

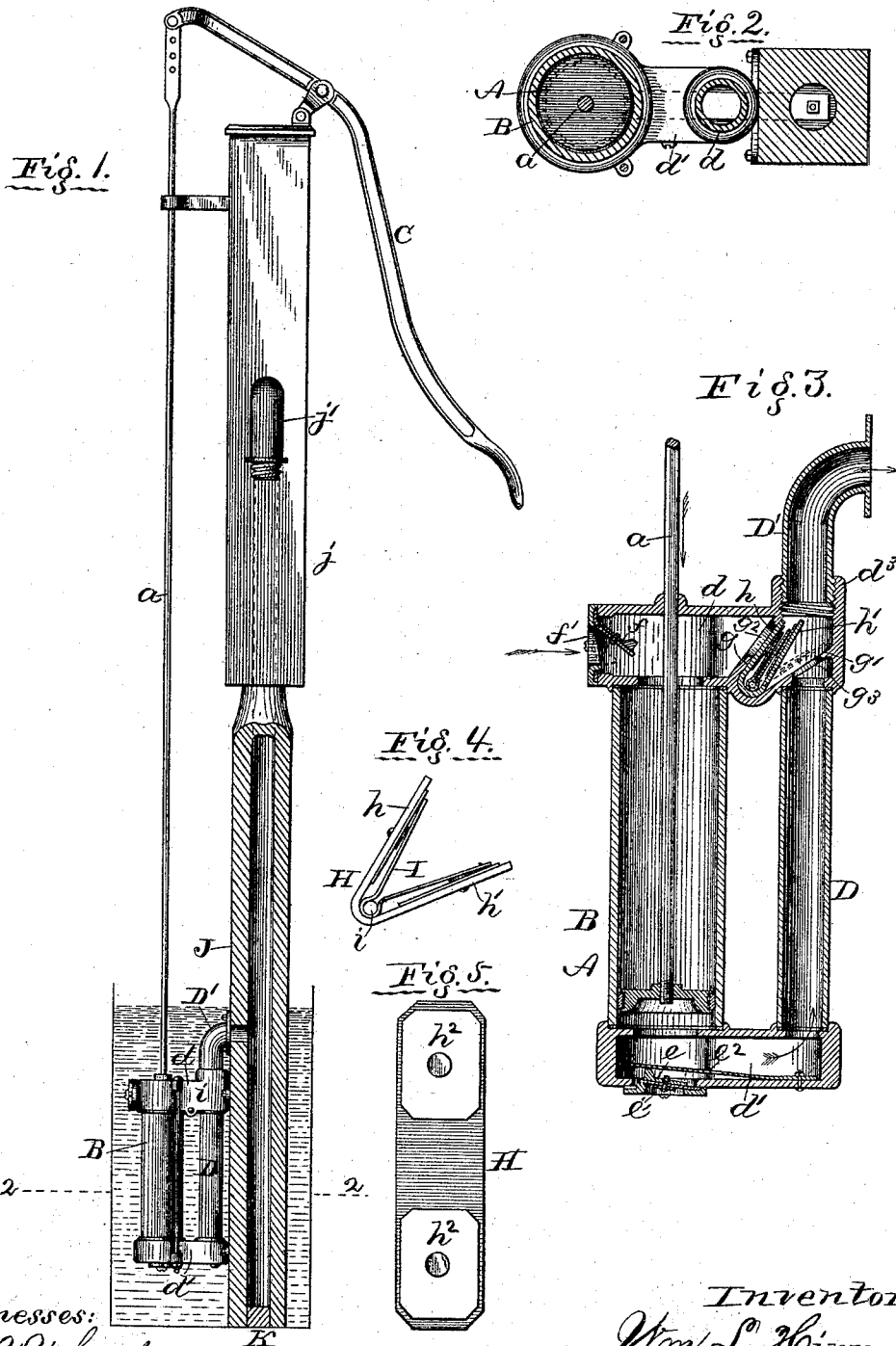
(No Model.)

W. L. HIPPERT.

SINGLE CYLINDER DOUBLE ACTING FORCE PUMP.

No. 498,978.

Patented June 6, 1893.



Witnesses:
O. P. Richards,
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Inventor:
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UNITED STATES PATENT OFFICE.

WILLIAM L. HIPPERT, OF GALESBURG, ILLINOIS.

SINGLE-CYLINDER DOUBLE-ACTING FORCE-PUMP.

SPECIFICATION forming part of Letters Patent No. 498,978, dated June 6, 1893.

Application filed September 13, 1890. Serial No. 364,861. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. HIPPERT, a citizen of the United States, residing at Galesburg, in the county of Knox and State of Illinois, have invented certain new and useful Improvements in Single-Cylinder Double-Acting Force-Pumps, of which the following is a specification.

This invention relates to a single cylinder double acting force pump, and consists in combinations and constructions hereinafter described and claimed.

In the accompanying drawings, which illustrate my invention: Figure 1 is a side elevation, partly in sectional elevation, showing my improved pump applied to an ordinary wooden pump stock and tube; Fig. 2, a sectional plan, in the line 2, 2, in Fig. 1; Fig. 3, a central sectional elevation; Fig. 4, an enlarged side elevation of the dual discharge valve and spring; Fig. 5, an enlarged plan of the leather blank, which is bent to form the dual discharge valves.

The piston A is moved in the cylinder B by means of a piston rod *a* which is reciprocated by a handle C or by any other suitable power. The cylinder B is connected at its upper end with a discharge pipe D by means of a chamber or pipe *d*, and at its lower end with same pipe by means of a flat bottomed chamber *d'*. A valve *e* covers the opening *e'* into the lower side of the chamber *d'*, and a spring *e²* presses upon this valve to regulate its action. A valve *f* covers the opening *f'* into one end of the chamber *d*.

Near the union of the chamber *d* and pipe D, the chamber *d* has two inclined valve seats *g*, *g'*. The seat *g* having an opening *g²* leading from the chamber *d*, and the other seat, *g'*, having an opening *g³* leading from the pipe D. A valve *h* covers the opening *g²*, and a valve *h'* covers the opening *g³*. These valves *h* *h'* are formed of a single piece of leather H, or other suitable flexible material such as shown at Fig. 5, and preferably reinforced with metallic plates *h²*. To form the valves *h* *h'*, the leather strip H is bent as shown at Figs. 4 and 5, and a bent spring I then interposed, as shown at Fig. 4, so as to press outwardly on both valves *h* *h'*. The upper por-

tion D' of the pipe D is screw threaded into the chamber *d* at *d³*, and can be removed to put the valves *h* *h'* in place, where they are held by a pin *i* which passes through a hole in the walls of the chamber *d*, and through the bent spring near their bends. Should the valves *h* *h'* become deranged in any manner, access can be readily had to them for easy removal of the valves and for repairs by simply removing the section of pipe D' as hereinbefore described.

As shown, the section D' of discharge pipe D is curved outwardly and flanged so that it can be and is bolted to the tubing J of an ordinary wooden pump, with ordinary wooden stock *j*, handle C, and spout *j'*, thus illustrating the method of applying my device to a common wooden pump, by simply plugging the lower end of the pump tubing with a plug K, and making the attachment as described. When fixed to a wooden pump, as shown, the wooden tubing rests in the bottom of the well and supports the cylinder B in an entirely submerged position in the water, as shown at Fig. 1. It will be evident that the pipe section D' can be continued upwardly and form the upper and discharge end of the pump in any ordinary manner.

This pump is simple in construction, and not liable to get out of order, and access to the valves is easy. The main valves having the springs as shown and described, also render their action smooth and remove all tendency of the valves to uncertain closing action, and remove the "pounding" action often found in the valves of force pumps.

The operation of the pump will be evident without explanation. As shown at Fig. 3, the piston A is descending, and water is entering at the now open valve *f*, while the valves *e* and *h* are closed and the water is passing upwardly through the open valve *h'*. When the piston moves in the opposite direction, or upwardly, the valve *f* will be closed, as also the valve *h'*, while water will enter through the valve *e*, and be discharged through the valve *h*.

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

In a pump, the combination with a cylinder, the upper and lower horizontal chambers communicating with the cylinder, the pipe D leading out from the lower chamber and into
5 the upper chamber, and a discharge leading from the upper chamber, of two valve seats in the upper chamber, arranged at different inclinations and having valve openings therein,
a valve between the seats, formed of a single
10 flexible strip folded centrally, a pin secured

in the casing above the valve strip and a spring consisting of outwardly extending arms, connected at their lower ends and interposed between the valve strip and pipe.

In testimony whereof I affix my signature in
15 presence of two witnesses.

WILLIAM L. HIPPERT.

Witnesses:

P. H. ROGERS,
JOSIAH TILDEN.