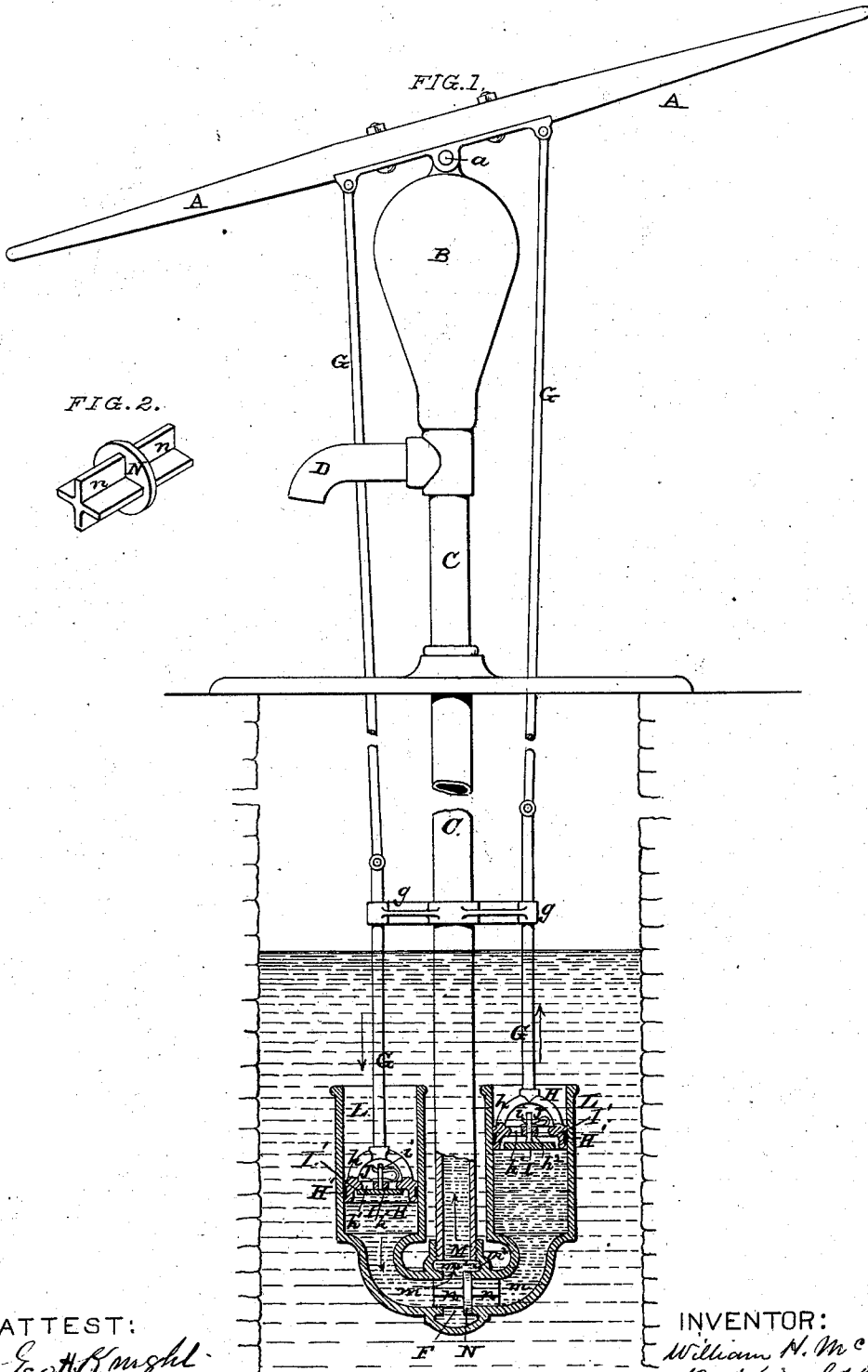


W. H. McGREW
Force-Pump.

No. 198,136.

Patented Dec. 11, 1877.



ATTEST:

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INVENTOR:

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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*¹ 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*¹. 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.

H¹ 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.