W. H. McGREW

Force-Pump.

No. 198,136. Patented Dec. 11, 1877.

FIG. 1.

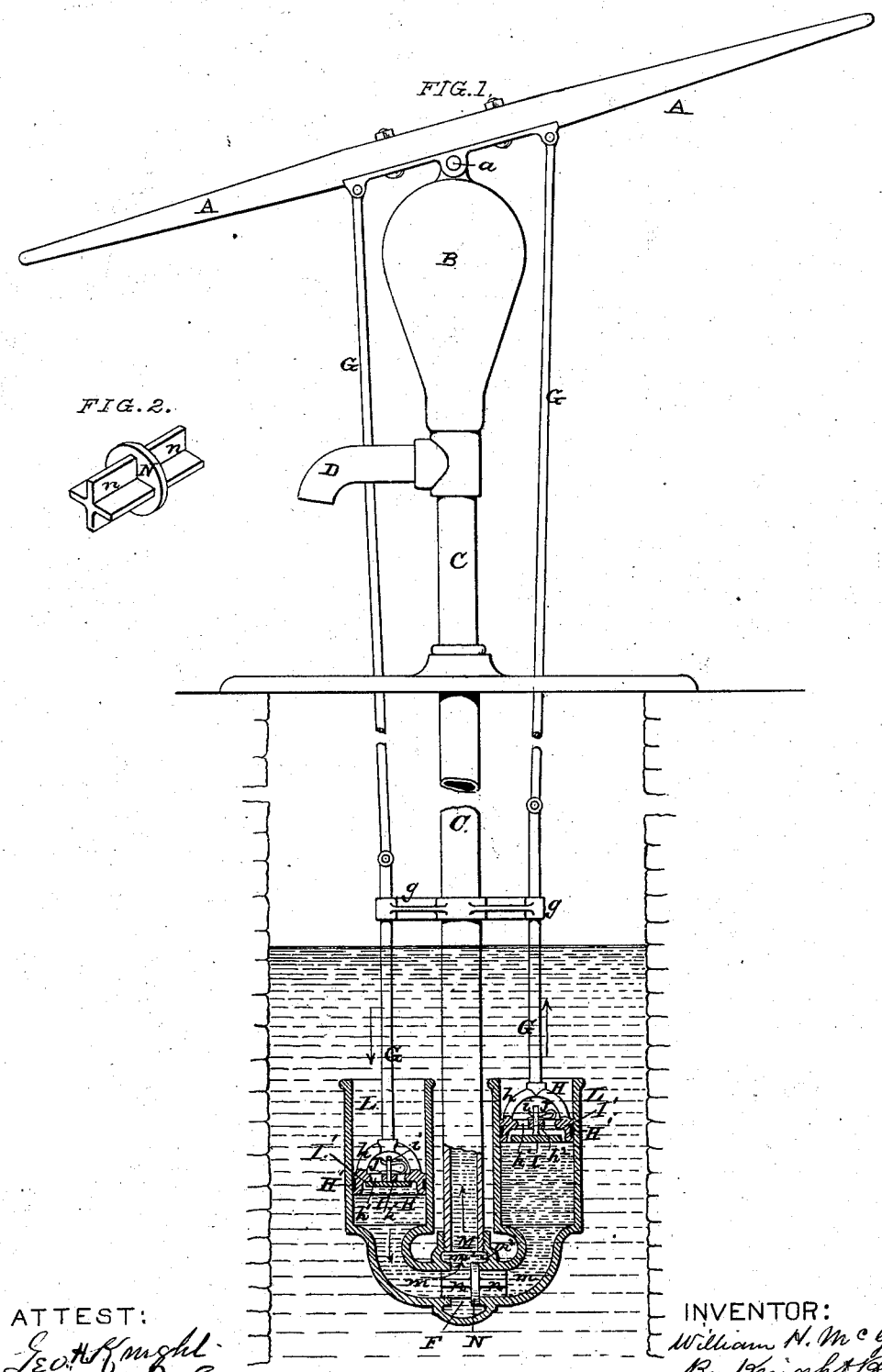

FIG. 2.

ATTEST:

Geo. H. Knight

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UNITED STATES PATENT OFFICE.

WILLIAM H. McGREW, OF PERU, INDIANA.

IMPROVEMENT IN FORCE-PUMPS.

Specification forming part of Letters Patent No. **198,136**, dated December 11, 1877; application filed October 18, 1877.

To all whom it may concern:

Be it known that I, WILLIAM H. McGREW, of Peru, in the county of Miami and State of Indiana, have invented a certain new and useful Improvement in Force-Pumps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My improvement consists, in the main, of the combination of two open-topped cylinders, both in communication at bottom with a single valve-chamber containing a reciprocating disk-valve, and communicating with the discharge-pipe, with or without a check-valve between the chamber and the pipe.

My improvement also applies to the peculiar construction of the valves, as set forth hereinafter.

In the drawings, Figure 1 is part in side elevation and part in axial section through the two cylinders. Fig. 2 is a perspective view of the reciprocating slide-valve.

A is the hand lever or brake, fulcrumed at *a* to the top of the air-chamber B, which forms the top of the pump-stock C. D is the spout; and this is arranged with a screw-thread for the coupling of a hose when desired. C is the stock or discharge-pipe leading from the valve-chamber F to the spout D. G are rods connected at the upper ends to the brake, and at the lower ends to the pistons H. The rods G pass, or may pass, through suitable guides *g*, and may be jointed, as shown, or may be in one piece from the brake to the piston. Each piston is connected to the rod G by one, two, or more arms, *h*, allowing the water free access to the central port h^1, closed on the downward movement of the piston by a flat valve, I, which fits the flat-valve seat I′ at the bottom of the piston. The valve I consists of a simple flat disk, the top of which comes in contact with the seat I′. The valve I has an upwardly-extending central guide-stem, *i*, passing through a guide-bar, h^2, which extends diametrically across the valve-port h^1. At the top of the valve-stem *i* is a cross-pin, against which engages the upper arm of a spring, J, the lower arm of which has bearing upon the guide-bar h^2. The action of the spring J is to lift the valve I and close the valve-port, and thus the valve is kept closed, except when the piston is ascending in the cylinder L.

H′ is packing surrounding the piston. This packing may be of leather or any usual or suitable substance. Each cylinder L communicates at the lower end with a valve-chamber, M, through a pipe or passage, *m*, which constitutes the port of the reciprocating valve working in said chamber, the inner end of each pipe *m* forming the seat of the valve. This sliding reciprocating valve has a central disk, N, of sufficient diameter to stop the valve-ports, and end guides *n*, working in the ports.

The valve-chamber has a port, m^2, at top, communicating with the discharge-pipe. This port may be furnished with a check-valve, if desired.

The operation is as follows: The brake is oscillated, and the descending piston H forces the water out of the bottom of its cylinder into the valve-chamber, carrying the valve N over, and stopping the port *m* at the opposite side of the chamber, and forcing the water up the discharge-pipe. At the same time the water is passing through the port of the other piston as it rises. When the latter piston has reached its upper position the spring J closes the valve I.

I claim as my invention—

1. The combination of open-topped cylinders L, valves I, valve-chamber with end ports *m*, and slide-valves N, substantially as set forth.

2. The valve I in piston H, made flat to fit the flat bottom of piston H, and provided with guide-stem *i* and spring J, substantially as set forth.

3. The combination, with the valve-chamber M, provided with valve-ports, of the valve with central disk N and end guides *n*, working in the valve-ports, substantially as set forth.

W. H. McGREW.

In presence of—
JAMES M. CALVERT,
JAMES MEANS, Jr.