W. C. LIBENGOOD.

Force-Pump.

No. 168,907. Patented Oct. 19, 1875.

Fig. 1.

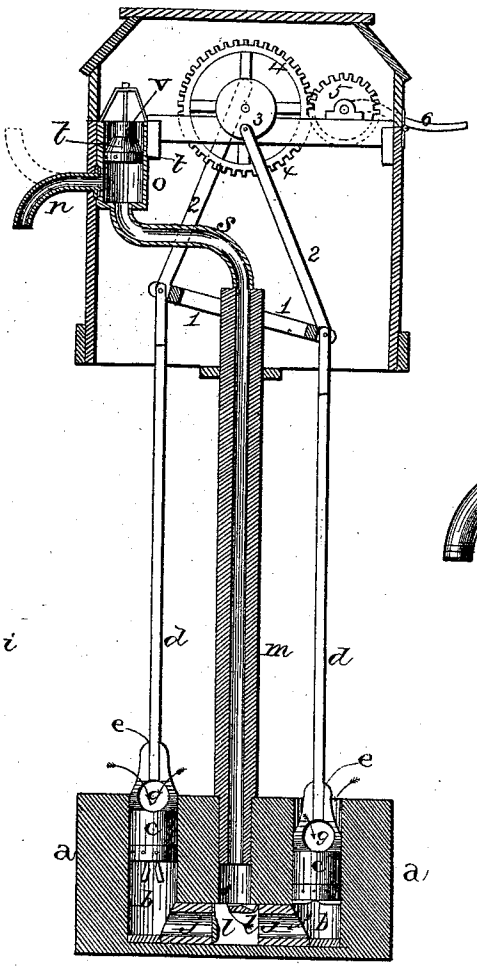


Fig. 2.

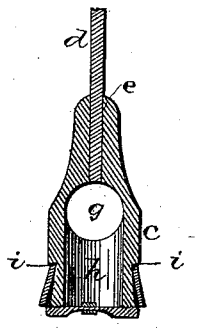
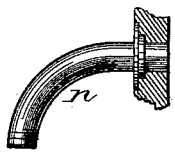


Fig. 3.



WITNESSES.

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UNITED STATES PATENT OFFICE.

WILLIAM C. LIBENGOOD, OF BRADENVILLE, PENNSYLVANIA.

IMPROVEMENT IN FORCE-PUMPS.

Specification forming part of Letters Patent No. **168,907**, dated October 19, 1875; application filed September 13, 1875.

To all whom it may concern:

Be it known that I, WILLIAM C. LIBENGOOD, of Bradenville, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Force-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.

My invention relates to an improvement in force-pumps; and it consists in the arrangement and combination of parts that will be more fully described hereinafter, whereby a powerful, cheap, and efficient pump is produced.

The accompanying drawings represent my invention.

a represents a suitable block or casting, that is to rest on the bottom of the well or cistern, underneath the surface of the water. In the ends thereof are made pump-cylinders *b*, in which the pistons *c*, provided with downwardly-opening valves, operate alternately. The pistons may be made of wood or iron, and have a suitable slotted opening, *e*, made vertically down through their tops to receive the ends of the piston-rods *d*, and have a larger circular opening, *g*, through their sides, and a vertical opening, *h*, through the lower ends, through which the water falls into the cylinder as the pistons are raised upward, and in grooves *i* around the lower ends are placed suitable packing, in the usual manner. As the pistons descend the valves close upward, and force the water from the cylinders through the passages *j* and valves *l* up into the stock *m* through the discharge-pipe *n*, which pipe is connected to the reservoir *o*. Connected to the top of the stock by means of a pipe, *s*, is the reservoir, which consists of an enlarged circular chamber, the top of which is closed by a vertically-adjustable valve, *t*, that is weighted down upon its top by a weight, *v*. As the water will be forced by the pistons into the reservoir sufficiently fast to rise above the discharge-pipe, this weighted valve bears down upon the water with sufficient pressure to cause it to flow out in a constant steady stream. This valve takes the place of the ordinary air-chamber, is cheaper, and presents much better results. The ends of the piston-rods *d* are pivoted at their tops to a walking-lever, 1, that is made to vibrate up and down by the rods 2, that have their upper ends attached to the cranks or eccentrics 3 on the ends of the shaft, to which the spur-wheel 4 is secured. The wheel 4 is operated by the wheel 5, to which the crank 6 is secured, the said wheel 5 being made larger or smaller in proportion to the speed or power desired.

The whole upper portion of the pump is inclosed in a frame-work of any suitable form or description.

Having thus described my invention, I claim—

1. The combination of the reservoir *o*, valve *t*, and weight *v*, substantially as set forth.

2. The combination of a suitable operating mechanism, pistons, cylinders, block *a*, and stock *m* with the reservoir *o*, valve *t*, and weight *v*, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 1st day of September, 1875.

WILLIAM C. LIBENGOOD.

Witnesses:

ROLIN A. SLATER,

HENRY FELLHEIMER.