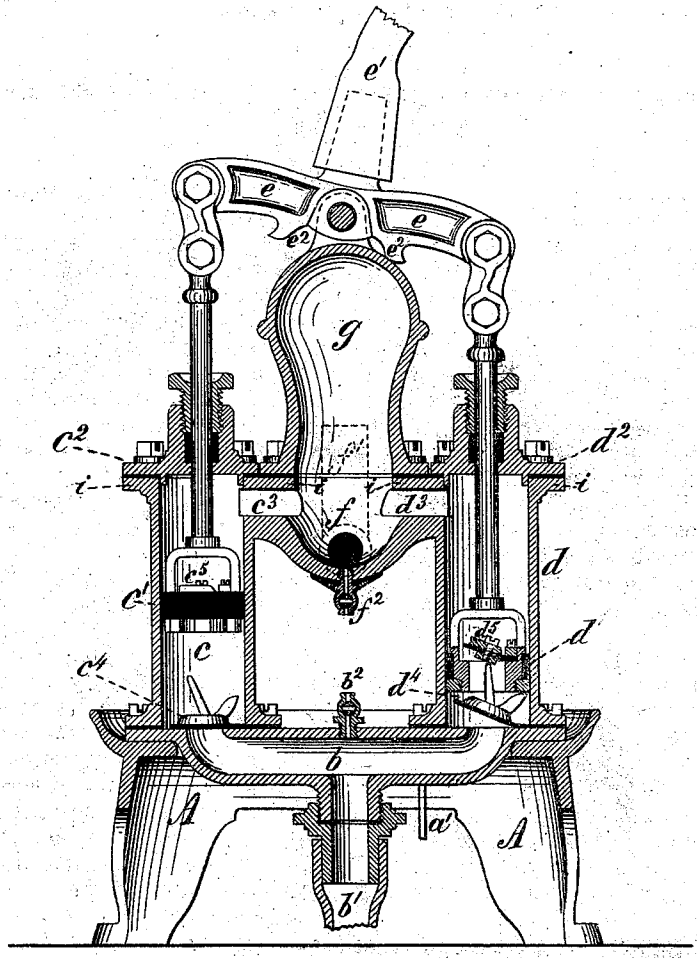
M. S. CLARK.

Pumps.

No. 156,279. Patented Oct. 27, 1874.



Witnesses:

Wm. P. Towne.

Geo. E. Poole.

Inventor:

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UNITED STATES PATENT OFFICE.

MINFORD S. CLARK, OF NEW YORK, N. Y., ASSIGNOR TO CHARLES HARRISON, OF SAME PLACE.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **156,279**, dated October 27, 1874; application filed September 29, 1874.

To all whom it may concern:

Be it known that I, MINFORD S. CLARK, of New York, N. Y., have invented certain Improvements in Double-Acting Force-Pumps and Pump-Draining Devices, of which the following is a specification:

My invention consists of draining devices applicable to various kinds of pumps, for the purpose of freeing them from water which might otherwise be exposed to freezing in cold weather. I accomplish my object by providing the pump-cylinder with a hinged valve having two arms inclined upward in opposite directions, one of these arms being acted upon by the face of the piston, so as to rock open the valve, and the other arm projecting through the piston and striking against the piston-valve, so as to raise that from its seat when the piston is fully depressed.

I also provide two air-cocks, the one for the admission of air into the induction-chamber and water-supply pipe, and the other for the admission of air into the air-chamber of the pump, and through that into the cylinder above the piston-valve. In the case of a double-acting force-pump, I provide each cylinder with the valve-tripping device, as shown.

The accompanying drawing exhibits a vertical section of a double-acting force-pump embodying my improvements. The base or standard A has a raised upper edge, making it a drip-cup, and supports the induction-chamber b, to which the water-supply pipe b^1 is attached. The induction-chamber extends across the base, and furnishes a bearing, upon which the cylinders c and d are bolted, and opens at either end into the cylinders c and d, which are, respectively, provided with the pistons c^1 and d^1. The piston-stems are packed in the cylinder-heads c^2 and d^2 in the usual manner, and connected by short pitmen to the rocking-beam e, which is worked by the lever e^1.

The cylinders communicate at their upper ends, by the transverse passages c^3 and d^3, with the eduction-chamber f and eduction-pipe f^1. At the bottom of the cylinders are hinged valves c^4 and d^4, respectively, seated upon the openings into the induction-chamber. The pistons are also provided with hinged valves c^5 and d^5, opening upward.

By reference to the drawing, it will be seen that the piston d^1 is shown in the position of being fully depressed, its further downward movement being prevented by the resting of the beam toe or stop e^2 upon the top of the air-chamber g, to which the beam e is pivoted. It will be seen, also, that the face of the piston d^1 rests upon an arm attached to the valve d^4, and inclined backward from its hinge, so that the valve is rocked upward by the piston. It will also be seen that in the position thus prescribed by the operation of the stop e^2 the other arm of this valve projects through the opening in the piston, and strikes against the under side of the piston-valve d^5, so as to raise that in a prescribed degree. There is, therefore, an open communication between the induction-chamber and the upper part of the cylinder d. If, under these circumstances, the air-cock b^2 is opened, any water contained in the cylinder d falls by its own gravity into the induction-chamber, and thence into and through the water-supply pipe to the water level at its source. Upon reversing the movement of the pump, the opposite piston c^1 is depressed, and operates in the same way upon the valves c^4 and c^5, allowing water in that cylinder to drain through the valves and into the induction-chamber, and so on. Another air-cock, f^2, situated at the bottom of the eduction-chamber f, when opened, allows air to enter the eduction-chamber, or, if there be water there, permits such water to escape from the eduction-chamber and fall upon the top of the base, which is arranged as a drip-box, and provided with a small discharge-pipe, a^1. It will thus be seen that if both the air-cocks are opened a few motions of the beam e suffice to completely drain all parts of the pump from water, so that any injury to them arising from freezing is wholly avoided.

When it is desired to work the pump, the air-cocks are closed, and then its operation is precisely the same as other force-pumps—that is, in the upward movement of the piston water is sucked into the cylinder from the induction-chamber, and in its downward movement such water is retained by the closing of the lower valve, and forces its way through the piston-valve into the upper part of the cylin-

der, from which it is ejected by the next upward movement of the piston into the eduction-chamber and eduction-pipe f^1. By this arrangement of the parts, my pump sucks either air or water, as may be desired. The air-chamber g has a flanged base, which is bolted to the flange of the eduction-chamber. The cylinder-heads c^2 and d^2, respectively, rest upon and are bolted to the cylinder-flanges, the usual packing being interposed in all three cases. By detaching the rocking-beam from its axis, and from the piston-stems, either one of the cylinders, or the air-chamber, may be separately removed by merely unbolting it from the flange $i\ i\ i\ i$, which affords a seat upon the same horizontal plane for both cylinder-heads, and for the air-chamber.

By this construction, convenience of repairs is greatly facilitated because access can thus be had to either cylinder, or to the air-chamber, without the necessity of taking the whole pump apart.

I claim as my invention—

1. The combination of a pump-cylinder provided with rocking and tripping valves, substantially such as described, with the induction-chamber b, provided with the air-cock b^2, substantially as and for the purpose set forth.

2. The combination of a pump-cylinder provided with rocking and tripping valves, substantially such as described, with the eduction-chamber f, provided with the air-cock f^2, arranged and operating substantially as described.

MINFORD S. CLARK.

Witnesses:

WM. P. TOWNE,

GEO. E. POOLE.