(No Model.)

A. L. & C. F. REINMANN.

VALVE FOR MERCURIAL PUMPS.

No. 345,543. Patented July 13, 1886.

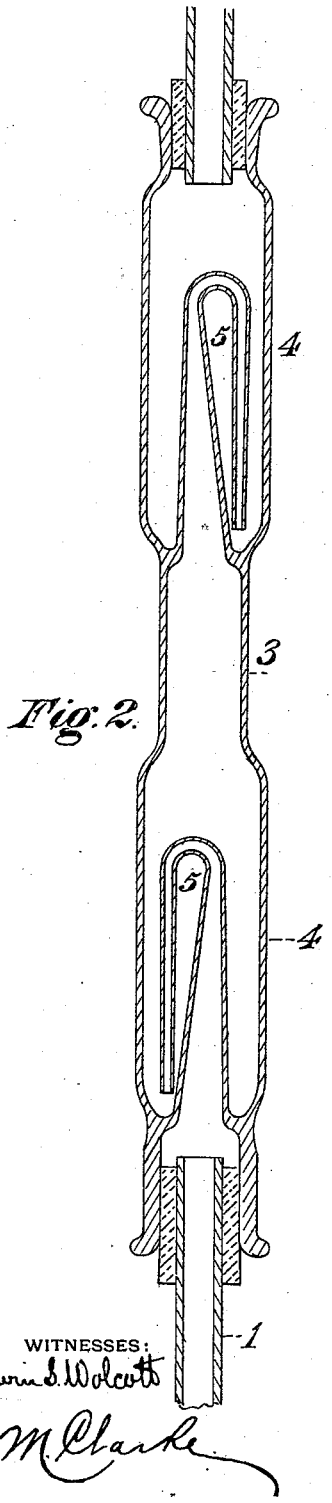

Fig. 2.

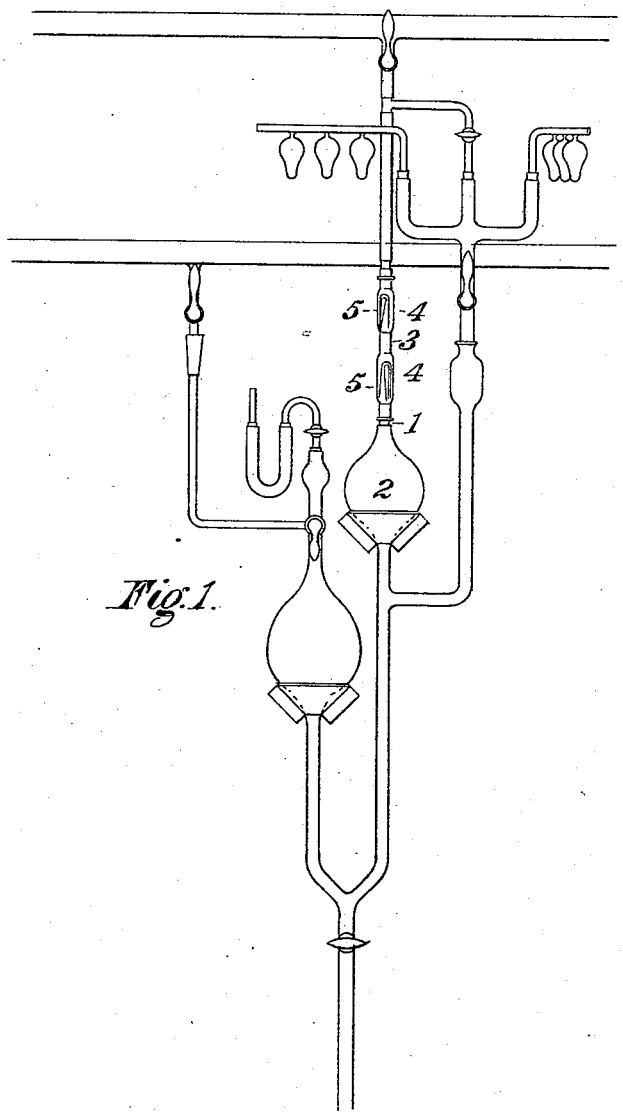

Fig. 1.

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UNITED STATES PATENT OFFICE.

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VALVE FOR MERCURIAL PUMPS.

SPECIFICATION forming part of Letters Patent No. 345,543, dated July 13, 1886.

Application filed March 31, 1886. Serial No. 197,265. (No model.)

To all whom it may concern:

Be it known that we, ALBERT L. REINMANN, and CHARLES F. REINMANN, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, citizens of the United States, have invented or discovered certain new and useful Improvements in Valves for Mercurial Pumps, of which improvements the following is a specification.

In the accompanying drawings, which make part of this specification, Figure 1 is a view in side elevation of a mercurial pump having the improved form of valve incorporated therewith. Fig. 2 is a sectional elevation on an enlarged scale, of the improved form of valve.

In the form of mercurial pump known as the Geissler pump it is necessary to interpose check-valves in the outlet-pipe leading from the vacuum-chamber to the open air, or to a mechanical exhaust-pump, in order to preserve the vacuum formed by the ebb and flow of the mercury in said chamber. Glass float-valves are generally employed for this purpose, but are objectionable on account of their liability of being broken when raised by the sudden flow of mercury into the valve-chambers.

The object of the invention is to provide the outlet-pipe with bent tubes or traps of such form and construction that the mercury used in the pump will seal or close the mouths of such tubes as against the inflow of any air, thus avoiding the use of movable parts in a valve; and to this end the invention consists in the construction and combination of parts, substantially as hereinafter described and claimed.

Onto the outlet-pipe 1 of the vacuum-chamber 2 is placed a section of pipe, 3, provided with an enlargement or chamber, 4, in which is located the bent tube 5, one end of said tube being attached to or formed integral with the pipe 3 at the base of the chamber 4. This tube extends nearly to the top of the chamber 4, where it bends around into U shape, as shown, and extends down to near the lower end of the chamber, where it opens into the chamber. The height of the tube from the open end to the bend is dependent upon the greatest difference of atmospheric pressure in the chamber 4 and the vacuum-chamber 2, as the column of mercury in that portion of the tube should be sufficient to withstand any pressure in the chamber 4.

In operating a pump provided with our improved valve, the mercury flows into the vacuum-chamber, and thence into the chamber 4, through the bent tube, forcing the air before it. As the mercury ebbs back into the mercury reservoir, a sufficient proportion thereof will remain in the chamber 4 to cover the open end of the tube 5, and prevent the return of the air. In order to prevent the tube from acting as a siphon, and thus emptying the chamber, that arm of the tube in communication with the vacuum-chamber is made tapering towards its upper end, as shown; or said arm of the tube may be made cylindrical, but of larger diameter than the other arm.

This form of valve or trap forms a perfect seal as against the return of air into the vacuum-chamber, and is not liable to be broken by sudden movements of the mercury.

We claim herein as our invention—

1. A valve for mercury-pumps, consisting of a chamber in combination with a bent or U-shaped tube located in said chamber, substantially as set forth.

2. A valve for mercury-pumps, consisting of a chamber, in combination with a bent or U-shaped tube located in said chamber, one of the legs of said tube being greater of diameter than the other leg, substantially as set forth.

In testimony whereof we have hereunto set our hands.

ALBERT L. REINMANN.
CHARLES F. REINMANN.

Witnesses:
DARWIN S. WOLCOTT,
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