G. W. HOOPER.

Double-Acting Force-Pump.

No. 198,023. Patented Dec. 11, 1877

Fig. 1

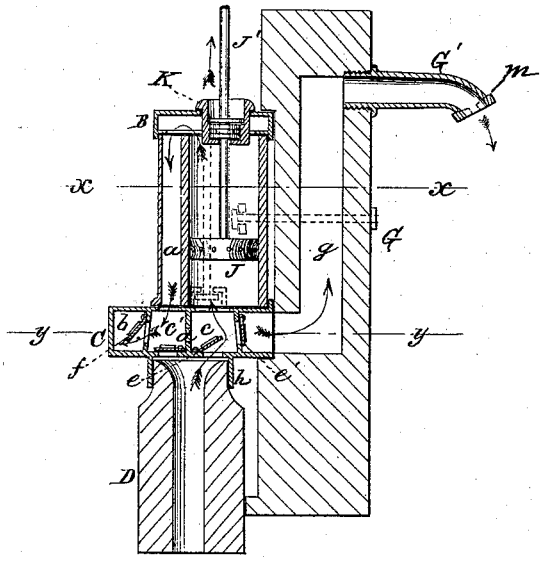


Fig. 2

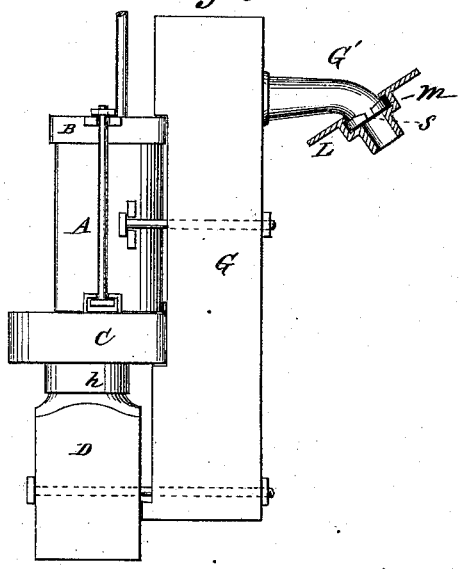


Fig. 3

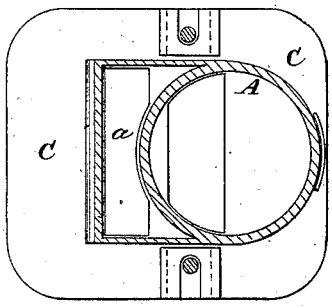


Fig. 4

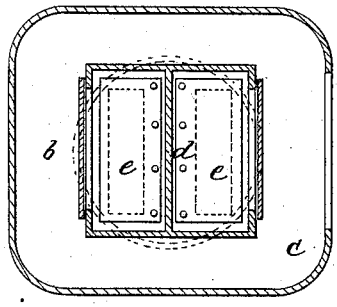


Fig. 5

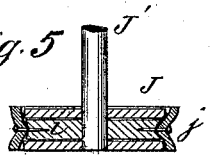


Fig. 6

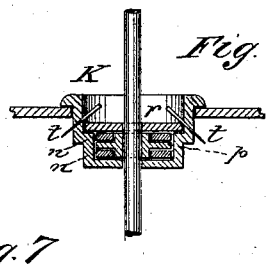
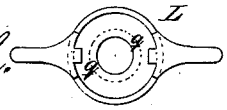


Fig. 7



WITNESSES:

A. W. Almqvist

J. F. Scarborough.

INVENTOR:

G. W. Hooper.

BY Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

GEORGE W. HOOPER, OF GREENE, MAINE.

IMPROVEMENT IN DOUBLE-ACTING FORCE-PUMPS.

Specification forming part of Letters Patent No. **198,023**, dated December 11, 1877; application filed September 10, 1877.

To all whom it may concern:

Be it known that I, GEORGE WINFIELD HOOPER, of Greene, county of Androscoggin, and State of Maine, have invented a new and Improved Double-Acting Force-Pump, of which the following is a specification:

This invention relates to double-acting force-pumps; and the nature of my invention consists in a double valve-box located at the foot of a cylinder in which works a valveless piston, in combination with a water-way on one side of the cylinder, which communicates therewith at its upper end, and also communicates with one of the compartments of the double valve-box, as will be hereinafter explained.

The invention further consists in a novel and improved packing for the piston-rod of my double force-pump, which packing will be hereinafter fully explained.

In the annexed drawing, Figure 1 is a section taken vertically through the pump, the pen-stock, and the discharging-stock. Fig. 2 is an elevation, showing an external view of the pump and a section through the hose-coupling of the nozzle or spout. Fig. 3 is a section taken horizontally through the pump in the plane indicated by dotted line *x x*, Fig. 1. Fig. 4 is a section taken horizontally through the valve-box, indicated by dotted line *y y*, Fig. 1. Fig. 5 is a diametrical section. Fig. 6 is a diametrical section through the water-reservoir and its packing. Fig. 7 is a view of the coupling for attaching the hose to the spout of the pump.

Similar letters of reference indicate corresponding parts.

The letter A designates the cylinder of the pump, which may be of any suitable capacity, and which is constructed with a water-way, *a*, on one side, and it is secured to a vertical trunk, G, to which is applied a spout, G′. The water-way *a* communicates with the cylinder A, at its upper end, and with a valve-box, C, at its lower end. This valve-box C is surrounded by a chamber, *b*, and divided into two compartments, *c c′*, by a vertical partition, *d*. The cylinder A communicates, at its lower end, with the compartment *c*, and this compartment communicates, by openings provided with valves *e e′*, with the discharge-passage *g* and with the bore of the pen-stock D, as shown in Fig. 1.

As the piston J is raised, water will flow into the cylinder A, through the compartment *c*, passing valve *e*, and as the piston descends the water will be forced past valve *e′* into the discharge-passage *g*. During the descent of the piston J water will be drawn up through chamber *c′*, water-way *a*, and will be discharged into the cylinder A. Now, when the piston ascends, the water above it will be forced into the discharge-passage *g*, through the chamber *c′*, through a valve, *f*, and the surrounding chamber *b*. By these means I have a double-acting forcing-pump, which will discharge continuously from the nozzle or spout G′.

If the pen-stock D is used, it will be connected to the bottom of the valve-box C by means of a tube, *h*, fixed to this box.

The piston J is formed of two disks of metal, firmly secured on each side of a wooden disk, *i*, the periphery of which is grooved and has secured to it a leather packing, *j*. A piston thus constructed will operate just as well during its upstroke as it will during the descending stroke. The piston-rod J′ passes through a water-receptacle, K, which is clearly shown by Fig. 6. This receptacle or reservoir K is cast in the cap B, and contains two packing-rings, *n n*, which are made of leather or other suitable material, which surround the hubs of a movable disk, *p*, which will shift about to conform to the requirements of the rod. On the top of the rings and disk is a plate, *r*, which may be held down by means of pins *t* applied as shown in the figure last referred to, or the plate *r* may be held down in any other suitable manner.

During the upstroke of the piston the pressure from below will crowd the packing against the plate *r*, and prevent the escape of water, while the downstroke will press the packing against the bottom of the reservoir, and prevent the entrance of air and water.

I shall use, in combination with my improved pump, a coupling, L, having a tubular neck formed on it, to which a hose will be attached. This coupling is constructed with teeth *q q* and also with handles. The teeth are designed to engage with beveled shoul-

ders *m* formed on the nose of the spout G′, and to lock the coupling securely in its place when properly applied to the spout. The attachment of the coupling can be effected by turning it either to the right or left after passing the teeth *q q* through the grooves *s*, one of which is shown in Fig. 2.

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

1. The valve-box C, having chambers *b c c′* and valves, in combination with the cylinder A and water-way *a*, arranged with their respective openings, substantially as described.

2. The water-reservoir K, having combined with it the packing-rings *n n*, the movable disk *p*, and covering-plate *r*, held in place substantially in the manner specified.

GEORGE WINFIELD HOOPER.

Witnesses:

WILLIAM H. MERRILL,

CLINTON G. LIBBY.