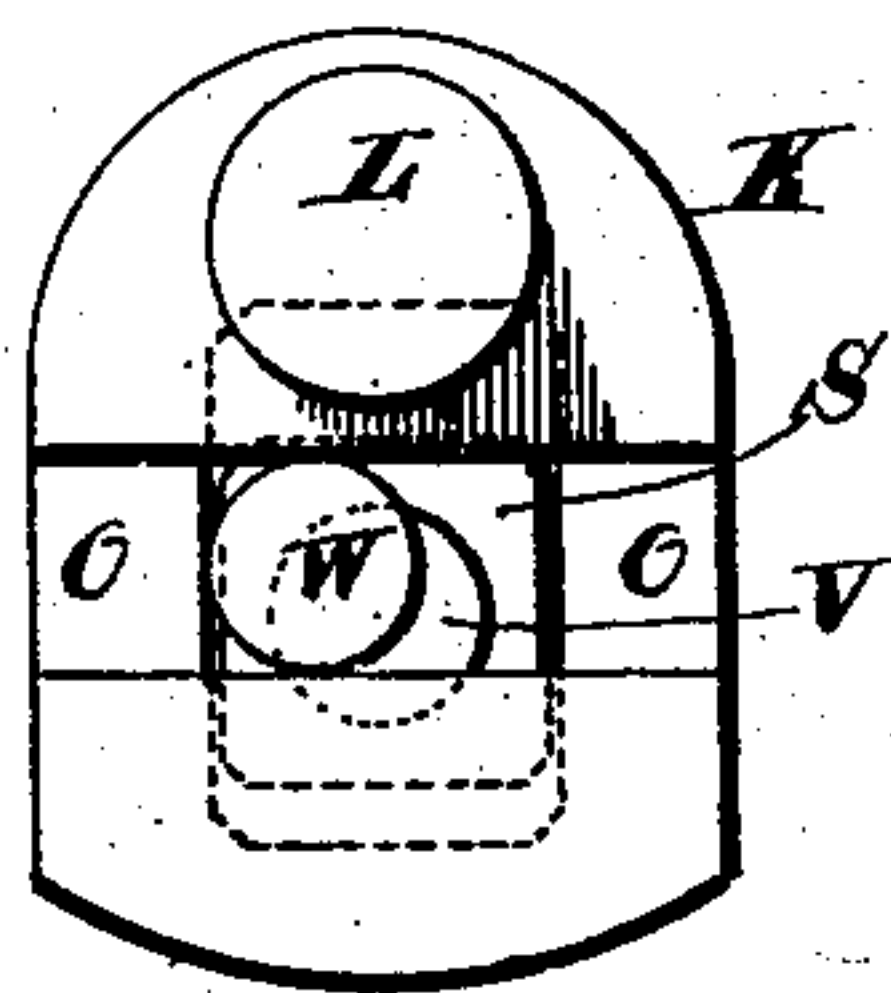
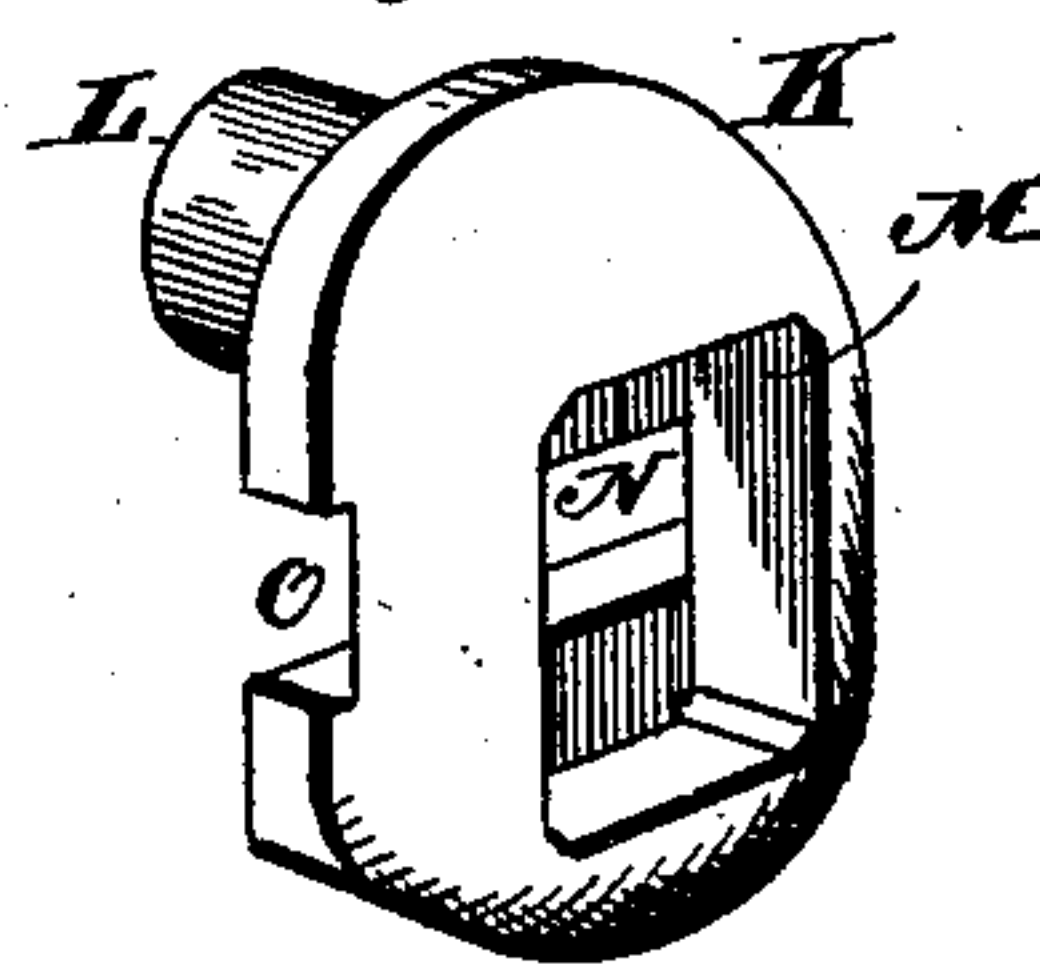


Fig. 9.



Witnesses.

Robert Everett.

John S. Doolittle.

Inventor.

Henry E. Marchand.

By James L. Norris.

Atty.

UNITED STATES PATENT OFFICE.

HENRY E. MARCHAND, OF ALLEGHENY CITY, PENNSYLVANIA.

MEASURING-PUMP.

SPECIFICATION forming part of Letters Patent No. 275,680, dated April 10, 1883.

Application filed January 11, 1883. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. MARCHAND, a citizen of the United States, residing at Allegheny City, Allegheny county, Pennsylvania, have invented new and useful Improvements in Measuring-Pumps, of which the following is a specification.

The present invention relates to improvements upon the measuring-pump forming the subject-matter of Patent No. 264,312, granted to me on the 12th day of September, 1882.

The object of the invention is to provide simple and effective means for packing the shaft or arbor which serves to impart a reciprocating movement to the double-headed piston, to adjust from the outside of the pump-cylinder the eccentric or wrist-pin block which serves to throw the piston back and forth, this adjustment being for the purpose of varying the throw or movement of the piston, and, furthermore, to provide a piston of a novel construction which possesses decided advantages over the piston used in the pump heretofore patented to me.

To these ends the invention consists in the construction and combination of devices which will be fully described hereinafter, and then pointed out in the claims.

In the drawings, Figure 1 is a perspective view, showing the relative positions of a barrel-measuring pump and vessel to be filled. Fig. 2 is a vertical sectional view taken transversely through a measuring-pump constructed according to the present invention. Fig. 3 is a longitudinal sectional view taken vertically through the side of the measuring-pump on which the piston-operating devices are located. Fig. 4 is a perspective view of the double-headed piston, showing its liquid-chamber and vertically-movable valves. Fig. 5 is a longitudinal sectional view of the piston. Figs. 6, 7, 8, and 9 are detached views of the packing-plug, piston-operating block, and tapering bolt.

The letter A designates the pump-cylinder, which is closed at its ends by the detachable heads B, securely fastened to the ends of the cylinder. The cylinder has the bottom chamber, *a*, into which the liquid enters from the barrel or other reservoir through the centrally-located tube *b*. The end heads, B, are provided with vertical chambers *c*, which com-

municate at all times with the inlet-chamber *a*, as is clearly shown in Fig. 3, while the communication of these chambers with the piston-chamber is through ports *d*, normally closed by inwardly-movable valves C. The stems of these valves project into tubular projections *e* on the cylinder-heads, and are encircled by springs *f*, for pressing the valves into their seats.

The parts just described are also found in my previous patent, and need not be more precisely described.

The working-chamber of the cylinder contains a double-headed piston, D, which, instead of being constructed of two independent heads rigidly connected together by bolts and provided with horizontally-movable spring-pressed valves, is in the present instance constructed of a solid cylindrical body, apertured or recessed in the following manner, viz: A measuring-chamber, D², is formed in the body of the piston in such a manner as to leave the heads or ends of the cylinder intact, as is clearly shown in Fig. 4. This chamber is of a segmental shape, and has two vertical ports, *g*, in its bottom, which communicate with horizontal passages *g*², leading out through the ends of the cylinder. The ports *g* contain vertically-movable valves *h*, which are raised by the entering liquid and held closed by their own weight. The side of the piston opposite the liquid-chamber is provided with a recess, *i*, having curved sides, as is shown in Fig. 3, and this recess is traversed vertically by a groove, *j*, which extends from the top to the base of the piston. A block, K, operates in the recess *i* of the piston, and a wrist-pin, L, on the inner face of said block, moves up and down in the groove *j*, also formed in said piston. The block K has a square or quadrangular seat or recess, M, on the face thereof adjoining the cylinder, and a slot, N, extending across the inner or piston side of the block, opens into said recess or seat, and is bordered at its ends by the short grooves O, as is clearly shown in Figs. 8 and 9. A cylindrical extension or tube, P, forming part of the side of the shell of the cylinder, receives a cylindrical plug, Q, which has a conical enlargement or swell, R, near its outer end and a square projection, S, at its inner end. The conical enlargement R of the

plug is seated in the flaring or correspondingly-shaped outer end or mouth of the tube P, and a screw-threaded cap, T, applied to the end of said tube, has an outer flange, which 5 bears against the enlargement R and serves to press the same into its seat. The flaring seat of the tube and the correspondingly-shaped enlargement of the plug Q produce a liquid-tight joint, and no additional packing 10 devices are required to guard against the working out of liquid through the tube on the cylinder. The plug is extended beyond the latter and receives the handle or crank U, which is securely fastened to the plug for the purpose of 15 turning the same. The square projection S at the inner end of the plug fits into the recess or seat M of the wrist-pin or eccentric block, and these parts are firmly locked to each other, so as to turn together, by means of a tapering stem or 20 bolt, V, which passes through an axial bore of the plug, and is firmly secured in place by a nut, v, applied to its screw-threaded outer end, or the part thereof projecting beyond the plug. The stem or bolt V has an eccentrically-ar- 25 ranged pin or stud, W, at its inner end, which is passed through the recess M and slot N, and lies on the inner or wrist-pin side of the block K. The recess M is made somewhat longer than the projection S, so that the block K can 30 be adjusted or moved up and down for varying the throw of the piston, according to the exigencies of the case. It will be observed that the stem V is loosened in the plug when the outer nut, v, is properly turned, whereupon the 35 block K can be adjusted or moved up and down on the square end of the plug through the medium of the eccentric end portion of the stem. The block having been adjusted so as to set the wrist-pin higher or lower in the working- 40 groove in the piston, the nut is again tightened for locking the block, stem, and plug together, so as to cause these parts to turn together.

The principle of operation of a pump constructed according to the present invention is 45 the same as in my previous patent, it being manifest that as the piston moves from either head of the cylinder the vacuum created in the cylinder will cause the valve at the receding end of the cylinder to open, as is shown in 50 Fig. 3, and permit liquid to enter the cylinder, and during the return-stroke of the piston the

liquid which has thus entered is caused to enter the chambered piston by the opening of the upwardly-movable valve and pass from the piston through the discharge-pipe W', which 55 communicates with the chamber in the piston during its entire stroke. The lengthening or shortening of the stroke of the piston by the means described will permit the amount of liquid received into the cylinder and ejected there- 60 from to be varied, as will be manifest.

Having thus described my invention, what I claim is—

1. The combination of a double-headed piston having a segmental liquid-chamber, inlet- 65 ports opening into said chamber through the heads of the piston, and vertically-movable valves fitted in said ports, with suitable means for reciprocating the piston, and a cylinder having end inlet-valves and discharge-pipe 70 communicating with the chambered piston, substantially as and for the purpose set forth.

2. The combination of a reciprocating piston having a vertical recess and groove, and a block with a wrist-pin or an eccentric arranged 75 therein, with a cylinder having inlet and discharge ports, and an arbor or shaft carrying said block or eccentric, substantially as and for the purpose set forth.

3. The combination of the plug having a 80 conical or tapering enlargement and a suitable handle, and a piston-cylinder having a tubular extension provided with a flaring mouth, with an eccentric or wrist-pin block and a reciprocating piston, substantially as and for the pur- 85 pose set forth.

4. The combination of an adjustable eccentric or wrist-pin block having a rectangular recess and slot communicating therewith, the plug provided with an axial bore and rectangu- 90 lar inner end projection, and the tapering stem having an end stud or pin with the recessed piston, and the cylinder having a tube for the reception of the plug, substantially as and for the purpose set forth. 95

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HENRY E. MARCHAND.

Witnesses:

JAMES L. NORRIS,
J. A. RUTHERFORD.