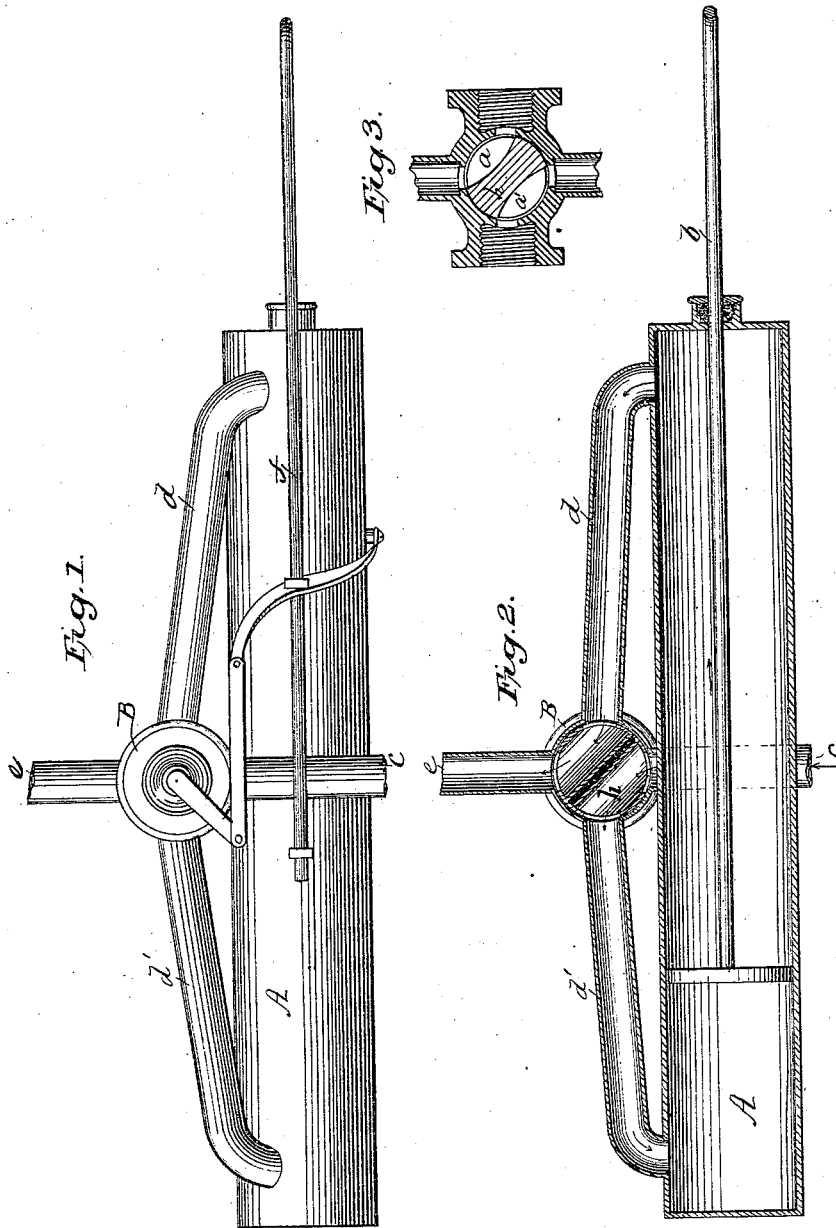


O. K. McINTIRE.
Force-Pump.

No. 208,192.

Patented Sept. 17, 1878.



Attest:
M Gardner
A. Scott

Inventor.
Olivier McIntire per
J. D. Shorn atty

UNITED STATES PATENT OFFICE.

OLIVER K. McINTIRE, OF SPRINGFIELD, OHIO.

IMPROVEMENT IN FORCE-PUMPS.

Specification forming part of Letters Patent No. **208,192**, dated September 17, 1878; application filed December 7, 1877.

To all whom it may concern:

Be it known that I, OLIVER K. McINTIRE, of the city of Springfield, county of Clarke, and State of Ohio, have invented a new and useful Improvement in Force-Pumps, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The object of my invention is to construct a force-pump by means of concave valves cut in a solid cylinder of iron or other metal, which being alternately moved back and forth in quarter-revolutions by a crank or lever, a suction and compress force is created that facilitates the opening of the valve, and also adds force to the discharging power of the pump in the same manner.

The valves being of equal capacity with the receiving and discharging orifices of the pump, a uniform stream of water is discharged, and the reciprocal opening and shutting of the valves of the pump causes a continuous stream to be thrown.

Figure 1 is a perspective view of pump and cylinder attached. Fig. 2 is same, showing the course of the water or other fluid being forced through it. Fig. 3 is a cross-section of pump, showing the valves and their operation.

Referring to the drawings, the water or other fluid passing in at tube *c*, Fig. 2, at the same instant the valve *a'* is opened, the vacuum produced in cylinder *A* causes the fluid to impinge against the curved surface of valve *a'*, assisting the propelling power *f*; and, instan-

taneous with the reverse of propelling rod or piston *f* and crank *j*, the fluid rushes out of valve *a'* into tube *d*, rendering the same assistance to the propelling power. In like manner, the movement of the piston-rod *b* with the rod *f* and crank *j* drives the water against the opposite valve, *a*, the moment the same is opened by the reverse motion, and passes out at the discharge-pipe *e*, thus giving a twofold force to each movement of the rod *f*. The quarter-revolution of the small cylinder *h* alternately opens and closes both valves, at the same time, therefore, concentrating quadruple forces to the aid of the propelling power of the pump, co-operating with its motive power exactly.

As valve *a'* opens to receive the fluid from pipe *c*, simultaneously the valve *a* opens to discharge the same volume of fluid into pipe *e*, so that, of necessity, the same volume is received and discharged at the same time.

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

The combination of the cylinder *A*, tubes *d*, valve-chamber *h*, provided with supply *c*, discharge-pipe *e*, and curved double-faced valve *a'*, operated by crank, connecting-link, vibrating arm, and pitman-rod, as shown, whereby the force of the water is utilized in opening and closing the valve, substantially as described.

OLIVER K. McINTIRE.

Witnesses:

J. DOUGLASS MOLER,
J. S. SHOWALTER.