

T. R. Timby.

Mercurial Barometer.

N^o 36,872.

Patented Nov. 4, 1862.

Fig. 1.

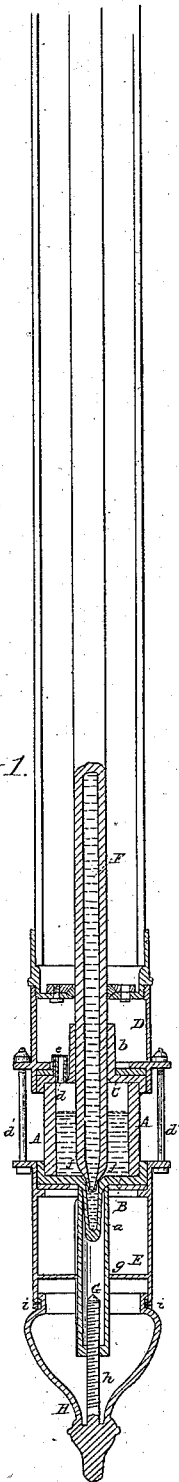
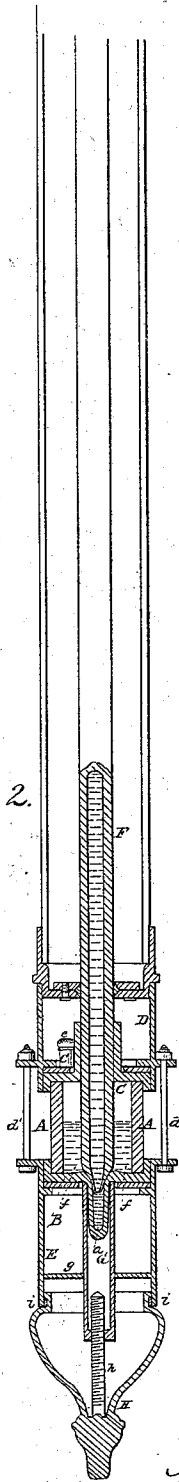


Fig. 2.



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UNITED STATES PATENT OFFICE.

THEODORE R. TIMBY, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN MERCURIAL BAROMETERS.

Specification forming part of Letters Patent No. 36,872, dated November 4, 1862.

To all whom it may concern:

Be it known that I, THEODORE R. TIMBY, of the city of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in the Mercurial Barometer; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a central section of the lower part of a barometer with my improvements, showing it in an operative condition. Fig. 2 is a similar section illustrating the mode of inclosing the mercury within the tube.

Similar letters of reference indicate corresponding parts in both figures.

This invention consists in a certain construction of the mercurial barometer, which provides for the shutting up of the mercury within the tube to render it portable, and permits the expansion of the mercury so shut up, and guards against the breaking of the tube.

It also consists in a certain construction of and mode of applying the cover of the cistern, whereby the danger of the tube being broken at its connection with the cistern is obviated.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A B C is the cistern composed of a hollow cylinder, A, of glass or iron, having an elastic india-rubber bottom, B, and cover C, the whole secured together by being clamped by long screw-bolts *d' d'*, between two metal cylinders, D and E, which constitute portions of the barometer-case. I prefer the cylinder A to be of glass, on account of its transparency. The cistern-bottom B is provided in the center with a cup-like depression, *a*. The cover C is made with a neck, *b*, to fit the exterior of the glass-tube F, which contains the column of mercury, and it is made with a nozzle, *c*, for the admission of air above the surface of the mercury in the cistern, such nozzle having fitted to it a short glass tube, *d*, to keep it open and permit the tying over it of a piece of silk, leather, or other material, *e*, which is pervious to air, but impervious to mercury. The neck *b* is secured to the tube F by being bound tightly round with thread, either with or without the aid of cement. The tube F, which is directly in the

center of the chamber, is provided near the mouth with a shoulder, *f*, which is capable of fitting closely around the margin of the cup-like depression *a* in the cylinder-bottom when the latter is suitably raised up.

Directly under and in line with the glass-tube F there is an open-topped metal tube, G, the interior of which is smaller than the exterior of F, and into which the chamber *a* enters. This tube has provided for it in the cylinder E a fixed guide, *g*, in which it is capable of moving longitudinally, but not of turning; and in the lower end of the said tube there is provided a female screw-thread for the reception of a male screw, *h*, which is rigidly attached to the bottom H of the barometer-case, which is attached to the cylinder E at *i i* in such a manner as to permit it to be turned independently of the said cylinder and the rest of the case, for the purpose of turning the screw *h*, and thereby raising or lowering the tube G.

To place the barometer in an operative condition, the tube G is so adjusted by turning the bottom H of the case that it will not hold the bottom of the cistern in contact with the bottom of the tube F, but will allow the mercury to flow freely between them.

To make the barometer portable, it is held in such a position that the mercury is caused to fill entirely the tube F, and while in this position the bottom B of the cistern is brought close up to the shoulder *f* of the tube F, to shut up the mercury within the said tube by turning the bottom H of the case in the proper direction to make the screw *h* move the tube G toward the tube F. The tubes F and G may then be considered as portions of a tube whose continuity is interrupted by the bottom of the cistern, and the tube G becomes an expansion-chamber, within which the cup-like depression *a* in the bottom of the cistern yields to the expansion of the mercury in the tube F, and so prevents the bursting of the said tube by such expansion. The adjustment of the tube G also serves, by its action on the flexible cistern-bottom B, as a means of adjusting the level of the mercury in the cistern to the proper zero-line for the most accurate observations, such line being marked on the glass cylinder A, or indicated in any other suitable manner.

It is not absolutely necessary that the cistern-bottom B be made with the cup-like depression *a*, and that the tube F be provided with a shoulder, *f*, as described, for if the bottom B be flat in its normal condition and the tube F be made with a stub or square end, the pressure on the bottom due to the expansion of the mercury will, in the tube F, cause it to be forced into the tube or chamber G in a cup-like form. I prefer, however, to make the cistern-bottom and tube F as at first described and represented in the drawings.

I do not claim making the cistern of the barometer with a flexible bottom, nor the closing of the mouth of the tube by the operation of a screw on the said flexible bottom; but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The tube G, arranged in line with and below the tube F, containing the column of mercury, and combined therewith by means of the interposed elastic bottom of the cistern in such manner as to constitute an expansion-chamber in which a portion of the said bottom is capable of expanding, substantially as and for the purpose herein specified.

2. Making the cistern with a cover of india-rubber or other elastic material, combined with the tube F and fitted with a tube, *d*, of glass or other hard material, substantially as and for the purpose herein specified.

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Witnesses:

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