(No Model.)

L. TEAGUE.

PUMP.

No. 353,897. Patented Dec. 7, 1886.

Fig. 1.

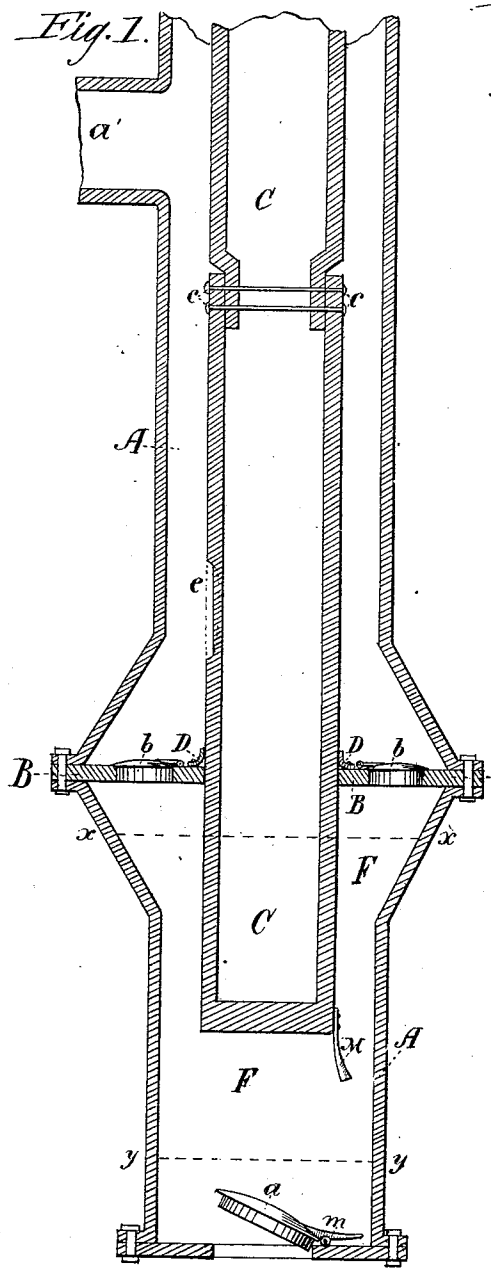
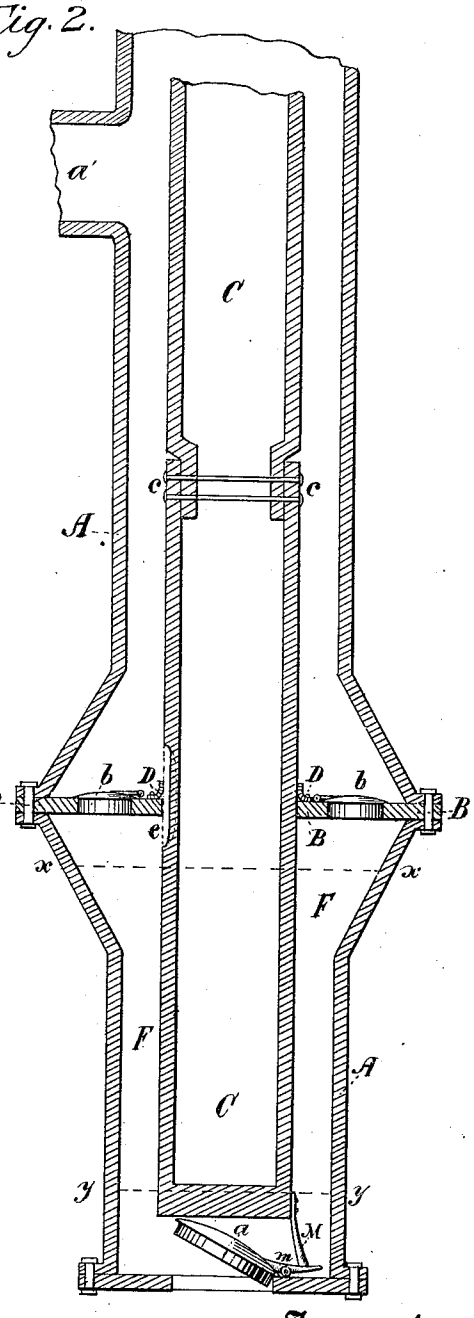


Fig. 2.



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UNITED STATES PATENT OFFICE.

LOGAN TEAGUE, OF ARCATA, CALIFORNIA.

PUMP.

SPECIFICATION forming part of Letters Patent No. 353,897, dated December 7, 1886.

Application filed April 21, 1884. Renewed October 27, 1886. Serial No. 217,363. (No model.)

To all whom it may concern:

Be it known that I, LOGAN TEAGUE, of Arcata, county of Humboldt, and State of California, have invented an Improvement in Pumps; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a new and useful pump in which the discharge is occasioned by the displacement of the water caused by the introduction of the plunger within a confined body of water, and the suction is occasioned by the withdrawal of said plunger.

My invention consists in a cylinder provided with peculiarly-arranged entrance and outlet valves, a reciprocating plunger of smaller diameter than the cylinder and adapted to be inserted and withdrawn from that chamber of the cylinder formed between the valves, and in an arrangement to provide escape for the water when the plunger is at rest, whereby the danger of bursting from freezing is prevented, all of which I shall hereinafter fully describe by reference to the accompanying drawings, in which—

Figure 1 is a vertical section of my pump. Fig. 2 is a vertical section of same, showing the plunger forced down far enough to permit the water in the cylinder to escape when the pump is to remain in a state of rest.

A is the pump-cylinder, having in its base an upwardly-swinging clack-valve, *a*, and at its top a discharge spout, *a'*. Within the cylinder is a transverse plate or diaphragm, B, annular in shape, and having at opposite sides the upwardly-swinging clack-valve *b*. Between the bottom of the cylinder and the diaphragm B is thus formed a chamber, F.

C is the plunger, preferably made of a closed water-tight tube. It is made in two sections, coupled at *c*. The plunger passes down through the center of the annular diaphragm B, and is packed therein by means of an annular leather flap, D, secured by one edge to the edge of the diaphragm and adapted to lie up against the plunger, as shown.

The diameter of the plunger is much less than that of the cylinder, and the operation is therefore as follows: The plunger is drawn up through the annular diaphragm, leaving behind it in the chamber a vacuum equivalent to its bulk, into which the water passes through the entrance-valve *a*. When the plunger is forced down into the chamber, it displaces an amount of water equal to its bulk, and this much water is forced upward through valves *b*, and, as the operation continues, is finally discharged. In this operation there is no friction on the plunger, the principle being the displacement of a portion of a confined body of water and the withdrawal of the body producing the displacement, so that it requires very little power to work it. The bottom of the plunger may be loaded to assist its movement. The ordinary stroke of the plunger is between the lines *x x* and *y y*; but when the pump is to be left at rest, and there is danger of a freeze, the plunger is to be forced farther down, whereby a recess or groove, forming a passage, *e*, made in the side of the plunger higher up, is brought opposite the diaphragm, thus leaving an escape for the water in the upper part of the cylinder down into the chamber. This recess or groove may be partially covered with a smooth narrow plate, if desired.

The escape passage might be formed with a short pipe or otherwise, though I prefer the way shown. The valve *a* at the bottom is provided with a lever, *m*, with which an arm, M, on the bottom of the plunger comes in contact when the plunger is forced down far enough to open its passage *e*. The valve *a* is thereby tipped up and an escape opened for the water in the chamber.

Any suitable means may be employed to reciprocate the plunger.

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

In a pump, the cylinder A, having a valve, *a*, in its bottom, with a lever-arm, *m*, the annular diaphragm B, having valves *b*, and the reciprocating closed plunger C, formed in two parts, of a diameter smaller than that of cylinder A and passing down through said diaphragm, said plunger having a passage, *e*, in its side adapted to open a connection between the portions of the cylinder on each side of the diaphragm, and an arm, M, on its bottom adapted to operate against lever *m* to open valve *a*, substantially as and for the purpose described.

In witness whereof I have hereunto set my hand.

LOGAN TEAGUE.

Witnesses:
B. F. STERN,
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