C. H. McKEEHAN.

FORCE-PUMP.

No. 186,594. Patented Jan. 23, 1877.

Fig. 1.

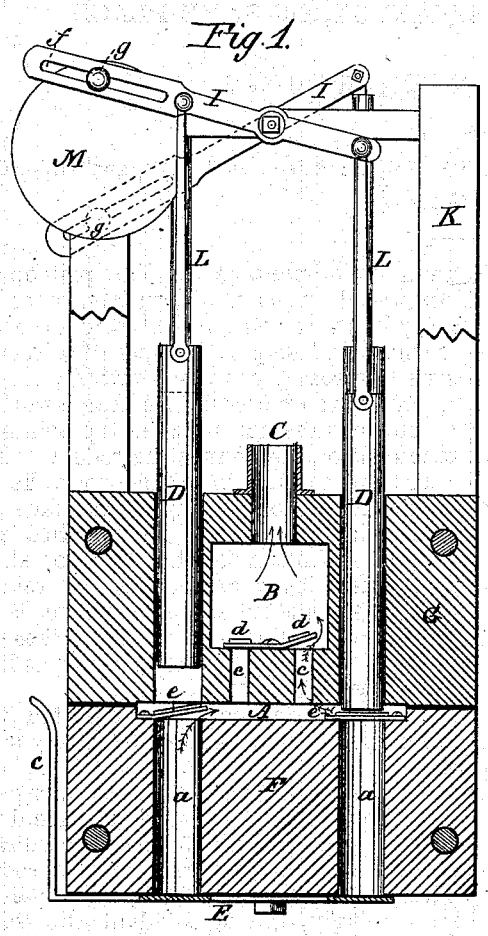


Fig. 2.

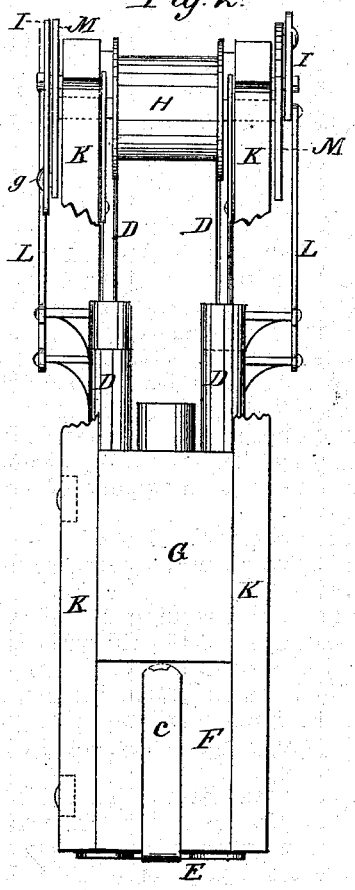


Fig. 3.

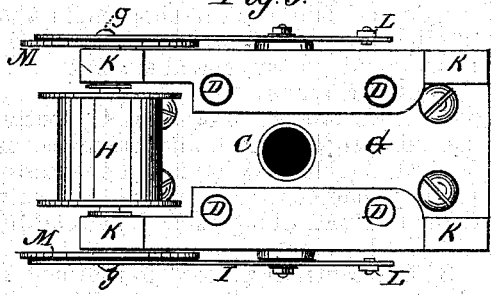
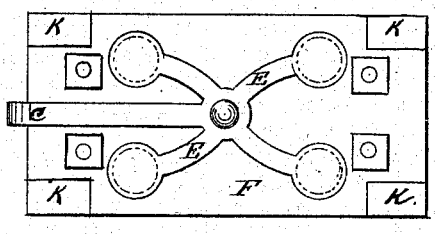


Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES H. McKEEHAN, OF TEXARKANA, ARKANSAS, ASSIGNOR TO HIMSELF AND VIRGIL TACITUS HANNON, OF SAME PLACE.

IMPROVEMENT IN FORCE-PUMPS.

Specification forming part of Letters Patent No. **186,594**, dated January 23, 1877; application filed November 28, 1876.

To all whom it may concern:

Be it known that I, CHARLES H. McKEEHAN, of Texarkana, in the county of Miller and State of Arkansas, have invented a new and useful Improvement in Force-Pumps; and I do hereby declare that the following is a full, clear, and exact description of the same.

The object of my invention is to provide a cheap yet durable and efficient double-acting reciprocating force-pump, applicable chiefly in situations where a submerged pump is required.

The improvement relates to the construction and arrangement of parts, as hereinafter described.

In the accompanying drawing, forming part of this specification, Figure 1 is a partly-sectional elevation of my improved pump. Fig. 2 is an end elevation of the pump, with part of the frame-work broken away. Figs. 3 and 4 are, respectively, a top and bottom plan view.

The pump may be constructed of wood or metal; but the illustration represents it in the form I prefer, when it is made of wood.

A indicates the suction or receiving chamber, B the exhaust or forcing chamber, C the discharge, and D the pistons, of the pump. The water is received into chamber A through passages *a*, which open at the bottom of the pump, and are provided with a centrally-pivoted four-armed valve, E, having an arm, *c*, by which it may be operated to open or close the passages *a*, and thus regulate the supply or shut it off altogether. The receiving-chamber A is very shallow, and formed by recessing the upper side of the block F. The more capacious exhaust-chamber B is formed in the middle of the block G, which is placed upon block A, and secured thereto by means of screws or bolts. The communication between the chambers A B is by means of the vertical passages *c c*, which are provided with valves *d*, for preventing the return of water. The four pistons or plungers D work vertically through the block F, each directly over a flap-valve, *e*, which alternately opens and closes an induction-passage, *a*. The pistons are reciprocated in pairs alternately, those diagonally opposite being operated together. The mechanism I employ for operating them consists of a rotary drum or shaft, H, and levers I, which are pivoted to the frame-work K at a point equidistant between the points of attachment of the connecting-rods L. The levers have slots *f*, in which work the wrist-pins *g*, fixed eccentrically on the face of circular plates M, which are attached concentrically to the ends of the drum or shaft H. The wrist-pins *g* are so located, relatively, that as the slotted end of one lever is raised the corresponding end of the other is depressed, so that the levers vibrate, as it were, reversely.

Rotary motion may be imparted to the drum by a belt-connection from any suitable motor.

Supposing the pump to be submerged, and the valve E open, the rotation of the drum or shaft H will cause the levers I to vibrate reversely, and the plungers to reciprocate in pairs. The valves E will open in pairs correspondingly, and thus admit the water to chamber A, whence it passes into chamber B, and is finally discharged at C.

I do not claim the combination, in a pump, of alternately reciprocating pistons and a receiving and exhaust chamber; but

What I claim is—

1. The combination of block G, containing the exhaust-chamber B and passages, as described, the block F, having the recess or receiving chamber A and ports *a*, the valves *d d* and *e e*, and plungers D D, as shown and described.

2. The centrally-pivoted four-armed valve E, having the bent lever-arm *c* for operating it, in combination with the induction-ports *a*, as shown and described.

CHARLES HOUSTON McKEEHAN.

Witnesses:

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J. G. FERGUSON.