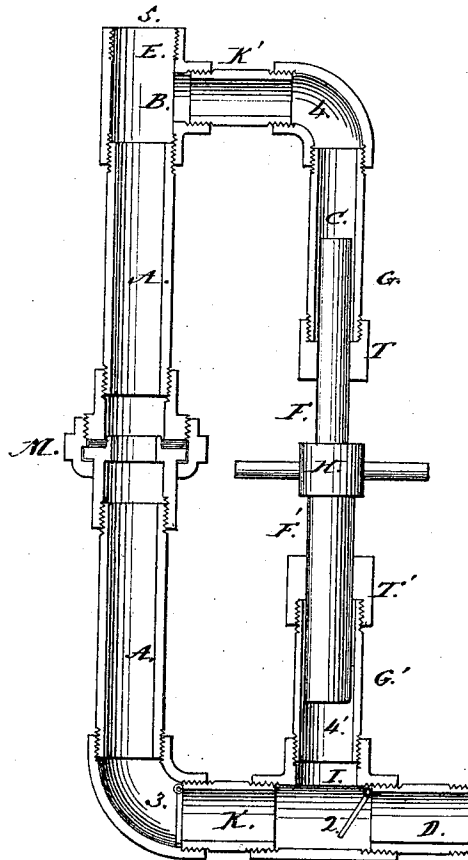


T. FOULDS, Jr.

Pumps.

No. 132,718.

Patented Nov. 5, 1872.



Witnesses:

Edw. W. Dunn
W. E. Bauer

Inventor:

Thomas Foulds, Jr.
By J. S. Kellogg

UNITED STATES PATENT OFFICE.

THOMAS FOULDS, JR., OF TREVERTON, PENNSYLVANIA.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. 132,718, dated November 5, 1872.

To all whom it may concern:

Be it known that I, THOMAS FOULDS, JR., of Treverton, Northumberland county, and State of Pennsylvania, have invented a new and Improved Pump; and I hereby declare the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing with the letters of reference marked thereon forming a part of this specification.

Like figures or letters indicate like parts.

My invention relates to an improvement in pumps; and consists of a couple of tubes or pipes arranged with valves and chambers in such a manner that at each stroke of the piston, either up or down, the fluid may be lifted and forced to cause a continuous flow from the exhaust-pipe.

Description of Drawing.

Figure 1 is a vertical section taken through the middle of the tubes.

G G' are hollow cylinders, formed of ordinary tubing, the one, G', having twice the capacity of the other, G. Without these tubes are chambers 4 4', which serve to contain the liquid which is being lifted and forced by the action of the piston. The piston is composed of two rods, F F', jointed in the middle by screw-threads formed in the ends of said rods, and the screw-threaded band H, which closely embraces both. The band H forms stop-bearings by the excess of its diameter over that of the piston-rods, and which come in contact alternately with the sleeves T T. The piston moves vertically, and is clasped by sleeves T T, which contain the packing to form air-tight joints. A screw-thread joint, I, is attached to the tube G' to form a continuation of the chamber 4'. Two sections of tubing, K D, of any desired length, are attached to joint I, and they are both provided with hinged valves 2 and 3, which open in the same direction. The one, 2, in the entrance-tube admits the liquid into the chamber 4' I K, and the other, 3, allows it to pass into auxiliary tube A, which is in direct communication with the discharge-pipe 5. A corresponding pipe or tube, A, is jointed at M with a packed joint, which, however, is not necessary to the

pump, as it is used only for the purpose of adjustment. A tube, K', connects the auxiliary pipe A with the upper chamber 4 C. The power to operate the pump is applied at the joint H.

Having thus described the construction of my pump, its operation is as follows: The valves 2 and 3 being closed and the piston being down, while a pipe of an indefinite length to form a combination of pipe D reaches the liquid, I lift the piston by the power applied at the band H until its shoulder comes in contact with the sleeve T. A partial vacuum is formed in chamber 4' I K, and the liquid, by the pressure of the atmosphere, opens the valve 2 and fills the chamber. The piston is now forced down, and the liquid in the chamber closes valve 2 and opens valve 3 and enters tube A. One or more down strokes may be necessary to fill the pipe A. After the tube A is full one more down stroke will force the liquid through pipe K' and fill the chamber 4 C. An upward stroke of the piston will force the liquid out of discharge-pipe S, while the lower chamber is filled as described previously.

The upper chamber and piston-rod being smaller than the lower, the liquid which follows with the down stroke is less than that forced through valve 3; consequently there is a double discharge, or a discharge at each action of the piston.

I mentioned that the upper chamber is only half the capacity of the lower; but in practice I may prefer to use a different proportion, and this I claim to do, as it would not change the principle of the invention.

Claim.

What I claim as new and my invention, and wish to secure by Letters Patent, is—

The cylinders G G' with their respective chambers C 4 and 4' I K, (said chambers having different capacities,) in combination with the piston F F', tube K, valves 2 and 3, and auxiliary tube A, all arranged as described, and for the purpose set forth.

THOMAS FOULDS, JR.

Witnesses:

ALEXANDER MATHESON,
WM. Z. RAKER.