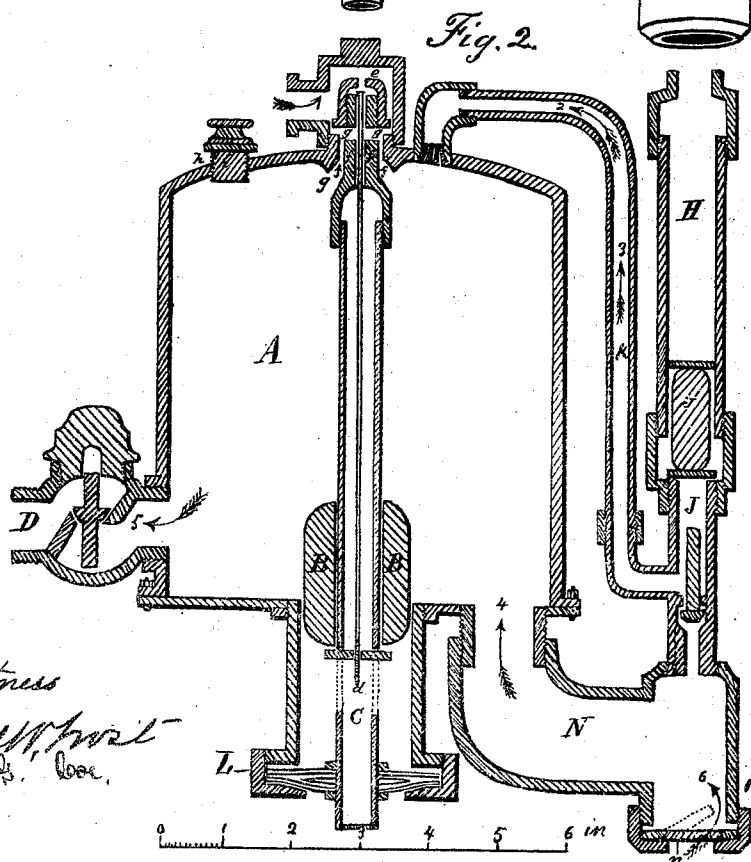
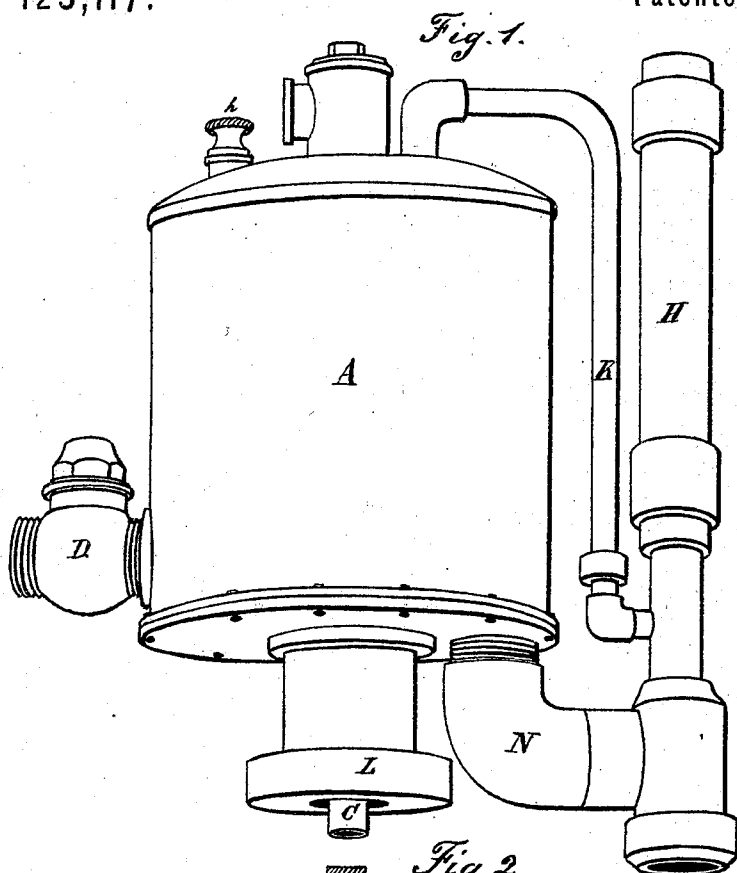


JAMES M. MOREHEAD.
No. 123,117.

Steam Vacuum Pumps.
Patented Jan. 30, 1872.



Witness
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JAMES M. MOREHEAD, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN STEAM VACUUM-PUMPS.

Specification forming part of Letters Patent No. 123,117, dated January 30, 1872.

SPECIFICATION.

I, JAMES M. MOREHEAD, of the city of Brooklyn, county of Kings, State of New York, have invented certain Improvements in Steam Vacuum-Pumps, of which the following is a full description, reference being had to the accompanying drawing, which makes a part of the specification.

In carrying out my invention, I take a cylinder and line it with laminated wood or other suitable material, for resisting the water. Through the center of the cylinder is a hollow tube or rod, and upon this tube is placed a float, to the bottom of which is attached a small wire rod, running through the tube to the top of cylinder. On the end of this wire is a nut with valve attached. The object of the float, when the cylinder is filled with water, is to rise upward and lift with it at the same time, by means of the wire rod, the valve which is seated on the top of the steam-port in the upper end of cylinder, thereby allowing a free passage of steam from the boiler through steam-port into the cylinder. I also have a tube for holding water, which is open at the top, and connected by a small injection-pipe to the cylinder. Placed inside of this open tube is a floating valve. The object of this valve is to prevent the air from passing into the cylinder when the atmospheric pressure forces a jet of water in, and also to prevent the water from being forced in when the pressure is on the cylinder. Attached to the lower end of this cylinder by means of the hollow tube, is a diaphragm. This is so constructed that the pressure of the atmosphere upon the diaphragm causes it to force the valve which is placed on the underside of the steam-port, up tightly against it. The cylinder is provided with a suction-pipe and a discharge-pipe, for filling it with water and discharging it.

Figure 1 is a perspective front view of the improved steam vacuum-pump. Fig. 2 is sectional view of same.

A is the cylinder of the pump; B, a float affixed to and working upon the hollow rod or tube C; *d* is a wire rod attached to the float B, and passing through the tube C and the cylinder A. On the top of the wire rod *d* is a nut or valve, *e*, which is seated on the upper

part of the steam-port *g*. D is a discharge-pipe, and H a tube, open at the top for holding water. Within this tube H is placed the floating valve *b*. K is an injection-pipe, and connects the tube H with cylinder A. At the bottom of the cylinder is the diaphragm L, which is connected to the valve *f* by means of the tube C. N is a suction-pipe, for filling the cylinder A with water. *h* is used for same purpose. *n* is a foot-valve.

In operating my improved steam vacuum-pump, I first fill the cylinder A with water by means of the tube *h*. When the cylinder A is full, the float B rises upward on the hollow rod or tube C, carrying with it at the same time the wire rod *d*, which lifts the valve *e* from its seat on the steam-port, thereby allowing the steam from the boiler a free passage through steam-port *g* into cylinder A, (shown in Fig. 2 by arrow 1.) The pressure of the steam forces the water out of the cylinder A through the discharge-pipe D, shown by arrow 5, until the float B lowers down, bringing with it the valve *e*, which closes the steam-port *g*. Now, at this point, the pipe H being open at the top and filled with water, the atmospheric pressure forces a jet of water through the injection-pipe K, (as shown in Fig. 2 by arrows 2 and 3,) into the cylinder A, which produces a vacuum. At the same time the floating-valve *b* in tube H passes down and closes the opening J, thereby preventing the air from being taken into the cylinder A, and the atmospheric pressure upon the diaphragm L forces the valve *f* upward, closing the steam-port *g* on the under side, and holding it tightly until the cylinder A is filled with water through the suction-pipe N, (as shown in Fig. 2 by arrows *e* and 3.) Then the valve *f* by its own gravity and the pressure of the steam upon it, falls again, leaving a clear opening for the steam to pass through the steam-port *g* into the cylinder A.

I claim as my invention—

1. The combination, in a steam vacuum-pump, of the float B, hollow rod or tube C, wire rod *d*, and valves *e g*, arranged and operating substantially as herein shown and described.

2. The combination, in a steam vacuum-

pump, of the floating valve *b*, tube H, injection-pipe K, suction-pipe N, and chamber A, all arranged substantially as and for the purpose set forth.

3. In a steam vacuum-pump, I claim the combination of the float B, hollow rod or tube C, wire rod *d*, diaphragm L and valves *e g*, chamber A, float-valve *b*, tube H, and injection and suction-pipes K N, all arranged and op-

erating substantially as herein shown and set forth.

In testimony that I claim the foregoing I have hereunto set my hand and affixed my seal this 6th day of November, A. D. 1871.

JAMES M. MOREHEAD. [L. S.]

In presence of—

LOUIS W. TROST,
CHARLES G. COE.