A. H. ASHLEY.

Pumps.

No. 208,054. Patented Sept. 17, 1878.

Fig. 1.

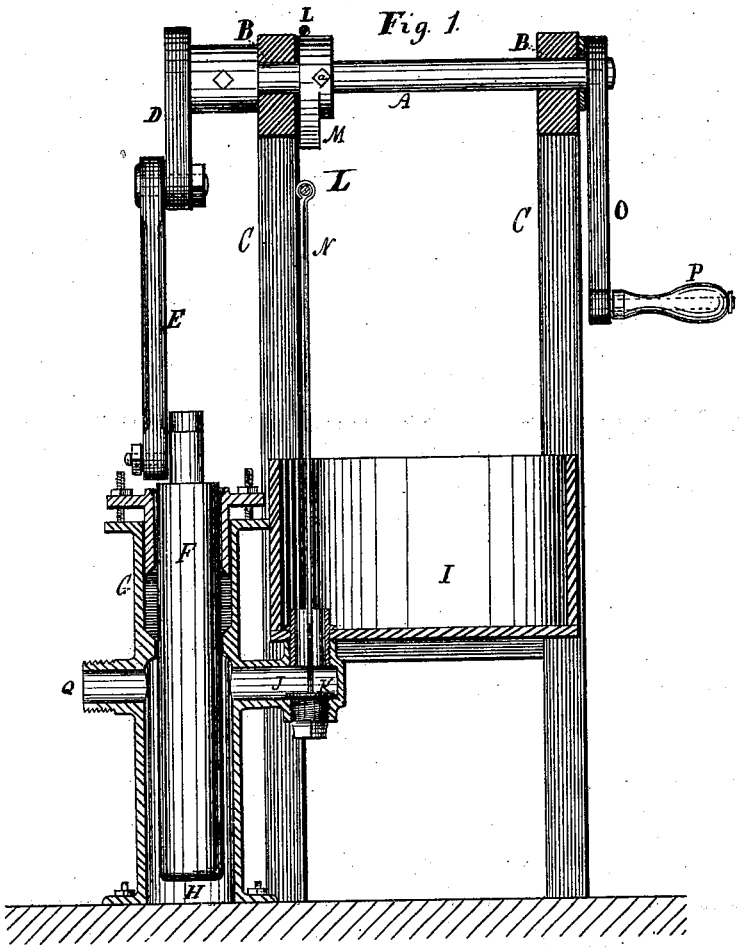
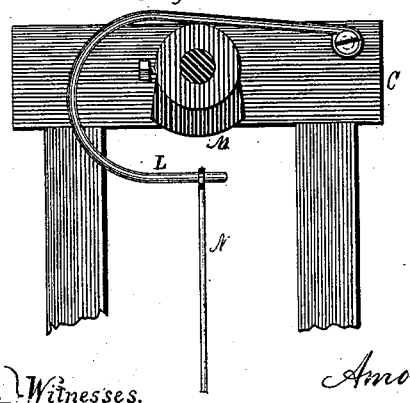


Fig. 2.



A. B. Robertson.
W. W. Hollingsworth. } Witnesses.

Amos H. Ashley, Inventor.
per T. J. W. Robertson,
Attorney

UNITED STATES PATENT OFFICE.

AMOS H. ASHLEY, OF STUYVESANT FALLS, NEW YORK.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **208,054**, dated September 17, 1878; application filed July 19, 1878.

To all whom it may concern:

Be it known that I, AMOS H. ASHLEY, of Stuyvesant Falls, town of Stuyvesant, in the county of Columbia and State of New York, have invented certain new and useful Improvements in Pumps; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 represents a vertical transverse section of a pump constructed according to my improvement, and Fig. 2 a similar section at right angles to that shown in Fig. 1.

My invention relates to that class of pumps designed for pumping hot water; and it consists, first, in a pump so arranged as to allow any steam forming in the cylinder to escape through the induction-valve, thereby dispensing with the separate valve and apparatus heretofore employed for this purpose; secondly, in arranging the valve so that it shall be positively closed at the right time and yet open readily, by its own weight, that of its attachments, and the pressure of the water above it, to allow the water to enter; and, thirdly, in certain details of construction, by which these main features are carried out, which will be more fully shown in the following specification, in which—

A represents a shaft, journaled in suitable bearings B B in the frame C C, which may be made of any suitable form. This shaft carries a crank, D, giving motion, through the pitman E, to the plunger F, working through the stuffing-box G into the cylinder H.

A hot-water tank is shown at I, which should be arranged so that there may be a clear passage from it through the induction J to the upper part of the pump-cylinder when the valve K is open. By this means any steam rising in the cylinder H will readily pass out through the induction-pipe on the opening of the valve.

At L is shown a vibrating lever, one portion of which rests on a cam, M, which is adjustable on the shaft A by a set-screw, *a*, or any other convenient means. The free extremity of the lever is connected to a valve-rod, N, carrying the valve K before referred to.

A crank, O, and handle P are shown attached to the shaft A; but, of course, a pulley or any other suitable means may be employed to give the shaft a rotary motion.

The operation is as follows: As the plunger begins to rise, the valve K is opened by the weight of the water above it added to that of the valve-rod, lever, &c., and the water in the tank runs through the induction-pipe into the cylinder of the pump. Should any steam form in the cylinder, it will, from its lightness, rise through the water in the induction-pipe, and thus make room for the influx of water, which runs in of its own weight. As soon as the plunger begins to descend, the valve K is closed by the action of the cam M, and the water is then forced out at the eduction Q, which may be provided with any suitable valve.

Although I have shown a curved lever to operate the valve, yet it is obvious that any other form of lever may be used, such, for instance, as a **V**-shaped lever, one arm of which rests on the cam and the other carries the valve-rod; or, by removing the induction from under the shaft and placing it on one side, a straight lever may be used. The lever may be dispensed with entirely if a yoke is attached to the top of the valve-rod, or if an ordinary eccentric and strap are used.

Should it be found, as may be the case in pumping very hot water, that sufficient steam is formed to prevent a proper opening of the valve, the rod may be provided with a flange, on which weights similar to those employed on platform-scales may be placed until the valve will be found to open with certainty; or a weight may be added to the lever for the same purpose. Should weights in some situations be found inconvenient, springs may be substituted.

Although I prefer to have the valve so arranged as to open downward by its own weight added to that of its connections and the water, yet it may be made to open upward, and be both opened and closed by positive motions by the use of a suitably-shaped cam or eccentric and proper connections.

Instead of the puppet-valve shown, any other of suitable construction may be employed.

It is evident that the principle embodied in

this pump may be employed in other forms than that shown in the drawing, whether vertical or horizontal, by taking care that the induction-pipe is connected to the highest part of the cylinder.

What I claim as new is—

1. A pump having its induction-pipe connected with its cylinder at or near the top, and so arranged as to have a direct passage for the escape of the steam from the cylinder through the induction-pipe, substantially as described.

2. A pump having its induction-valve so arranged with respect to the pipe leading to the supply-tank that the force due to the weight of the valve and its attachments will unite with the pressure of the water in the pipe and tank in opening the valve, substantially as specified.

3. The combination of the cylinder H and hot-water tank I by an induction-pipe that enters the cylinder at or near its top, so as to create a direct passage for the escape of the steam from said cylinder, substantially as and for the purpose set forth.

4. The combination of the cam M and lever L with a valve arranged to be closed by the cam and opened by its own weight and that of the water above it, substantially as described.

5. A pump having its induction-valve opened by its own weight and the pressure of the water in the induction-pipe, and closed by a revolving cam operated by the shaft that imparts motion to the plunger, substantially as described.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

AMOS H. ASHLEY.

Witnesses:
SHERMAN VAN NESS,
EDWIN C. ROWLEY.