(No Model.)

S. KIMBLE, Jr.

Force Pump.

No. 235,782. Patented Dec. 21, 1880.

Fig. 1.

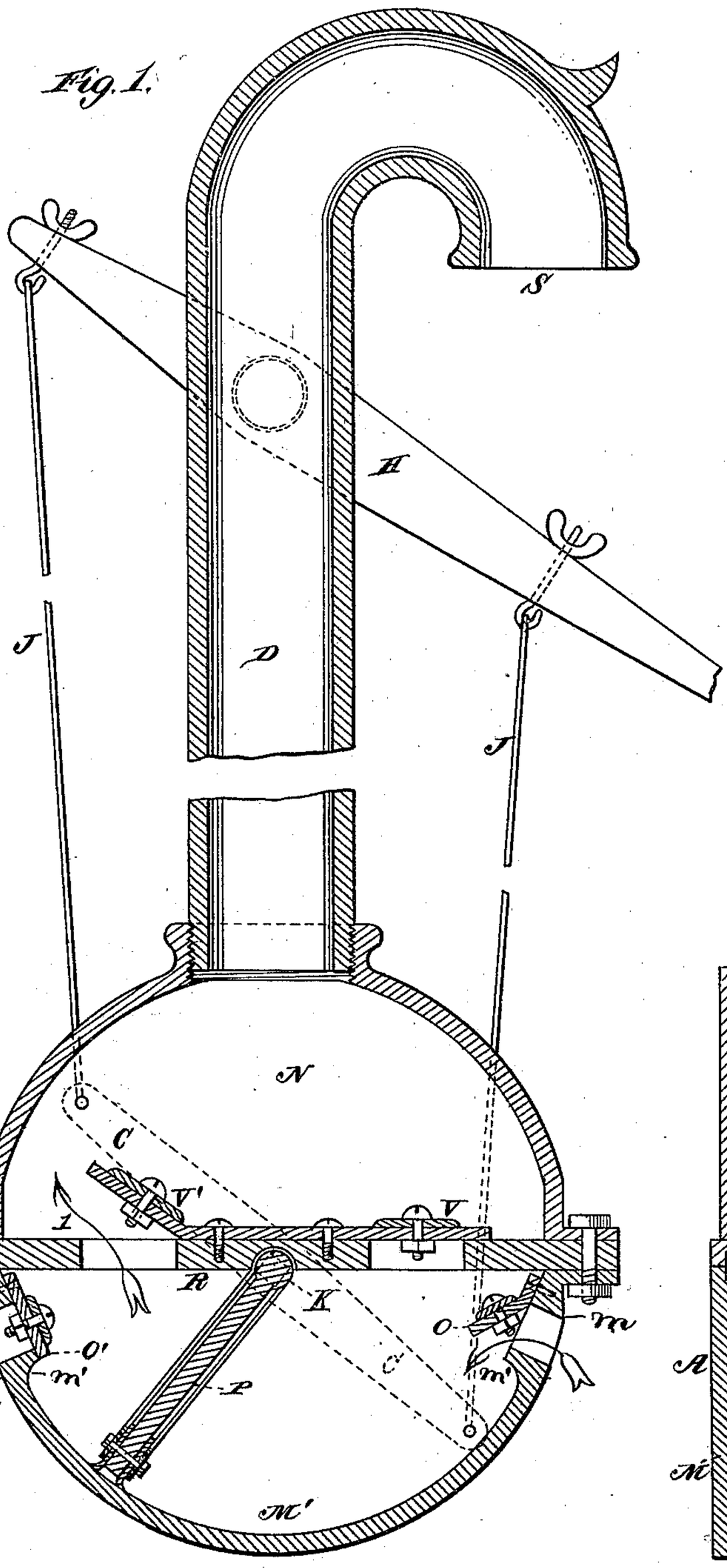
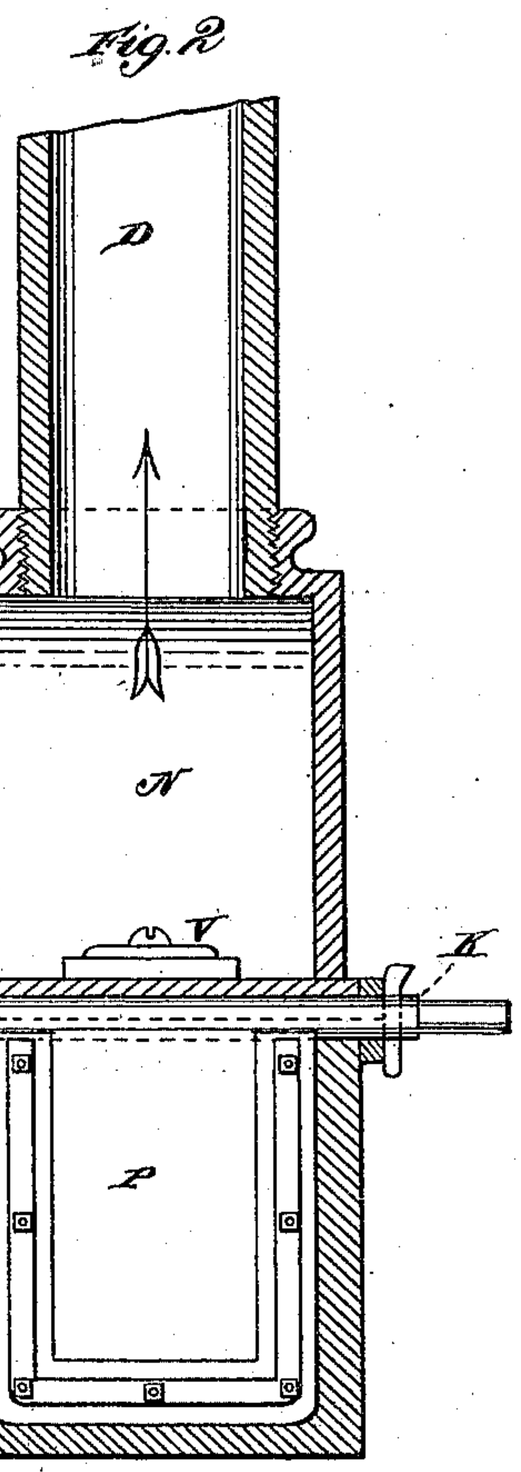


Fig. 2.



WITNESSES

Villette Anderson.

Robert Everett.

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UNITED STATES PATENT OFFICE.

SAMUEL KIMBLE, JR., OF MANHATTAN, KANSAS.

FORCE-PUMP.

SPECIFICATION forming part of Letters Patent No. 235,782, dated December 21, 1880.

Application filed September 25, 1880. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL KIMBLE, Jr., of Manhattan, in the county of Riley and State of Kansas, have invented a new and valuable Improvement in Force-Pumps; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a central vertical section of the device. Fig. 2 is a vertical cross-section.

This invention relates to devices wherein power is applied to directly force water in the desired direction.

The invention consists in a valved chamber through which a valved diaphragm passes, and in which a paddle or plunger rocks upon a shaft.

It also consists in other details hereinafter stated.

In the drawings hereto annexed, A represents a cylindrical chamber, composed of the two sections M N, interposed between which is the diaphragm R, the whole firmly bolted together. The lower section, M, is constructed at its upper edges with projections *m*, so that the interior of said section is concaved out, as shown at M′, having shoulders or stops *m′* at the ends of such concave. At the middle the diaphragm R rests upon a shaft, K, upon which is hung a paddle or plunger, P, which is rocked by said shaft K, and which snugly fits the chamber M, its outer edges being covered with leather or other suitable packing. The chamber M has two openings formed through projections *m*, covered by valves O O′, seated upon the inner faces of said projections *m*, and diaphragm R two, covered by valves V V′. Section N opens into the tube D leading to the discharge-opening S.

Journaled in the tube D is the rocking handle H, to which are fastened the connecting-rods J J. The lower ends of these rods are connected to double crank-arms C, by which means power applied to the pump-handle operates said crank, and with it shaft K, to which it is attached, and plunger P. This plunger fits snugly against the concave M′ of chamber M, and its movement is limited by the shoulders or stops *m′* of projections *m*, which prevent the valves O O′ from being struck and injured and limit the course of the plunger without damage to the latter, only a small portion of its body striking, and that provided with packing.

Instead of two rods, J J, there may be one only; but this one must be strong enough to thrust as well as pull.

This pump is to be inserted into a well until the water rises at least as high as the diaphragm R.

On applying power to the handle H the plunger P is moved in the direction of the arrow 1. This causes a partial vacuum behind, and the water opens valve O and rushes in behind the plunger. As the handle is moved in the opposite direction the plunger returns, forcing the water up, closing valve O and opening valve V, the water passing through the opening thus made in the diaphragm. At the same time the water in the well forces open valve O′ and enters behind the plunger. On the return-stroke this is forced through valve V′, closing O′, and the operation continues, each mass lifted into section N forcing the water there farther up until it pours out at the discharge-opening S.

This pump can be made a suction-pump below R R by attaching pipes to communicate with holes O O′ and connecting a suction-pipe to section M below.

I am aware that a double reciprocating piston provided with valves has had its hub working air-tight between the angles of four radial partitions in a cylinder, two of said partitions being perforated, and suitable valves and discharge-ports have been used in connection therewith, as may be seen in Patent No. 63,937 of April 16, 1867, and this construction is not claimed herein.

I am also aware that the plunger herein shown is not new, and I desire to limit myself to the precise construction herein shown and described.

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

The chamber A, consisting of sections N and M and diaphragm R, the section M having projections *m*, with openings therethrough, and forming a concave, M′, and stops *m′*, in com-

bination with valves V V′ in the diaphragm R, valves O O′, seated upon the inner faces of projections *m*, plunger P, hung to a shaft, K, and fitting snugly concave M′, and having its edges provided with packing, means for operating said plunger, and a tube, D, all constructed and arranged substantially as and for the purposes described.

In testimony that I claim the above I have hereunto subscribed my name in presence of two witnesses.

SAMUEL KIMBLE, JR.

In presence of—
WM. BURGOYNE,
BENNETT A. ALLEN.