H. M. JONES.

PUMPS.

No. 190,870. Patented May 15, 1877.

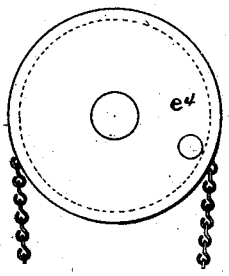
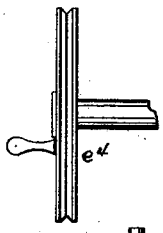


Fig. 1.



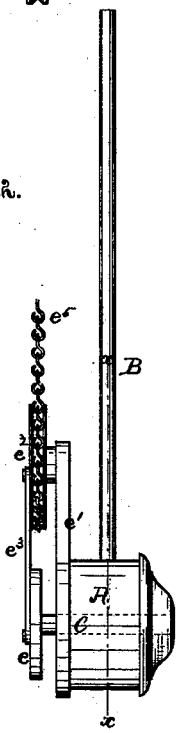
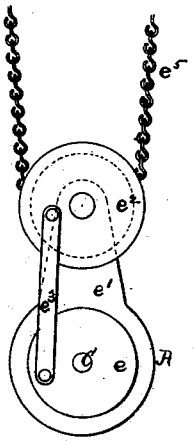


Fig. 2.



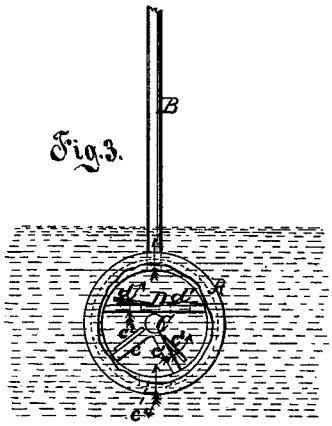


Fig. 3.

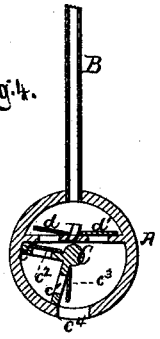


Fig. 4.

Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY M. JONES, OF WEST MERIDEN, CONNECTICUT.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **190,870**, dated May 15, 1877; application filed March 6, 1877.

To all whom it may concern:

Be it known that I, HENRY M. JONES, of West Meriden, county of New Haven, in the State of Connecticut, have invented an Improved Pump, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to that class of pumps known as submerged pumps, in which the pump barrel or box and its contained operating valves are placed or immersed in the water, as at the bottom of a well, and which are operated by suitable gear extending upward to the surface of the ground; and it consists in the peculiar arrangement of the valves and pump-box, to operate as specified, as hereinafter described, together with the devices I employ to operate the pump from the surface of the ground or curb, all as hereinafter particularly set forth, and recited in the claim.

Figure 1 is an elevation of my pump, showing the operating devices. Fig. 2 is an edge view or side elevation of the same. Fig. 3 is detailed view of the pump-box with the valves exposed, and the whole shown submerged in water. Fig. 4 is a central sectional view of the pump-box, valves, and pipe, on the line *x x*, Fig. 2.

A is the pump-box, in which are mounted the valves. This box I make cylindrical in form, as shown, and from it, on its upper side, extends the pipe B, which is the means of communication from the box to the ground or curb, and up through which the water is forced. The box and its connected parts are suspended in the well or water, on or by this said pipe B. Longitudinally through the cylindrical pump-box, and on the line of the axis thereof, passes the shaft C, having bearings in the end walls of the box. Upon the lower side of this shaft are mounted, at right angles to each other, the valve-arms *c* and c^1, extending the length of the pump-box and projecting from the shaft to and fitting against the cylindrical wall of the said box, as shown. In said arms, respectively, are arranged the upwardly-opening valves c^2 and c^3. Immediately above the shaft C is placed the partition D, extending across the box and also longitudinally through it, as shown, thus dividing the box into two distinct chambers. In this partition D are the two upwardly-opening valves *d* and *d'*, one upon either side of the line of the shaft C. From the lower chamber of the box leads the opening c^4.

Now, it is evident that when the box is suspended and submerged in the water, and the shaft C is rocked or oscillated in its bearings, the operation of the pump will be as follows: The shaft being oscillated to the left side, as in Figs. 3 and 4, the valve c^2 in the arm *c* will close by the pressure of the water, which will fill the lower chamber by passing through the opening c^4, and said arm will act to lift or force the water above it up through the valve *d* in the partition D, into the upper chamber, while, at the same time, the valve c^3 in the arm c^1 on the shaft C will be opened and allow the water in the lower chamber to pass through it, thus causing no resistance to the movement of the shaft; and, also, the valve *d'* will close, cutting off the communication from the lower to the upper chamber on that side. When the shaft is oscillated to the right, (in the opposite direction,) the valve c^3 will close and the arms c^1 will lift the water above it into the upper chamber, through the valve *d'*, the valve c^2 in arm *c* being opened, and the valve *d* in D being closed with the result before set forth. By repeated and rapid oscillations of the shaft the water will be continuously forced up into the chamber above D, and thence up through the pipe B to the surface or curb, and then discharged in a steady flow or stream.

To conveniently produce and maintain the rapid oscillation of the shaft C, I prefer to employ the following devices: Upon the end of the shaft C I fix a wheel, *e*, and upon a standard, e^1, mounted on the pump-box, turning on a short shaft, I arrange a chain-pulley, e^2. The pulley e^2 and wheel *e* I connect by means of a rod, e^3, the point at which the rod is pivoted to the wheel *e* being a less distance from the axis of said wheel than the point at which the other end of said rod is pivoted to the pulley is from the axis of said pulley. By a proper adjustment and relation of the distances of these pivot-points of the rod from the axes of their respective pulleys, the revolution of the pulley e^2 will, at each rotation

thereof, oscillate the shaft C in one direction the distance of a quarter turn, and then back again in the reverse direction a quarter turn on its axis. By this means the arms c and c^1 will be properly vibrated in the lower chamber of the pump-box. Motion is communicated to the pulley e^2 by a chain, e^5, which extends to a pulley, e^4, arranged at the curb or ground, and which is provided with a handle or crank-pin, as shown.

What I claim as my invention, and desire to secure by Letters Patent, is—

In combination with the shaft C, carrying valve-arms c and c^1 in a submerged pump-box, A, having valve-partition D, suspending pipe B, and opening c^4, the wheel e, chain-pulley e^2, rod e^3, hand chain-pulley e^4, and chain e^5, all arranged as described, to operate as and for the purpose specified.

HENRY M. JONES.

Witnesses:
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