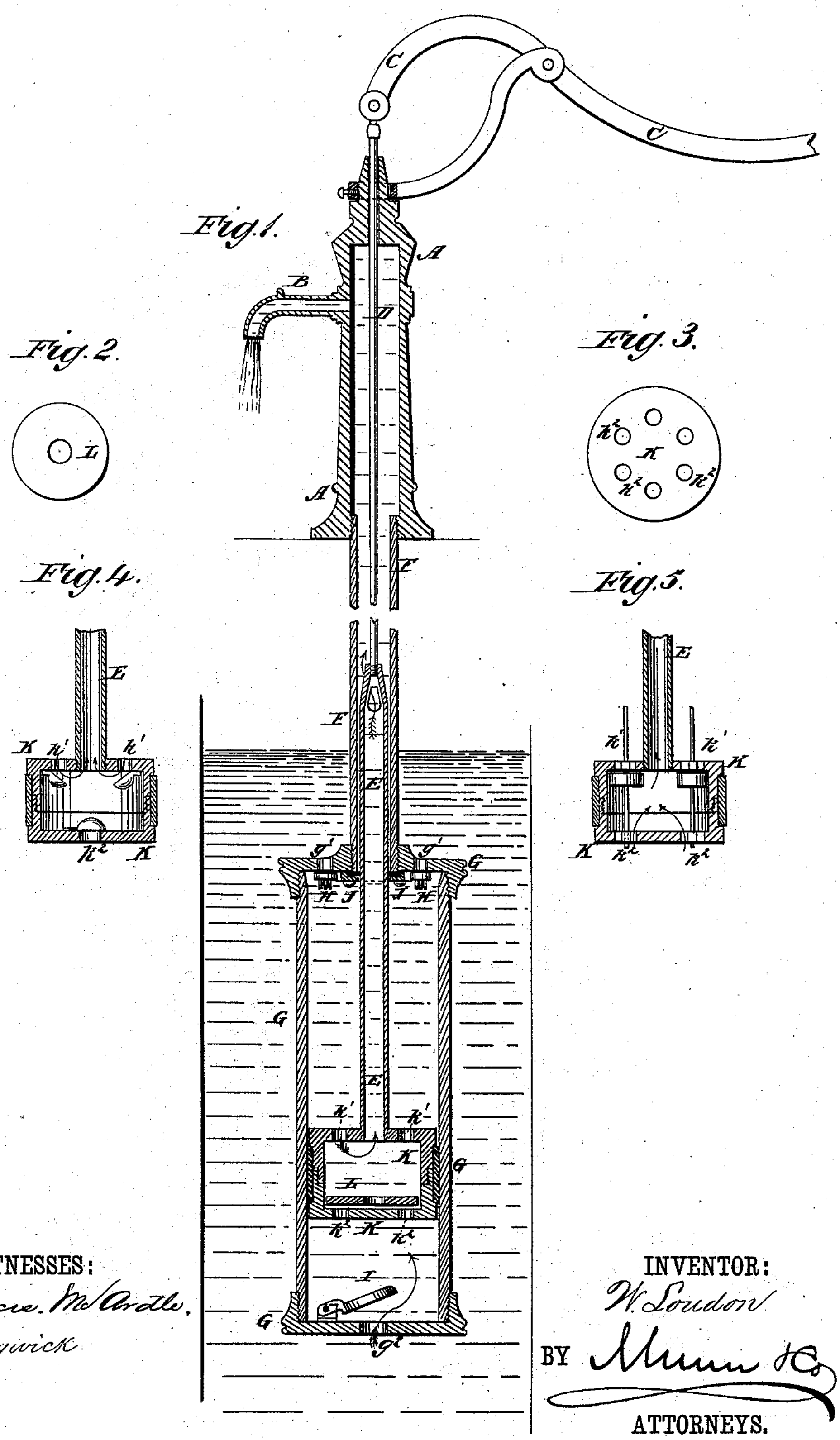
W. LOUDON.

Double-Acting Lift and Force Pump.

No. 211,168. Patented Jan. 7, 1879.



WITNESSES:

Francis McArdle.
C. Sedgwick

INVENTOR:

W. Loudon

BY Munn & Co

ATTORNEYS.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM LOUDON, OF SUPERIOR, NEBRASKA.

IMPROVEMENT IN DOUBLE-ACTING LIFT AND FORCE PUMPS.

Specification forming part of Letters Patent No. **211,168**, dated January 7, 1879; application filed November 7, 1878.

To all whom it may concern:

Be it known that I, WILLIAM LOUDON, of Superior, in the county of Nuckolls and State of Nebraska, have invented a new and useful Improvement in Double-Acting Lift and Force Pumps, of which the following is a specification:

Figure 1 is a longitudinal section of one of my improved pumps. Fig. 2 is a detail view of the ring-valve plate. Fig. 3 is a detail bottom view of the hollow piston. Fig. 4 is a detail section of the hollow piston and lower part of the hollow piston-rod, showing another form of valve. Fig. 5 is the same view as Fig. 4, but showing another form of valve.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish improved lift and force pumps, which shall be so constructed as to throw a continuous stream of water, and which at the same time shall be simple in construction and effective and reliable in use.

The invention will first be described in connection with the drawing, and then pointed out in the claim.

A represents a pump-case, which is provided with a discharge-nozzle, B, and a lever-handle, C, or other suitable operating device, and about the construction of which parts there is nothing new.

To the lever C, or other operating device, is hinged the upper end of a rod, D, the lower end of which is screwed into, or otherwise attached to, the upper end of the hollow piston-rod E. In the upper part of the hollow piston-rod E are formed openings to allow the water to escape freely into the tube F.

In the upper end of the cylinder G are formed one or more openings, g^1, closed by valves H, opening inward, and in its lower end are formed one or more openings, g^2, closed by valves I, opening inward.

The hollow piston-rod E passes down through a stuffing-box, J, at the upper end of the cylinder G, and to its lower end, within the cylinder G, is attached a hollow piston, K, which fits into the said cylinder G, and has a ring-groove formed in its outer surface to receive packing, so that it may move water-tight within the said cylinder G.

The piston K is designed to be made in two or more parts, screwed or bolted together, so that access can be conveniently had to its interior when desired. In the top of the piston K are formed openings k^1, and in its bottom are formed openings k^2, through which alternately water passes into the interior of the said piston. Within the piston K is placed a ring-plate, L, the hole in its center corresponding with the bore of the hollow piston-rod K, so that the open lower end of the said hollow piston-rod will always be uncovered. The ring-plate L thus acts as a valve to close the openings k^1 k^2 alternately.

If desired, each of the openings k^1 k^2 may be provided with its own valve, which may be hinged valves, opening inward, as shown in Fig. 4, or drop-valves, sliding upon small rods passing through and secured in the said openings k^1 k^2, so that they will close the said openings alternately, as shown in Fig. 5, the form of the valves being wholly immaterial.

With this construction, as the piston K moves upward, the pressure of the water in the upper part of the cylinder G will close the valve or valves in the top of the cylinder, open the valve or valves in the top of the piston K, and close the valve or valves in its bottom, and the water will pass into the hollow piston K and out through the hollow piston-rod E. At the same time the upward movement of the piston K will form a vacuum in the lower part of the cylinder G, and the pressure of the outside water will open the valve or valves I in the bottom of the said cylinder G and fill its said lower part. As the piston K moves downward the pressure of the water in the lower part of the cylinder G will close the valve or valves I in its bottom, open the valve or valves in the bottom of the hollow piston K, close the valve or valves in its top, and pass out through the said hollow piston K and the hollow piston-rod E. At the same time the downward movement of the piston K will form a vacuum in the upper part of the cylinder G, and the pressure of the outside water will open the valve or valves H in the top of the

said cylinder G and fill its upper part. With this construction the pump will throw a continuous stream of water.

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

The combination of the hollow piston K, having valved openings at top and bottom, the cylinder G, provided with valved openings at upper and lower end, the hollow rod E, having side holes at the upper end, the tube F, and the case A, having spout B, all relatively arranged as and for the purpose specified.

WILLIAM LOUDON.

Witnesses:
M. L. FOGEL,
JOSEPH LOUDON.