

No. 661,624.

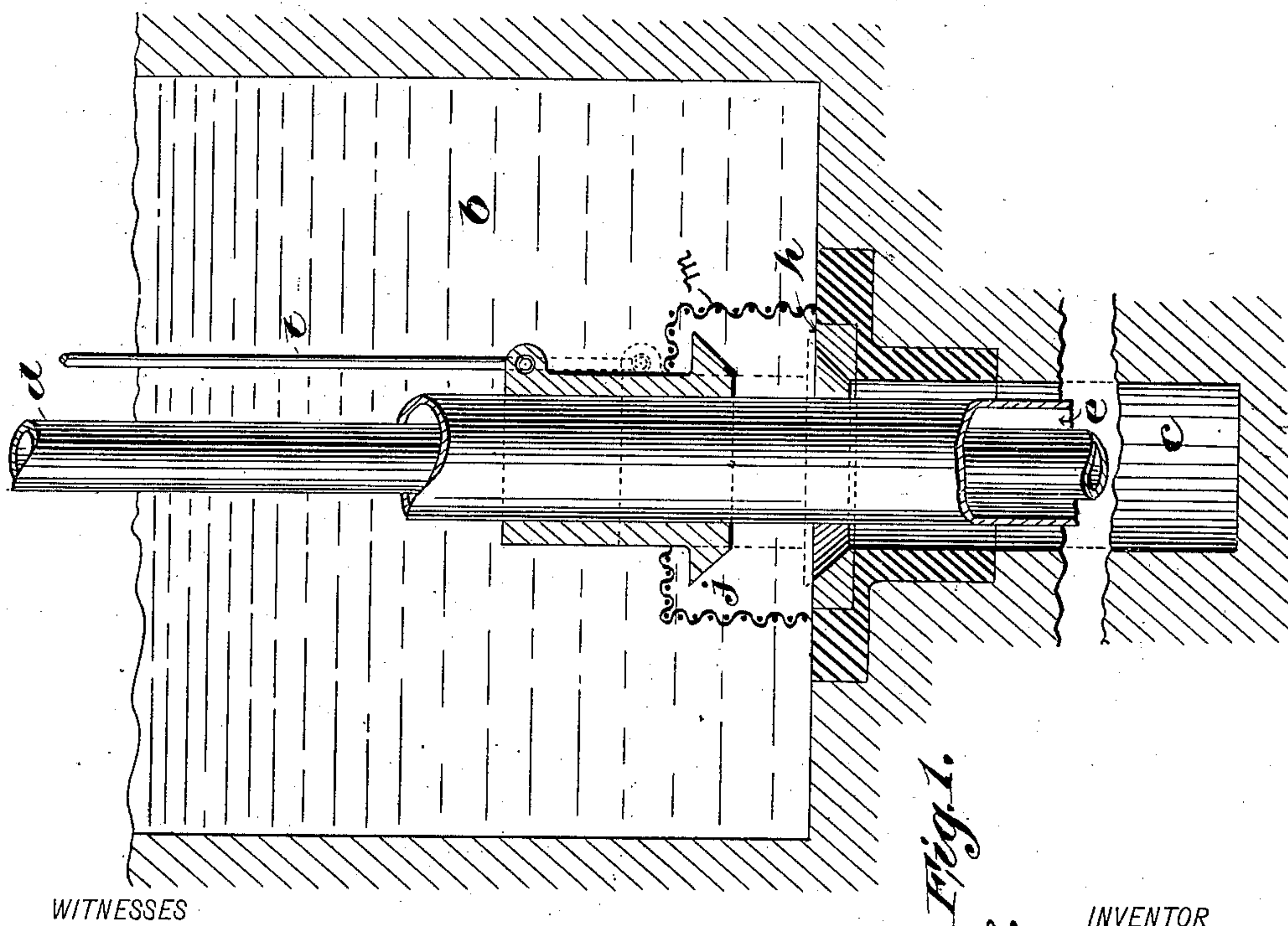
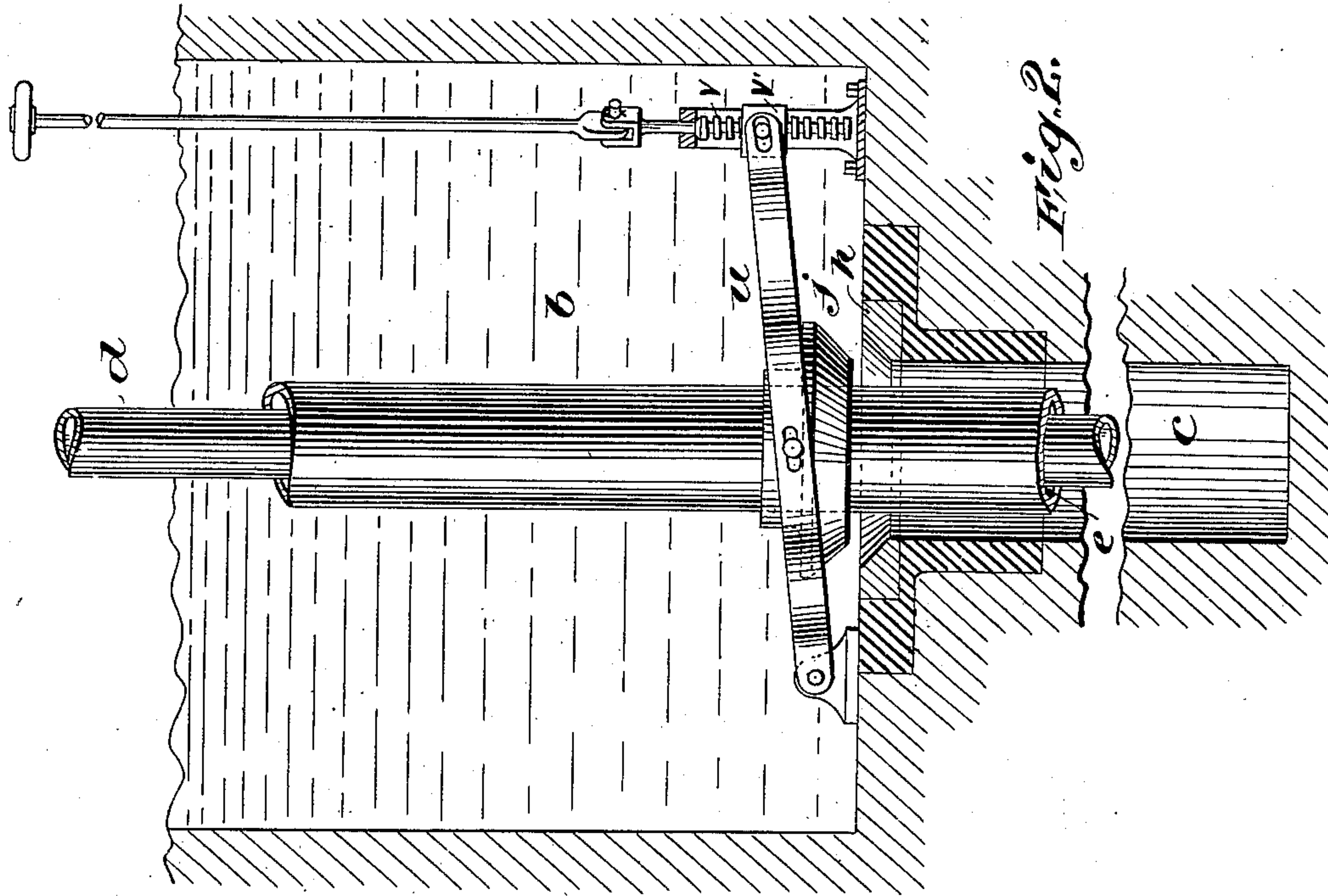
Patented Nov. 13, 1900.

C. SHAW.

APPARATUS FOR LIFTING WATER.

(Application filed May 29, 1900.)


(No Model.)



WITNESSES

W7125525
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UNITED STATES PATENT OFFICE.

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APPARATUS FOR LIFTING WATER.

SPECIFICATION forming part of Letters Patent No. 661,624, dated November 13, 1900.

Original application filed March 22, 1900, Serial No. 9,696. Divided and this application filed May 29, 1900. Serial No. 18,395.
(No model.)

To all whom it may concern:

Be it known that I, CLIFFORD SHAW, hydraulic engineer, of No. 100 Broadway, in the city and State of New York, have invented certain new and useful Improvements in Apparatus for Lifting Water, of which the following is a specification.

One way of lifting water has been to deliver the water into a reservoir well or pit in which the water-lifting mechanism is placed. Where the system known as the "Bacon air-lift" is employed for raising water, the reservoir well or pit will have a depth proportionate to the height to which the water is to be raised, as will be understood by every one skilled in the art. Where such reservoir-wells are used for lifting water or other liquids that contain sediment, there is always danger of the mechanism becoming so clogged when out of use that it will not start again properly.

The object of the present invention is to provide means for preventing the excessive settling of sediment in or around the water-lifting mechanism. This object I attain by entirely inclosing the lower portions of the apparatus when out of use—as, for example, by gates or valves which either close the mouth of the well or close the well farther down, near the intake-mouth of the air-lift mechanism employed.

In the preferred forms of the invention an air-lift is employed, and the valve or gate should be placed so far above the intake-opening of the uptake-pipe that any sediment that may have accumulated above the valve or gate will not clog the mechanism when the valve or gate is again opened. As a matter of convenience I prefer to place the valve or gate either just beneath the lowest level at which the water stands in the well or else (where the upper part of the pit is a comparatively large reservoir having an eight or ten inch immersion-well or smaller pit extending downward to give the necessary depth of immersion) at the head of the immersion pit or well.

In my application, Serial No. 9,696, filed March 22, 1900, I have set forth my invention broadly in many of its preferred forms. This present patent application is a division of the earlier one for the purpose of specifically claiming a different form of the invention

from that claimed specifically in the earlier one.

Figure 1 is a sectional view of one form of the invention. Fig. 2 shows a modification.

In Fig. 1 the large part of the reservoir or pit is shown at *b*; but this may also be understood as illustrating a shaft in a mine or, indeed, any open space, because the immersion pit or well proper is at *c*. The uptake-pipe for the air and water is shown at *d* and the air-pipe at *e*. I have shown the air-pipe *e* surrounding the uptake-pipe; but it is not necessary that either pipe should be within the other. At *h* is a valve-seat with which the valve *j* coöperates. The water or other liquid flows into the well *c* through the valve-seat *h* when the valve is open. The valve *j* is mounted to slide up and down upon a rod *t* or other connection that is provided for raising the valve. The operation of this form of the invention is as follows: When the well is in use—that is to say, is operating—the valve *j* is open, as in the figure. The water or other liquid passes through the open valve and down into the immersion-well *c*, and thence up through the uptake *d*. The screen *m* serves to prevent logs or other obstructions from getting into the valve and well *c*. When the apparatus is stopped and the air shut off, the valve *j* is lowered into place and may so remain until the operation is resumed. When the well is not in operation, only the sediment within the well *c* and beneath the valve can settle down about the inlet-openings in the pipes *d* and *e*. Any mud or other sediment settling from the water above the valve *j* is of course prevented from entering the well *c*. When the operation is again resumed, the rapid flow of water through the valve *j* carries with it some of the sediment that has settled above the valve; but this does no harm when the well is in operation, as it cannot settle.

In Fig. 2 the valve *j* is adapted to be raised and lowered or maintained open by levers *u* and an adjusting-screw *v*, which operates upon a screw-threading nut *v'* to raise and lower one end of the lever *u*, as shown, and slide the valve vertically on the pipe *e*.

In both forms of the invention the valve may be guided in its movements solely by the

air-lift mechanism, and, on the other hand, the conical valve, in conjunction with its seat, acts to center the air-lift mechanism in the well.

5 I claim as novel, in addition to and as a division of my said other application, the following:

1. In combination in apparatus for raising liquid of the type employing a submergence
10 pit or well and an air-lift mechanism, a valve-seat through which liquid is admitted to the air-lift mechanism, and a valve therefor mounted and movable upon the air-lift mechanism, substantially as set forth.

15 2. In combination in apparatus for raising liquid of the type employing a submergence pit or well and an air-lift mechanism, a valve-seat through which liquid is admitted to the air-lift mechanism, and a valve guided by
20 but controlled independently of the air-lift mechanism, substantially as set forth.

3. In combination in apparatus for raising liquid of the type employing a submergence pit or well and an air-lift mechanism, a valve-
25 seat through which liquid is admitted to the air-lift mechanism, a valve encircling and sliding upon the air-lift mechanism and means for moving the valve, substantially as set forth.

30 4. In combination in apparatus for raising water wherein the water to be raised is first delivered into a reservoir well or pit, air-lift mechanism for raising the water from the

said well or pit, and a valve through which the air mechanism extends, independently
35 movable for controlling the delivery of water thereto, substantially as set forth.

5. In combination in apparatus for raising water, wherein the water to be raised is first
40 delivered into a reservoir well or pit, air-lift mechanism for raising the water from the well or pit, combining an uptake and a down-take pipe one within the other, a valve mounted to slide parallel with and upon the outer
45 pipe, a valve-seat therefor through which the water passes to the well or pit, and means for moving the said valve to open and close the well or pit, substantially as set forth.

6. In combination in apparatus for raising water, wherein the water to be raised is first
50 delivered into a reservoir well or pit, air-lift mechanism for raising the water from the well or pit, combining an uptake and a down-take pipe one within the other, a valve encircling the outer pipe and movable rela-
55 tively thereto, a valve-seat therefor through which the water passes to the well or pit, and means for raising, lowering, and supporting the said valve, substantially as set forth. 60

Signed this 25th day of May, 1900, at Cincinnati, Ohio.

CLIFFORD SHAW.

Witnesses:

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WM. F. MURPHY.