

(No Model.)

T. C. MUNGER.
PUMP VALVE.

No. 530,442.

Patented Dec. 4, 1894.

Fig. 1.

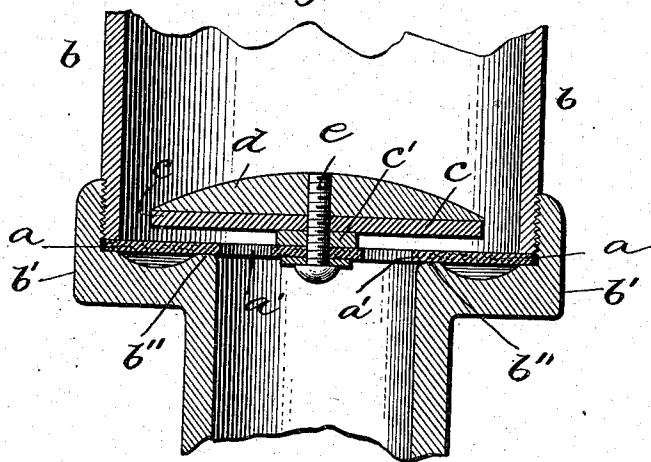


Fig. 2.

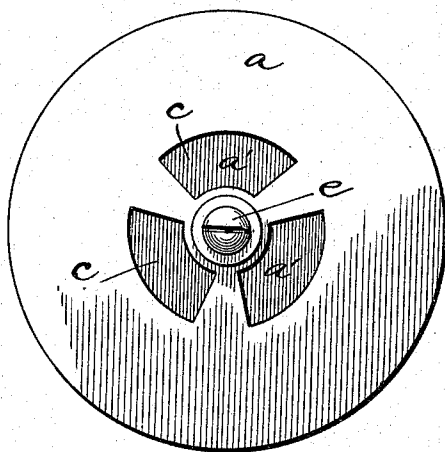
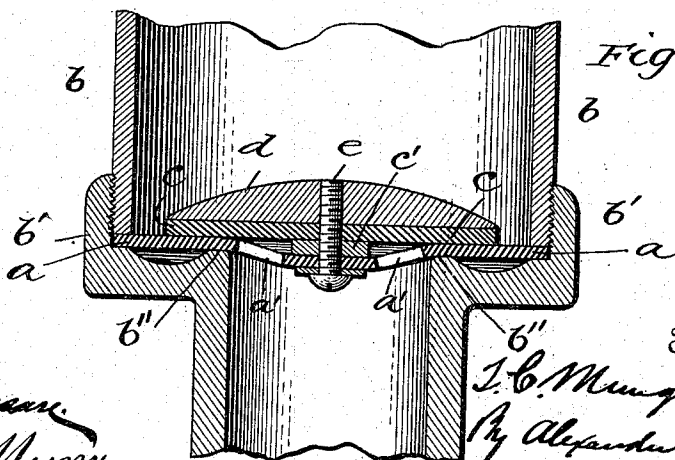


Fig. 3.



Witnesses
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THEODORE C. MUNGER, OF CEDAR RAPIDS, IOWA.

PUMP-VALVE.

SPECIFICATION forming part of Letters Patent No. 530,442, dated December 4, 1894.

Application filed August 17, 1894. Serial No. 520,588. (No model.)

To all whom it may concern:

Be it known that I, THEODORE C. MUNGER, a citizen of the United States, residing at Cedar Rapids, in the State of Iowa, have invented certain new and useful Improvements in Pump-Valves, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a vertical section showing the valve in its normal position; Fig. 2, a detail bottom view of the valve, and Fig. 3 a vertical section showing the valve closed.

This invention has for its object to provide a simple valve for use in lift and force pumps, and the invention consists of certain novel features of construction hereinafter fully described and particularly pointed out in the claims appended.

In the drawings, *a* designates a leather or other flexible diaphragm, which is provided near its center with the water passages *a'* and is adapted to be clamped around its edge by means of the parts *b b'* of the pump, said diaphragm being circular in form and being unsupported except by the valve seat *b''* and around its edge, so that it is capable of a limited vertical vibratory movement. Secured to the diaphragm, rigidly, at its center, is a valve *c* which is supported a short distance above the diaphragm by means of a spacing-washer *c'* and has secured to its upper side a weighted disk *d*. The valve and weight are clamped rigidly to the diaphragm by means of a central screw *e*, which passes up centrally through the diaphragm, spacing-washer and weight. The valve *c* extends out over the water passages *a'* and is permanently supported above the flexible diaphragm by means of the screw and spacing washer. The valve *c* is preferably made of rubber or other elastic material, but it may be made of metal if desired. The weight *d* preferably covers the entire upper surface of the valve so as to protect the same and hold it to its place.

It will be observed that when there is no water pressure above the diaphragm, the valve will remain open, as shown in Fig. 1, but that when there is water pressure above the diaphragm the latter will be depressed

at its center sufficiently to bring the outer edge of the valve closely against the upper side of the diaphragm and thereby close the water passages. When the water is drawn up by the pump-plunger, the flexible diaphragm will be elevated slightly at its center and give a free passage for the water. It will be observed that the parts of this valve are rigidly connected together and the use of hinges and other loose parts is avoided. This construction of valve and seat is advantageous in that it not only insures quick closing of the valve, thus preventing the loss of water in pumping, but also permits the valve to rise directly vertically, which latter makes it require less room than the side-hinge valve and makes it practical for small cylinders. Another advantage lies in the fact that the water has free access all around the valve, which prevents lodgment of sand and other substances. Another advantage is its adaptability to either metal or elastic valves.

Having thus fully described my invention, what I claim is—

1. A valve for pumps comprising a flexible diaphragm provided with water openings and adapted to be supported at its outer edge, and a valve secured to the center of said flexible diaphragm, upon its upper side and extending over the water passages, substantially as and for the purposes described.

2. In a pump valve the combination of a flexible disk provided with water passages and adapted to be supported at its edge, a valve secured centrally to the upper side of said disk and extending over the water passages, and a spacing-washer interposed between the disk and valve and supporting the valve above the diaphragm, substantially as described.

3. In a pump valve, the combination of a flexible disk provided with a water passage, a valve secured centrally to the upper side of said disk, a spacing-block interposed between the valve and disk, a weight secured upon the upper side of the valve, and a central screw or bolt clamping the parts together, substantially as and for the purposes described.

4. The combination with the parts *b b'* of

a pump, the lower part being provided with a valve-seat *b''*, a flexible disk provided with water passages and clamped at its edge and resting on said valve-seat, and a valve secured at its center to the center of the diaphragm and supported above and out of contact therewith, substantially as described.

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

THEODORE C. MUNGER.

Witnesses:

SETH W. PECK,
ADELBERT S. WOOD.