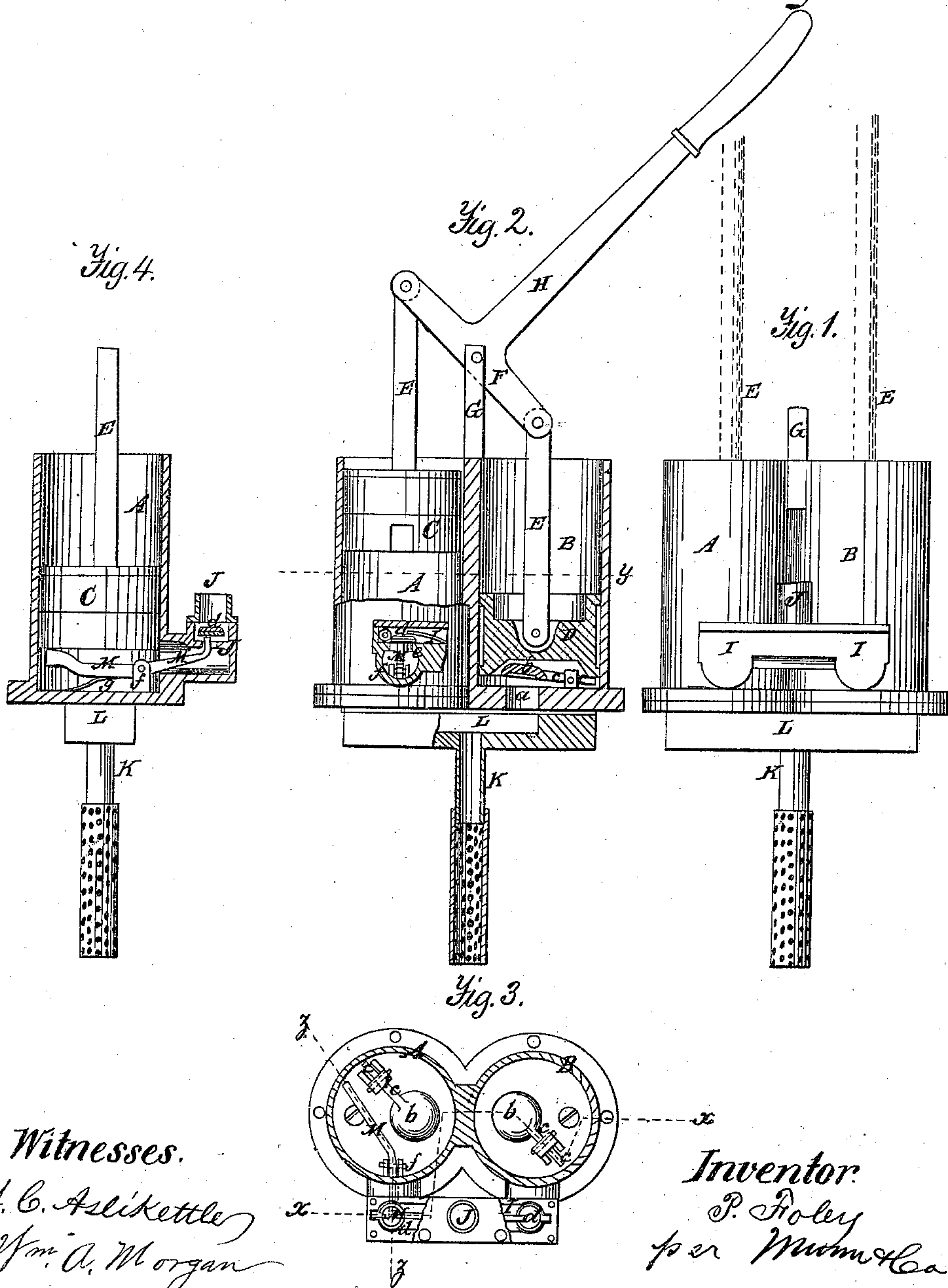


P. Foley,

Double-Acting Pump.

N^o 80,617.

Patented Aug. 4, 1868.



Witnesses.

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PATRICK FOLEY, OF NINEVEH, NEW YORK.

Letters Patent No. 80,617, dated August 4, 1868.

IMPROVEMENT IN DOUBLE-ACTION PUMPS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, PATRICK FOLEY, of Nineveh, in the county of Broome, and State of New York, have invented a new and improved Double-Action Suction-Pump; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a side elevation of my improved pump.

Figure 2 is a vertical longitudinal section of the same, taken on the plane of the line *x x*, fig. 3.

Figure 3 is a horizontal section of the same, taken on the plane of the line *y y*, fig. 2.

Figure 4 is a vertical transverse section of the same, taken on the plane of the line *z z*, fig. 3.

Similar letters of reference indicate corresponding parts.

This invention relates to a new pump of that class in which two vertical cylinders with reciprocating pistons are used, and which are generally employed for raising water from deep and other wells.

My invention consists chiefly in a novel arrangement of valves, whereby the connections of the induction and discharge-pipe with the cylinders are closed, said valves being so arranged that, when the pump is not to be used, they can be opened to discharge all the water from the cylinders, so that the freezing of the water within the pump or its pipes is completely avoided.

A B, in the drawing, are two upright cylinders, arranged close to each other, or any desired distance apart.

C D are two pistons, fitted respectively in the cylinders, as shown. The pistons are suspended from the rods E E, which are respectively pivoted to the two ends of a walking-beam, F, that is at its centre pivoted to a stationary post, G, projecting from the pump, as shown, or otherwise firmly arranged.

From the middle of the beam F projects a lever, H, which, when moved back and forth, will cause the beam to oscillate around its pivot, whereby reciprocating motion in opposite directions will be imparted to the pistons.

The lower parts of the cylinders are connected by a chamber, I, from which the discharge-pipe J extends upward, and the induction-pipe K is either branched, so as to enter the lower heads of the cylinders, or it enters a chamber, L, which serves the same purpose, as shown in fig. 2.

The perforations *a a*, in the bottoms of the cylinders, are closed by means of valves *b b*, which are blocks provided with shanks, *c*, said shanks pivoted to lugs that project from the bottom, as shown, and projecting beyond the pivots upward, so that if the piston is forced quite down, it will strike the projecting portion of the shank, and will depress it, thereby raising the valve, as shown in fig. 2. The valves *d d*, which cover the holes *e e* to the discharge-pipe, are of suitable construction.

M is a lever, pivoted to a lug, *f*, in the cylinder A, and having one arm, that fits under the valve *d*, pertaining to the cylinder A, and another arm in the cylinder, the latter arm being raised by means of a spring, *g*, or by the weight of the other arm, so that its other arm cannot raise the valve *d*. But when the piston C is forced quite down, it will depress the raised arm of the lever M, and will thereby cause the same to open the valve *d*.

The operation of the pump is as that of any other double-acting pump, that is, the discharge-valve of one cylinder and the suction-valve of the other are raised during one stroke of the pistons, while the other pair of valves is closed.

When it is desired to stop the operation, the piston C can be brought quite down, whereby it will open the valves *b* and *d*, pertaining to the cylinder A, when the water will flow out of the discharge-pipe, and of the cylinder A, and will therefore not be liable to freeze in the same.

By then forcing the piston D down upon the shank of its valve *b*, the water will also be discharged from the cylinder B.

This pump can be arranged in the lower part of deep wells, in which case long rods, E E, connect its pistons with the beam F, which is arranged above the well. In fig. 1, such long rods E are indicated.

The cylinders are open on top, and a tight piston-packing is therefore not required, as water may always remain upon the pistons.

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

The arrangement of the lever M with relation to the cylinders A B, chamber I, valves *d*, and valves *b b*, whereby, as the piston C descends, the valve *d* is opened, by means of the lever M, to discharge the water from the chamber I into the cylinder A, the valves *b b* being operated to discharge the water from the cylinders A B into the chamber L, by the alternate strokes of the pistons C D, as herein described, for the purpose specified.

PATRICK FOLEY.

Witnesses:

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