N. LEGROS.
Force-Pump.

No. 215,468. Patented May 20, 1879.

Fig. 1.

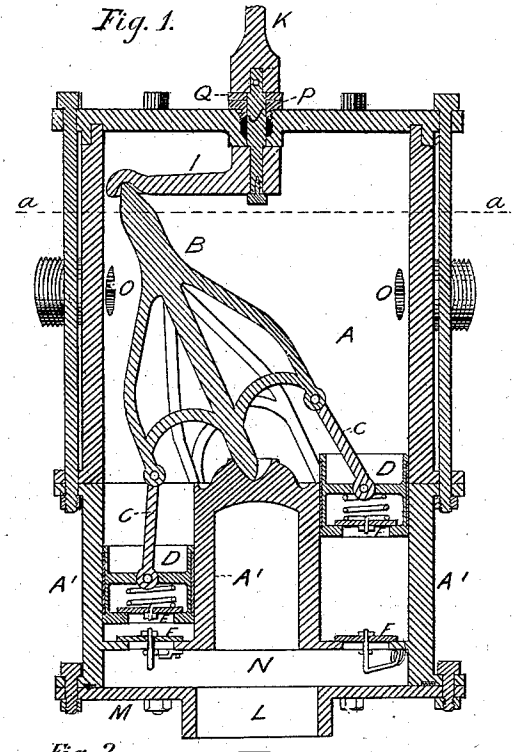


Fig. 4.

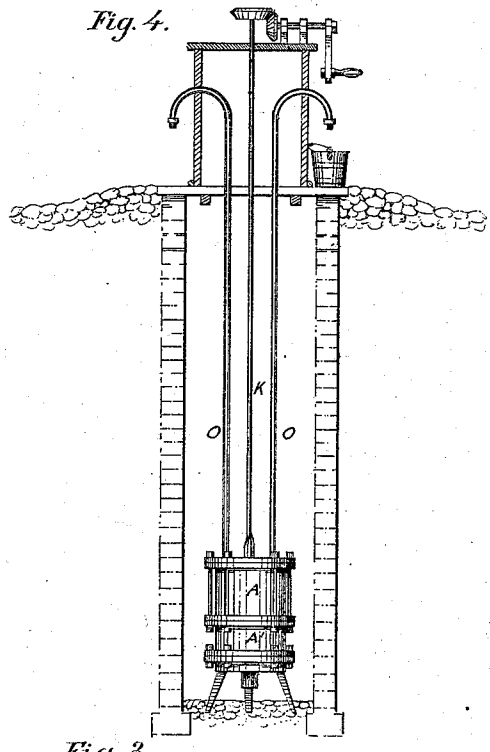


Fig. 2.

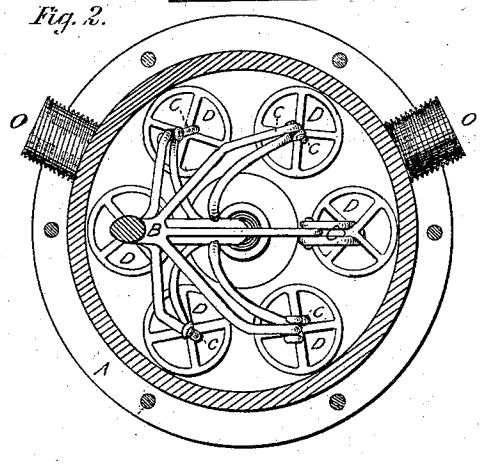
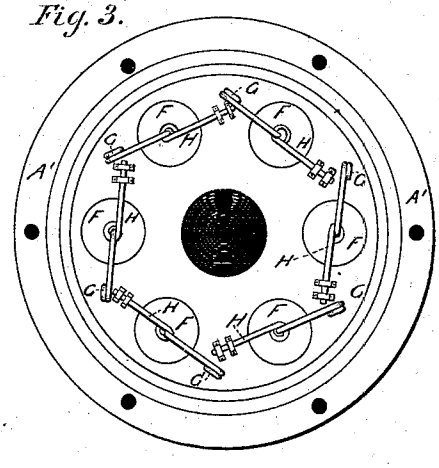


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

NORBERT LEGROS, OF WINDSOR, ONTARIO, CANADA, ASSIGNOR OF ONE-HALF HIS RIGHT TO ALBERT DROUILLARD.

IMPROVEMENT IN FORCE-PUMPS.

Specification forming part of Letters Patent No. **215,468**, dated May 20, 1879; application filed April 4, 1879.

To all whom it may concern:

Be it known that I, NORBERT LEGROS, of the town of Windsor, in the county of Essex, in the Province of Ontario, in the Dominion of Canada, 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 the method of raising and ejecting water or other liquids by means of a lever with several fixed arms placed in a water-tight cylinder, and working in a fixed socket at one end and being rotated at the other. To the ends of these fixed arms are hinged connecting-rods, which are hinged at their other ends to lifting-valves, the rotary motion of one end of this lever giving a reciprocating movement to the lifting-valves, and thus, by distributing the suction of the water equally over a considerable space, to impart a steadiness to the drawing and forcing of the liquid with comparatively little friction or loss of power.

In the accompanying drawings, Figure 1 is a central section of the pump. Fig. 2 is a horizontal sectional view of the pump at the line *a a*, Fig. 1. Fig. 3 is a view of the under side of the pump with the bottom of the suction-chest removed, showing the lower valves. Fig. 4 shows the application of the pump to raising water from a well or cistern.

A A′ are two cylindrical-shaped vessels fastened together by bolts passing through flanges, as shown by the drawings.

In the lower cylinder, A′, is cast or constructed an indefinite number of cylindrical chambers equidistant from the axis of the large cylinder. These cylinders have suitable-sized holes cast in their lower ends, upon which valves F F, &c., work. Under these lower valves is a chamber, N, forming a protection for them, and for the purpose of attaching a suction-pipe to when necessary. The cover M of this chamber should be hopper-shaped, so as to admit the liquid to the valves with as little variety in the course of the current as possible, and the inlet L of a large size, equal to at least half the area of the holes covered by the valves F F, &c. These valves F F, &c., are attached to the chambered cylinder by spring-wires G G, &c., playing through guides H H, &c., which are attached, by staples or otherwise, to the bottom of the lower cylinder, A′.

The armed lever B may, if desirable, be placed above the cylinder A, and the connecting-rods will then pass through the cylinder-cover and the same effect be produced. The lifting-valves D D, &c., are provided with trap-valves E E, &c., covering holes in their lower ends. These trap-valves are attached to the cross-bars, to which connecting-rods C C, &c., are hinged by means of spiral springs, which serve to keep the valves in place and admit of a free play on the downward movement of the lifting-valves.

When the upper end of the lever is moved by the rotation of the crank I, the lifting-valves D D, &c., are raised and lowered in their turn, and the liquid drawn up into the upper cylinder, and from thence is forced through outlets O O, and from thence in any required direction. These outlets may be either in the sides of the cylinder A or in its top, and there may be any required number of them.

The crank I is attached to a shaft, J, by means of a key, set-screw, or other fastening, and is connected at its outer end with the end of the lever B by a socket and point, as shown in the drawings, or by a ball-and-socket joint, or by any ordinary method not producing much friction.

The shaft J is squared at the top, and shaft K fits on this and is pinned to it. A washer, Q, of suitable material is placed between the shaft K and the top of a follower, which is screwed into the cylinder-top and forms the cover for the packing of the shaft. The shaft K extends upward to the proper height when the pump is used for wells or for raising liquid, and the power is applied in the usual manner either by a vertical or horizontal rotary motion.

This pump may be used in any position. It can be made of wood, metal, or any suitable material.

It is apparent that alterations in the con-

struction of the above-described pump may be devised for accomplishing a similar result without materially altering its principles, and therefore I do not confine myself strictly to the construction as above specified; but

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

1. A lever with fixed arms radiating from its axis, said arms being attached by connecting-rods to lifting-valves, such as those described, all working in a water-tight cylinder, (except the lever with its arms and connecting-rods, which may be outside,) and giving motion to the different valves by the rotation of this lever at its upper end, while the lower end works in a fixed socket or step, for the purpose of raising and forcing liquid in any desired direction.

2. The combination of the lever B with cylinders A and A′, crank I, connecting-rods C C, &c., and lifting-valves D D, &c., as described, for the purposes set forth.

3. A crank rotating one end of an armed lever, such as the one described, working either inside or outside a water-tight cylinder, for the purposes set forth.

NORBERT LEGROS.

Witnesses:
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