(No Model.) 3 Sheets—Sheet 1.

J. M. NORMAND.

PUMP.

No. 336,940. Patented Mar. 2, 1886.

Fig. 1.

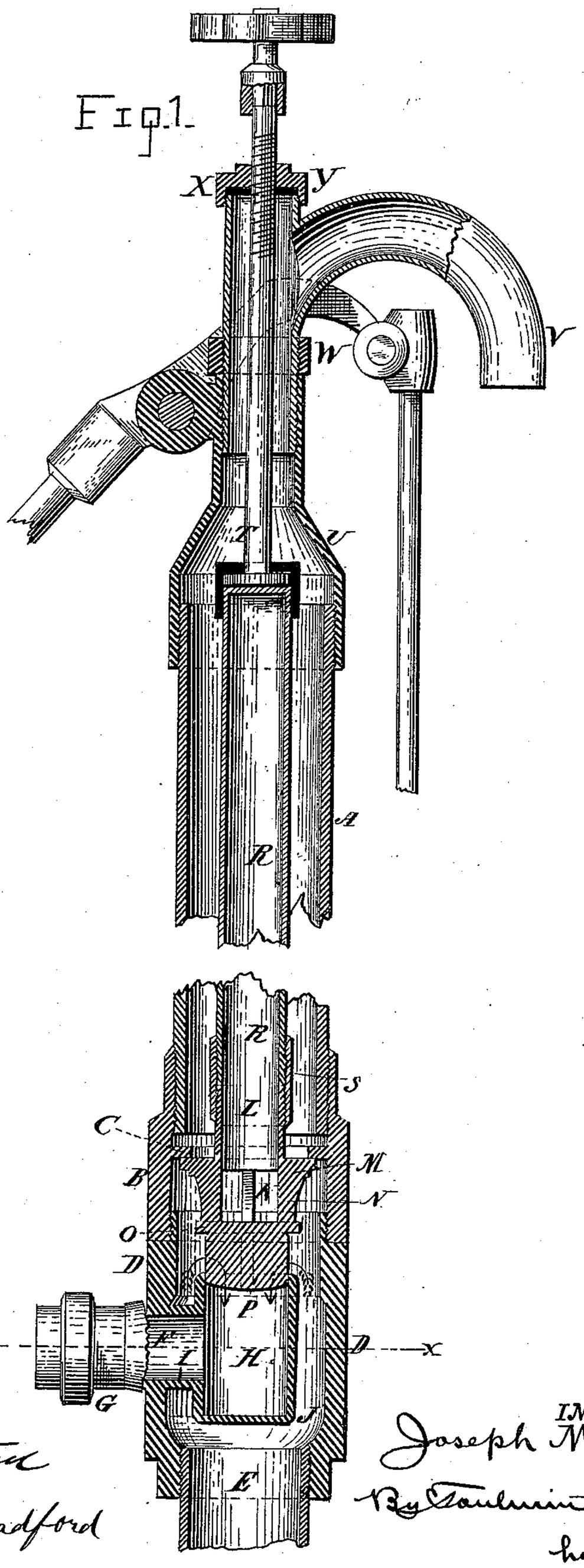

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Fig. 2

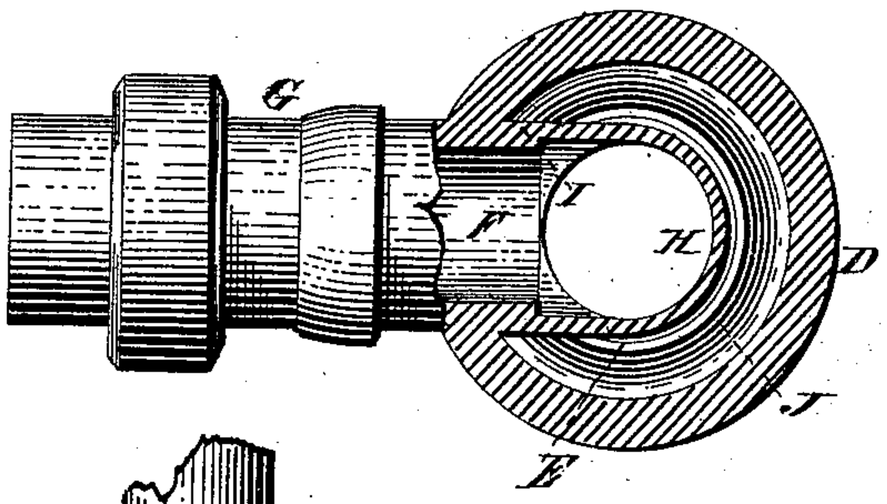

Fig. 3.

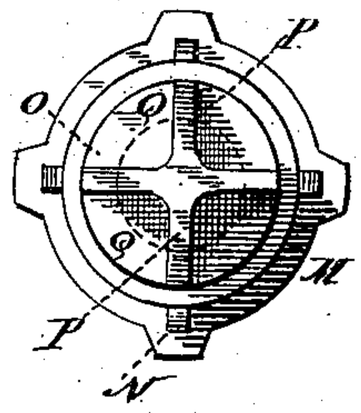

Fig. 4.

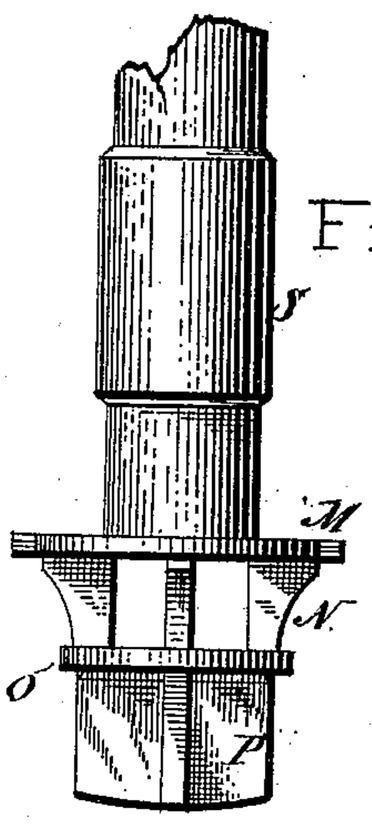

Fig. 5.

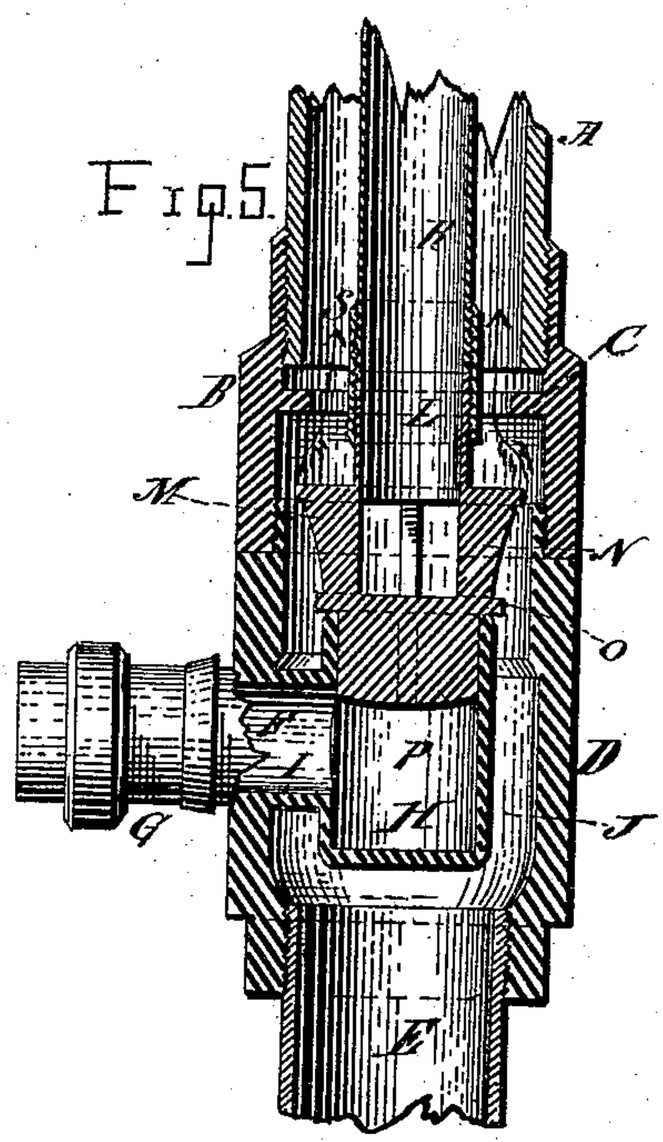

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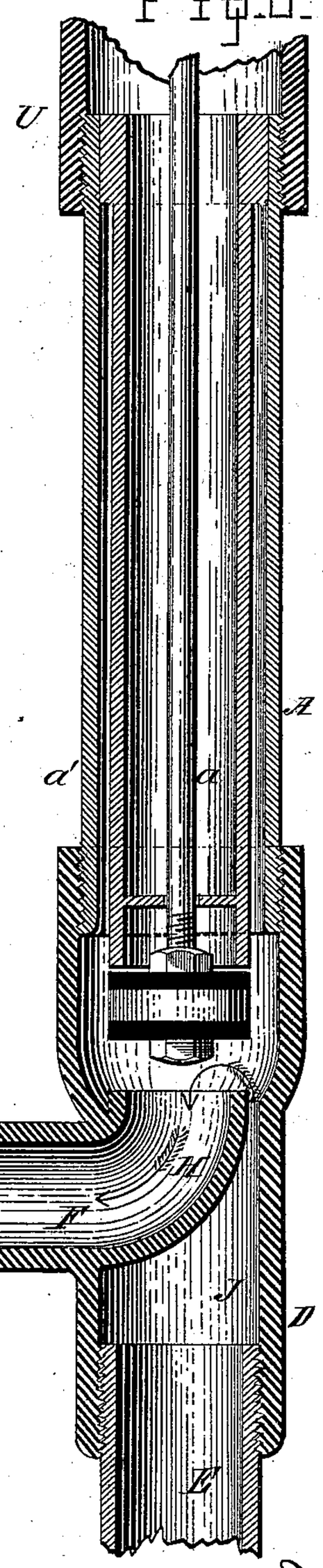
Fig. 6.



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UNITED STATES PATENT OFFICE.

JOSEPH M. NORMAND, OF SPRINGFIELD, OHIO, ASSIGNOR OF ONE-HALF TO JACOB KREIDER MOWER, OF SAME PLACE.

PUMP.

SPECIFICATION forming part of Letters Patent No. 336,940, dated March 2, 1886.

Application filed October 20, 1885. Serial No. 180,415. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. NORMAND, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Pumps, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in pumps; and it has for its objects, first, to provide a pump with a water cut-off having a plurality of waterways so disposed with respect to each other as that the discharge of the water may be changed from one direction to another, and having its actuating means contained within the pump-stock, whereby the cut-off may be placed below the freezing-point, and yet the external lateral dimensions of the pump generally be reduced and kept within small compass, thus rendering it unnecessary to enlarge the diameter of the well; second, to constitute an air-chamber of the means, essentially speaking, for actuating the water cut off, whereby the feature of lateral compactness is still preserved.

In the accompanying drawings, forming a part of this specification, and on which like reference-letters indicate corresponding features, Figure 1 represents a vertical sectional view of the pump-stock and of my improved cut-off mechanism and stock-head and discharge-spout, showing the valve in its higher plane and some of the inner features in side elevation; Fig. 2, a horizontal sectional view of the cut-off shell or casing detached, the section being taken on line *x x* of Fig. 1; Fig. 3, a view of the valve in an inverted position; Fig. 4, a side elevation of the valve and the coupling, and of the lower portion of the air-chamber; Fig. 5, a vertical sectional view of the cut-off mechanism and the lower end of the stock, showing the valve in its lower plane; and Fig. 6, a vertical section of a modification.

It should be understood, before entering into a detailed description of this invention, that the cut-off mechanism is applicable to all that class or family of pumps, in which the piston is placed outside of the stock proper at the discharge-pipe, for it is the absence of the piston from the interior of the stock or of that pipe that admits of the arrangement of the cut-off-actuating means now about to be described.

The letter A designates the pump-stock proper, being of tubular form and adapted to be firmly secured to the usual platform in any of the known and approved ways, and to the lower end of this stock is connected, preferably by means of screw-threads, a metallic coupling, B, whose interior below the termination of the stock is provided with an annular contracted portion or shoulder, C, the function of which is to form a seat for the valve (presently to be described) when in its higher plane. To this coupling B is secured the cut-off casing or shell D, which is of tubular form, and its lower end is designed to be connected to and put in communication with the discharge pipe or orifice of a pump-cylinder of the character already adverted to, either directly or through the instrumentality of a pipe, E. This shell is provided at one side with an opening, F, and from this opening extends outwardly a side discharge-pipe, G, integrally formed with or otherwise connected to the shell, and designed to have attached to it such water-pipes as may be found desirable. Within the shell is secured or cast a cup, H, the connection being effected through the short sleeve I, which also serves to establish a water communication between the cup and the pipe G, while around the cup, and between it and the interior of the shell, is a water-space, J, through which the water finds its way to the interior of the cup and to the stock or other water-discharge, as will presently more fully appear.

The letter K designates the valve, which, while it may be varied in point of detail construction, consists, in the present instance, of the tube L and the annulus M, from which extend the several plates N, disposed at intervals around the annulus and serving to connect the disk O therewith, while from the disk project ribs or fins P, of which there are four, and which are also operated by spaces Q. These several features of the valve may be cast in one piece, or they may be separately made and then united in any convenient manner. The spaces Q between the ribs P serve as water-passages, through which the water

flows from the water-space J into the cup H when the valve is in its higher plane, as represented in Fig. 1, and the ribs themselves serve to guide the valve in its vertical reciprocations, their lower ends being always somewhat, at least, within the cup. On the other hand, the space between the periphery of the annulus and the inner wall of the shell serves as a water-passage for the upward flow of the water, this action taking place when the valve is adjusted in its lower plane, as represented in Fig. 5. From these remarks it will be understood that when the valve is down the contact between the upper edge of the cup H, which edge is fashioned to form a seat, and the disk O prevents the escape of the water other than upward through the stock or other discharge, while when the valve is in the opposite extreme of its movement the contact between the shoulder C and the annulus prevents the escape of the water by that passage and diverts it into the other or lateral discharge. The tube L is attached to the tubular portion R of the actuating-rod, as by a coupling, S, and this tubular portion extends upwardly and within the stock to near the upper end of the latter, where it is closed and the stem T secured thereto so as to revolve. This stem is screw-threaded and provided with a hand-wheel for the purpose of actuating the valve, in the manner shortly to appear.

To the upper end of the stock is screwed or otherwise fastened the head U, which is contracted for a portion of its length—upper portion—and provided with an interior screw-thread, with which engages the exteriorly-threaded lower end of the discharge-spout V, a jam-nut, W, being employed to prevent undue displacement of the spout from an adjusted position. To the upper end of the spout a cap, X, is screwed, and in a threaded aperture of the cap the stem T works, whereby when rotated in the one or the other direction by the hand-wheel the valve is adjusted against the one or the other of its seats. A rubber or other packing-washer, Y, is interposed between the cap and spout to prevent leakage.

It will be noted that when the water is directed into the stock it finds its final outlet through the curved part of the spout.

When it is desired to turn the spout in either direction about the pump, the jam-nut is released, and the threaded connection permits of its adjustment, yet preserves it against leakage; nor does this adjustment affect the position of the handle.

It has already been noted that the valve-actuating rod is tubular, or mostly so, and that the function performed by the tubular portion is that of an air-chamber. Thus it appears that by my improved arrangement a highly-useful and much-used water-diverting and cutting off mechanism is provided, and at the same time an air-chamber afforded, and this without additional devices.

The air communication with the air-chamber is through the spaces between the plates N and up the tube L. The contemplated location of the cut-off mechanism in cold climates is below the freezing-point, and thus it will be seen that by my invention water may be interchangeably brought to the surface and diverted off under ground in any desired direction and then brought to the surface at the place where preferred, and yet no lateral increase of the dimensions of the pump proper is brought about.

In the modification shown in Fig. 6 the valve consists simply of two washers held on the actuating-rod *a* and bound against a disk by an upper and a lower nut, while that rod is solid, and the air-chamber is formed by the space between the stock and the pipe *a'*, secured thereto at its upper end. This pipe also forms the upward water-passage in this instance, as well as the upper seat for the valve. In the modification the coupling B is omitted and the shell secured directly to the stock.

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

1. In a pump, the combination, with the water-escape passage, of a cut-off mechanism, including an air-chamber, located in that passage, and constructed to change the direction of the discharge of the water.

2. In a pump, the combination, with the water-escape passage, of a cut-off mechanism including an air-chamber, and constructed to change the direction of the discharge of the water.

3. In a pump, the combination, with the water-escape passage having a lateral discharge, of a cut-off mechanism, including an air-chamber, located in that passage, the cut-off being between the point of principal discharge and the lateral discharge, and constructed to change the direction of the discharge of the water.

4. In a pump, the combination, with the stock constructed to conduct the escaping water and provided with a main and lateral discharge, of the valve located in that stock above the lateral discharge, and having a tubular or partially-tubular actuating-rod constructed to form an air-chamber and to allow of the escape of water around it, and located within the stock.

5. In a pump, the combination, with the stock, an internal shoulder, and a valve-shell secured to that stock and having an inclosed cup with a water-way about it, and a lateral opening, of a valve located within that shell, and an actuating-rod passing up through the stock and adapted to adjust the valve against the shoulder and the cup, respectively.

6. In a pump, the combination, with the stock, an internal shoulder, and a valve-shell secured to that stock and having an inclosed cup with a water-space about it, and a lateral opening, of a valve located within that shell, and an essentially-tubular actuating-rod forming an air-chamber passing up through the

stock and adapted to adjust the valve against the cup and the shoulder, respectively.

7. In a pump, the combination, with the stock, a coupling having a shoulder, a valve-shell having a cup therein with a water space about it, and a lateral opening, of a skeleton valve within the shell and coupling and having a tubular actuating-rod constituting an air-chamber, a threaded stem swiveled thereto, a head, and a discharge-spout having a threaded cap, the stem passing through said cap, and the rod being within the stock.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH M. NORMAND.

Witnesses:

A. W. YEATMAN,

EDWIN L. BRADFORD.