Raymond & Miller,

Pump Lift,

No. 42,874 Patented May 24, 1864

Fig 2.

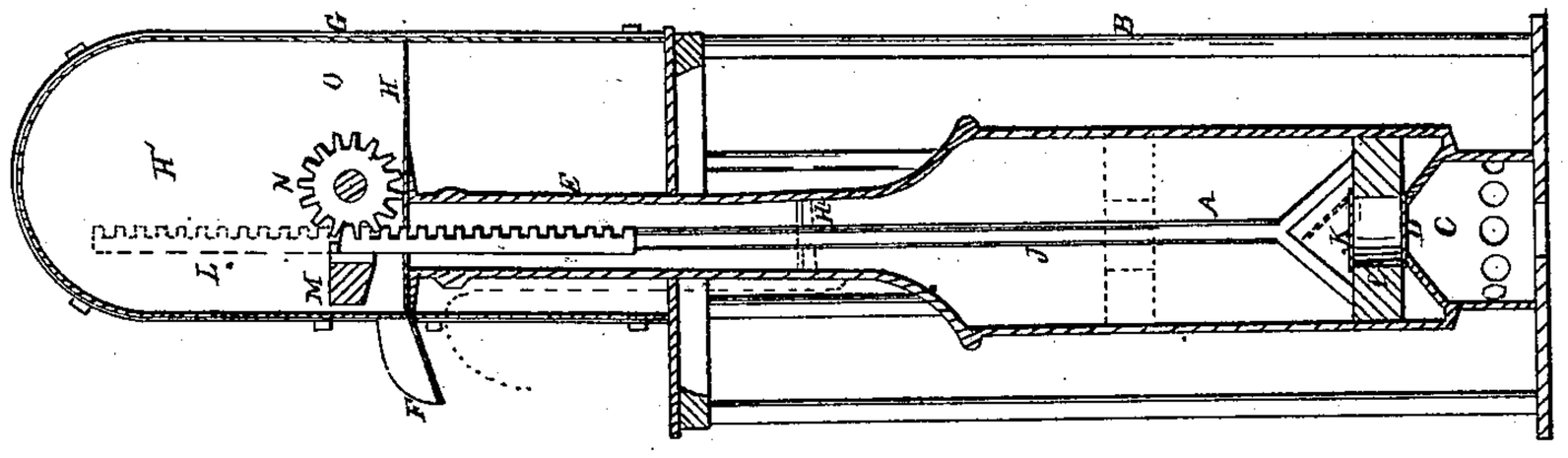
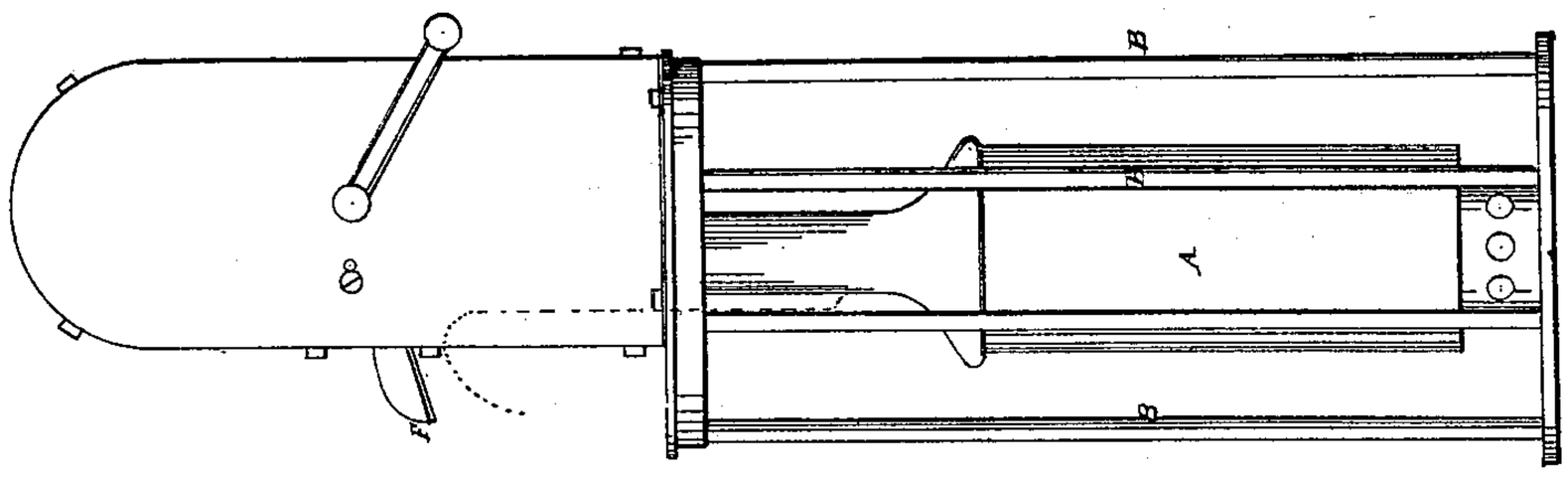


Fig 1.



Witnesses.

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UNITED STATES PATENT OFFICE.

F. RAYMOND AND A. MILLER, OF CLEVELAND, OHIO.

IMPROVEMENT IN LIFTING-PUMPS.

Specification forming part of Letters Patent No. **42,874**, dated May 24, 1864.

To all whom it may concern:

Be it known that we, FITCH RAYMOND and AUGUST MILLER, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Pumps; and we do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side view, and Fig. 2 is a vertical section.

Like letters refer to like parts.

Our invention relates to such a construction of a pump that a single turn of the crank will raise as much water as is usually obtained by many revolutions of the crank in the ordinary way of drawing water, thereby requiring less time and labor. The structure is also such that the water is constantly drawn from the bottom of the well, and, being a lifting-pump, the water can be raised any desired distance.

In the accompanying drawings, A represents the barrel or cylinder of the pump. This is supported by a frame-work, B. The lower end of the cylinder is provided with a chamber, C, into which the water is received before it passes through the valve. The central portion of this chamber, in its conical upper walls, is provided with a valve, D, opening upward into the cavity of the cylinder A. The chamber C is provided with openings for the ingress of water from without. The barrel of the cylinder A is about three feet in length and a foot or more in diameter. At the upper part of the barrel proper the tube is contracted to the diameter of from three to five inches, forming thereby a smaller tube, E, reaching to a proper distance above the surface of the ground, to convey the water into the spout F. That portion of the pump that is above ground is inclosed in the curb G, which has no opening except the spout which is attached thereto. At the bottom of the spout a diaphragm, H, stretches across the curb G, the tube E opening into the chamber H′ above the diaphragm.

The piston is shown at I. This is constructed in the usual form and fits accurately the interior of the cylinder A. The piston-rod J is bifurcated at the point of its attachment to the piston, for the purpose of giving space for the play of the piston-valve K. Upon the upper side of the piston, and in its center, we place the valve K, which opens upward, as indicated by the dotted lines in Fig. 2. When the piston is caused to rise, this valve is closed by the pressure of the water above it, and the piston lifts all of the water that is in the cylinder, carrying it up the tube E and discharging it above the diaphragm into the spout F. The upper end of the piston-rod J is provided with a rack, L, which works in a guide, M. This guide M stretches across the chamber H′, just above the spout F. The rack L, and with it the piston J, is worked up and down by means of the pinion N, which is situated upon the middle of the crank-shaft O. A single revolution of this pinion will move the piston through its whole stroke.

Instead of placing the diaphragm H just below the spout F, it may be placed at any point in the tube E, as shown at H^2, and a goose-neck pipe carried from any point below the diaphragm and above the piston, and discharging through or outside of the curb G, as indicated by the dotted lines in the drawings. In any case where the diaphragm is placed above the depth of freezing in the winter a vent-hole should be provided to draw the water down below that point when the pump is not in use. When the diaphragm is placed in the pipe E, it should be in the form of a stuffing-box, which will thus serve the double purpose of stopping the flow of water upward above that point, but also serves to give steadiness to the rod J.

What we claim as our improvement, and desire to secure by Letters Patent, is—

The chamber C, cylinder A, piston I, pipe E, curb G, rack and pinion L N, and diaphragm H, the several parts being constructed, arranged, and operating as and for the purpose set forth.

F. RAYMOND.
A. MILLER.

Witnesses:
W. H. BURRIDGE,
C. C. MORGAN.