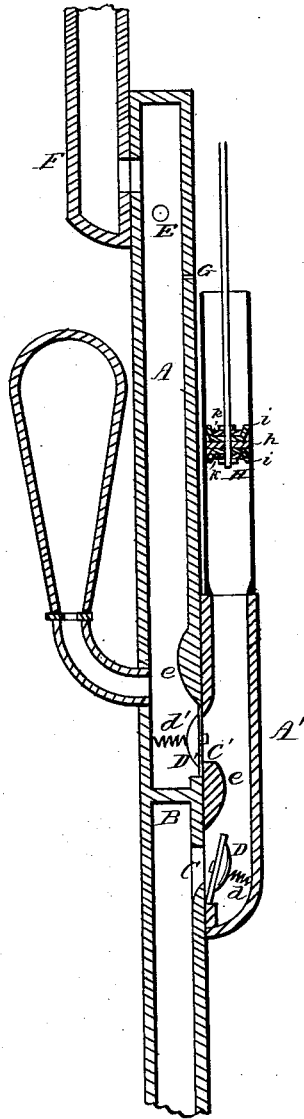


D. J. GORTON.

Pump.

No. 163,766.

Patented May 25, 1875.



Witnesses
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UNITED STATES PATENT OFFICE.

DANIEL J. GORTON, OF QUINCY, ILLINOIS.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **163,766**, dated May 25, 1875; application filed April 10, 1875.

To all whom it may concern:

Be it known that I, D. J. GORTON, of Quincy, in the county of Adams and State of Illinois, have invented certain new and useful Improvements in Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which is shown a vertical central section of my invention.

The object of this invention is to provide an improved suction and force pump, which shall be adapted to deep wells, certain and constant in operation, productive of ample discharge, and not liable to get out of order or freeze under ordinary conditions.

The pump to which my improvements particularly relate possesses the following-described characteristics: The body of the pump consists essentially of two vertical barrels or cylinders, the principal one of which extends from the top of the well to the water, while the other terminates above the water. These two barrels are joined together side by side. The shorter barrel is surmounted by a cast or sheet metal cylinder, within which the plunger works. The longer barrel is divided by a horizontal diaphragm or partition into two sections, which have communication through the shorter barrel near its lower ends by suitable apertures provided with flap-valves, one of which opens into the shorter while the other opens into the longer barrel or tube. When the plunger rises the lower valve is opened and the water enters the suction-tube, and when the plunger descends the lower valve closes while the upper one opens, whereupon the water previously drawn up is forced into the upper section of the long tube from which it eventually flows to supply the demands.

My invention, then, consists, first, in providing the inner surfaces of the barrels with convex protuberances above the valves, for the purpose of deflecting the descending currents of water, so that the same shall strike directly against the backs of the valves, and not have a tendency to force and hold the latter open when they should be closed. Secondly, in pro-

viding the long barrel of the pump with a small orifice below the freezing-point, and in such a position that the escaping waste may spurt against the piston rod and thence flow down into the cylinder, causing the plunger to be always covered a sufficient depth to prevent the access of air from above and freezing in the upper portion of the long barrel.

Referring to the accompanying drawings, A A' designate the two barrels of a suction and force pump, constructed according to my invention. B represents the diaphragm or partition dividing the longer barrel A into two sections, which communicate alternately with the barrel A' near its lower end, and through orifices C C, provided with flap-valves D D', respectively, the valve D being arranged to open into the barrel A' when the plunger is raised, and the valve D' to open into the barrel A when the plunger is lowered, said valves opening and closing alternately. *d d'* designate springs arranged to bear against the outer or back surfaces of the valves for the purpose of insuring certainty and rapidity of action. *e e* are convex protuberances, by means of which the descending currents of water are deflected and caused to strike directly against the backs of the valves, throwing them forward and closing them beyond the possibility of said currents striking their faces and holding them open. The shorter, or plunger, tube A' is surmounted by a cast or sheet metal cylinder, preferably galvanized, in which the plunger works. As the plunger ascends the suction opens the lower valve D, allowing the water to rise and enter the plunger-barrel from the lower section of the longer barrel, the upper valve being at the same time closed. Upon lowering the plunger the upper valve opens, while the lower one closes, whereupon the water, previously raised by suction, is forced upward through the upper section of the barrel A, whence it escapes through the spout E. At each rise of the water to the spout a small quantity enters the reservoir F, located at the upper end of, and communicating with, the long barrel, and tends to keep the discharge uninterrupted during the intervals succeeding the descent of the plunger. G is the orifice in the side of the barrel A, below the platform of the pump,

through which the water escapes, to cover the plunger and prevent freezing. H designates the plunger-head, comprising the center disk *h*, nearly equaling in width the diameter of the cylinder, the leather packing *i i* upon the upper and lower surfaces of said disk, and the blocks *k k* applied to said packing, and beveled outwardly on their edges from their inner surfaces. These blocks are of smaller diameter than the cylinder, by about two thicknesses of packing. The latter is crimped and cupped upon the blocks *k* in the manner shown by the cylinder, which renders it more elastic and expansive than when cupped by the center disk alone. The sections or parts of the plunger are secured upon the plunger-

rod by means of nuts or other suitable fastenings.

Having fully described my invention, I claim—

1. The protuberances *e e*, in combination with the valves D D', substantially as described.
2. The barrel A, having the orifice G, as and for the purpose specified.

In testimony that I claim the foregoing, I have hereunto set my hand this 22d day of March, 1875.

DANIEL J. GORTON.

Witnesses:

WILLIAM H. TAYLOR,
JAMES H. BARTLETT.