No. 849,394. PATENTED APR. 9, 1907.

P. C. HEWITT.

MERCURY PUMP.

APPLICATION FILED MAY 27, 1904.

Fig. 1

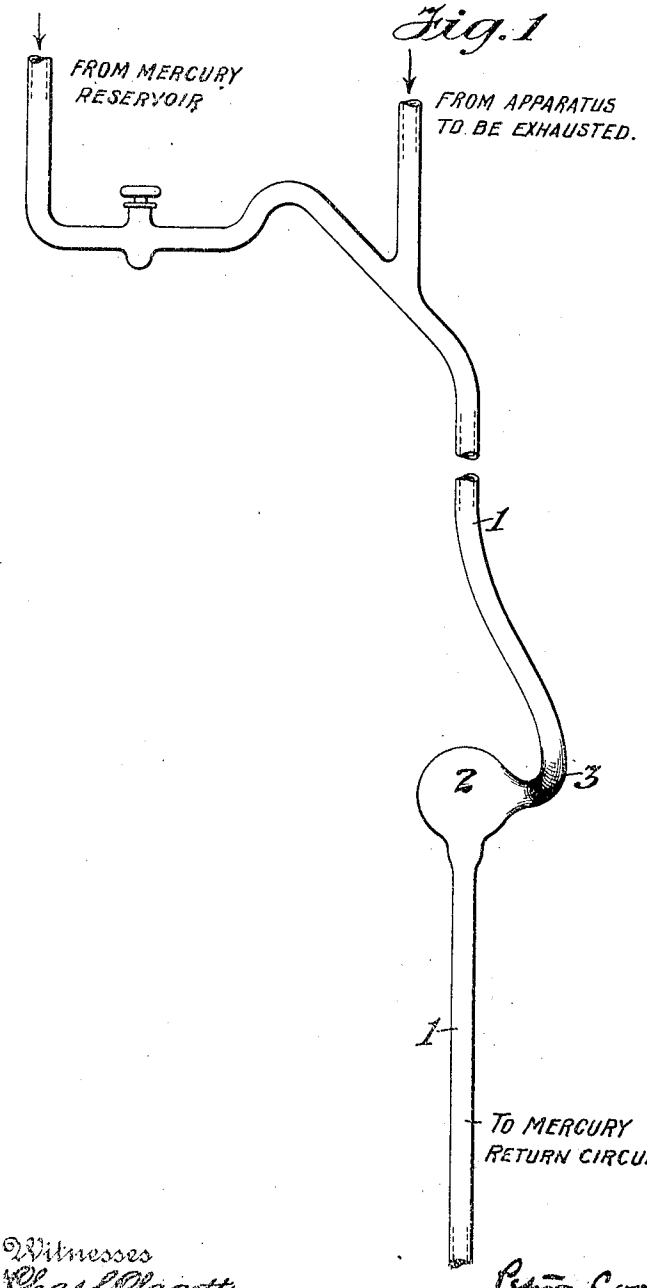
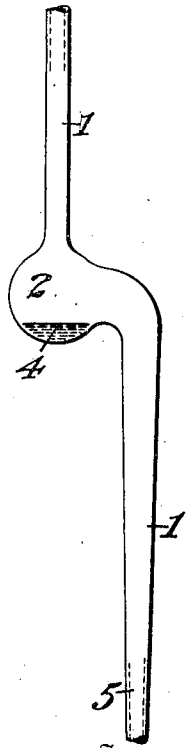


Fig. 2



Witnesses
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UNITED STATES PATENT OFFICE.

PETER COOPER HEWITT, OF NEW YORK, N. Y., ASSIGNOR TO COOPER HEWITT ELECTRIC COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

MERCURY-PUMP.

No. 849,394. Specification of Letters Patent. Patented April 9, 1907.

Application filed May 27, 1904. Serial No. 210,076.

To all whom it may concern:

Be it known that I, PETER COOPER HEWITT, a citizen of the United States, and a resident of New York, county of New York, State of New York, have invented certain new and useful Improvements in Mercury-Pumps, of which the following is a specification.

I have found that by making the fall-tube of a mercury-pump of such shape and arrangement that the energy acquired by the falling mercury is made to expend itself in friction, thus obviating the water-hammer effect in the tube, the life of the fall-tube may be materially prolonged and a greater distance of fall can be obtained, and consequently a more rapid operation of the pump, without passing the breaking limit of the tube when of glass. To this end I cause the mercury to fall into a small puddle of mercury in a bulb, which bulb should be interposed in the fall-tube at a reasonable distance above the barometric height, somewhere about three inches to six inches, depending on the quality of the glass and the bore of the tube, or I cause the mercury to strike tangentially upon a body of mercury in the fall-tube.

My invention will be understood by referring to the accompanying drawings, in which—

Figures 1 and 2 illustrate two modes of carrying out my invention.

Referring to the first figure of the drawings, 1 is a fall-tube between the ends of which is interposed a bulb 2. This bulb is located in the fall-tube at a point some three to six inches above the barometric height. The upper part of the fall-tube is made spiral in shape where it enters the bulb 2, as shown at 3. The mercury passing down the upper part of the tube 1 is thus caused to enter the bulb on a curve and acts tangentially upon any mercury which may accumulate in the lower part of the said bulb. Thereby a twirling movement of the mercury is produced in the lower part of the tube 1, tending to produce a vortex and calculated to cause the mercury to fall through a greater distance than if the fall took place in a straight tube of uniform diameter.

In Fig. 2 the bulb 2 is differently placed with respect to the upper and lower parts of the fall-tube 1, being so disposed as to permit a mass or puddle 4 of mercury to accumulate in the bottom of the bulb. The lower part of the tube 1 is tapered from the point where it leaves the bulb 2 to a point, as 5, where it becomes of the same diameter as the tube 1 above the bulb. I find that the mercury falling from the upper part of the tube 1 from the puddle 4 and passing out from the enlarged lower part of the tube produces a pumping action which is in excess of the ordinary action in fall-tubes. The puddle 4 overflows into the lower tube 1, and as the gas is much denser in the bulb 2 than in the lower tube, due to the height of the fall-tube above the bulb, the pumping capacity of the lower part of the tube is ample to carry away all of the gases brought there through the upper part thereof.

The same effect as to the carrying away of the gases is produced by the construction illustrated in Fig. 1.

I claim as my invention—

1. A fall-tube for mercury-pumps having a bulb interposed therein, the portion of the tube leading into the said bulb being formed into a spiral.

2. A fall-tube for mercury-pumps having a bulb interposed therein, and having a portion of the tube leading into the bulb formed into a downwardly-inclined spiral whereby the mercury entering the bulb strikes tangentially upon the mercury in that part of the tube which is below the bulb.

3. In a fall-tube for mercury-pumps, a bulb interposed between the upper and lower parts thereof, the lower part of the tube at the point where it is connected with the bulb being of larger diameter than the upper part of the fall-tube.

Signed at New York, in the county of New York and State of New York, this 23d day of May, A. D. 1904.

PETER COOPER HEWITT.

Witnesses:
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WM. H. CAPEL.