F. S. BALDWIN.

Measuring-Bottle.

No. 165,054. Patented June 29, 1875.

Fig. 5.

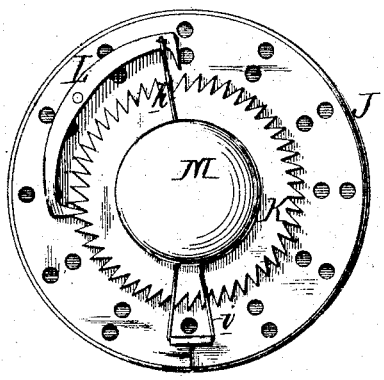


Fig. 6.

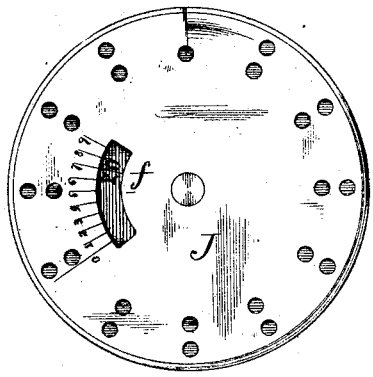


Fig. 4.

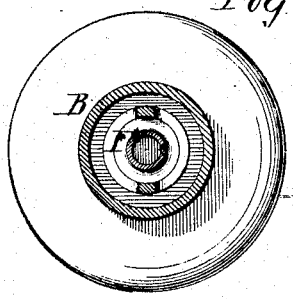


Fig. 1.

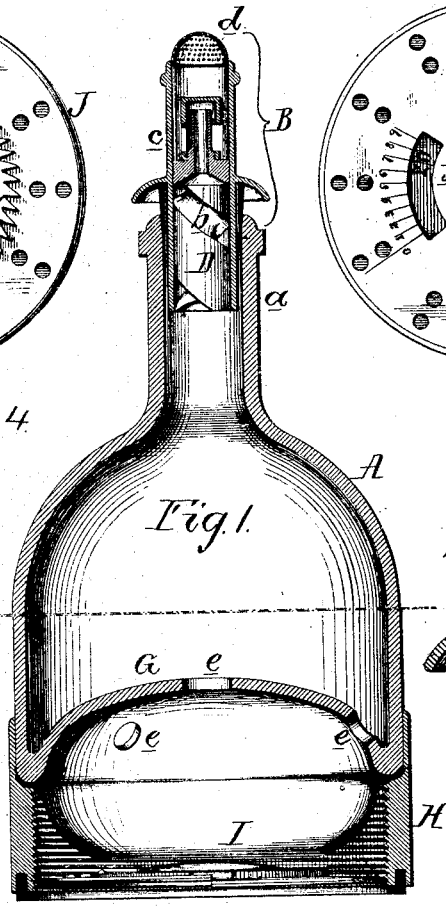


Fig. 3.

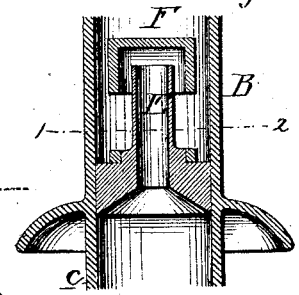


Fig. 7.

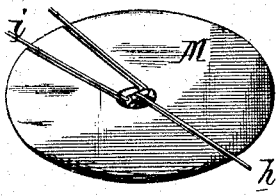
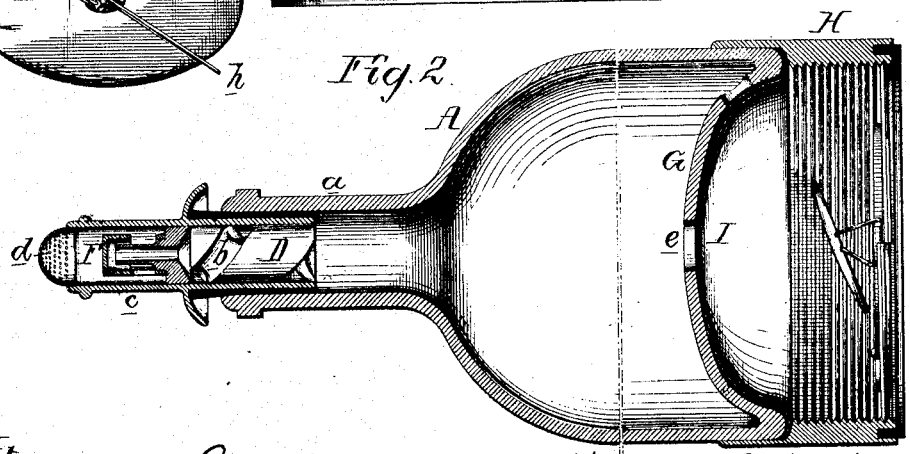


Fig. 2.



Witnesses,
Harry Smith
Hubert Howson

Frank S. Baldwin
by his Attorneys,
Howson and Son.

UNITED STATES PATENT OFFICE.

FRANK S. BALDWIN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN MEASURING-BOTTLES.

Specification forming part of Letters Patent No. **165,054**, dated June 29, 1875; application filed May 27, 1875.

To all whom it may concern:

Be it known that I, FRANK S. BALDWIN, of Philadelphia, Pennsylvania, have invented an Improved Measuring-Bottle, of which the following is a specification:

The object of my invention is to so construct a measuring-bottle that a given portion only of its contents can be poured out every time it is tilted; and a further object of my invention is to register the number of times the bottle is tilted, for the purpose of pouring out a given quantity of its contents. These objects I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figure 1 is a vertical section of my measuring-bottle; Fig. 2, the same as it appears when tilted; Fig. 3, an enlarged view of part of the mouth-piece; Fig. 4, a sectional plan on the line 1 2, Fig. 3; and Figs. 5, 6, and 7, views appertaining to the registering device.

A is a bottle, to the neck *a* of which is adapted a mouth-piece, B, consisting of a tube, *c*, tightly fitted to its place through the medium of intervening packing of gum or other suitable material, and within the lower portion of this tube is formed a spiral passage, *b*, in the present instance, by the snug fitting of a spirally-grooved plug, D, in the tube. Above this plug, and communicating with the spiral passage, is an internal tube, E, above which is an inverted cup, F. It will be seen that the contents of the bottle, when the latter is tilted, cannot escape from the mouth-piece without first flowing through the spiral passage, then through the tube E, then retreating to a distance determined by the flange of the cup, the liquid finally escaping through the perforated guard *d*, secured to the end of the mouth-piece. The object of compelling the liquid to take this circuitous course is to prevent the entrance of air through the mouth-piece during the pouring out of the liquid. The bottom G of the bottle is made of the concavo-convex form commonly adopted in the manufacture of ordinary bottles, and has a number of openings, *e*—three in the present instance—for a purpose explained hereafter. To the lower end of the bottle is tightly fitted and secured the annular base H, between an internal shoulder on which and the bottle is confined the edge of the elastic diaphragm I. The interior of this base is threaded for the reception of the threaded edge of the disk J, in which are a number of holes for the admission of air. On the upper surface of the plate is a pallet-wheel, K, which is arranged to turn on a central pin on the said plate, and to the latter is also hung the pallet-lever L, having at each end a projection adapted to the teeth of the wheel. A button, M, is connected by a link, *i*, to the disk, and by a link, *h*, to one arm of the pallet-lever, the button with its two links forming a knee-joint, so that by raising and lowering the said button—a duty performed through the medium of the elastic diaphragm, as explained hereafter—a vibratory motion will be imparted to the pallet-lever, and consequently an intermittent motion to the pallet-wheel. This disk J has a segmental opening, *f*, for the display of marks and figures arranged in a circle on the under side of the pallet-wheel, and one edge of the segmental opening *f* has marks and figures which, in conjunction with those of the pallet-wheel, indicate the number of intermittent movements of the same. There are, for instance, fifty teeth on the pallet-wheel, and the latter has five marks at equal distances apart, these marks being numbered consecutively from naught to forty. The marks on the edge of the opening are so graduated that, if continued in a circle, there would be as many marks as there are teeth in the pallet-wheel, the marks being numbered from naught to nine. The position of the numbered marks on the pallet-wheel with reference to those on the disk will indicate the number of intermittent movements made by the wheel from its starting-point.

When the bottle is in the position shown in Fig. 1, the contents will have free access to and will fill the space between the elastic diaphragm and the bottom G of the bottle, but no more liquid can be poured from it during one tilting of the bottle than equals the quantity contained in the said space, for on tilting the bottle, say, to the position shown in Fig. 2, the diaphragm will yield, and, as the yielding continues, the liquid will flow through the circuitous passage of the mouth-piece without permitting the air to enter the same. The mo-

ment the diaphragm reaches the bottom of the bottle the openings in the latter will be closed, and there can be no further flow of liquid from the bottle until the latter is replaced in a vertical position and again tilted.

The quantity of liquid which can be poured from the bottle will be determined by the adjustment of the disk J within the annular base. By elevating this disk the space between the bottom of the bottle and the diaphragm can be contracted, and by lowering the disk the space can be expanded, the capacity of the space always determining the quantity of liquid which can be poured from the bottle during one tilting of the same.

When the bottle is tilted the diaphragm will yield and permit the button M to move by its weight or by the action of a spring toward the neck of the bottle, thereby imparting one movement to the pallet-lever, which receives its other movement, when the bottle is restored to an upright position, from the flexible diaphragm; hence the indicator will show the number of measures of liquid which have been withdrawn from the bottle.

It will be noticed that the pallet-wheel is always under the control of the pallet-lever, which cannot be tampered with.

I claim as my invention—

1. A measuring-bottle, in which a perforated bottom, G, is combined with a flexible diaphragm, I, substantially in the manner and for the purpose described.

2. The combination of the bottle, its perforated bottom, and flexible diaphragm with the detachable mouth-piece B, with which a circuitous passage is formed, substantially as and for the purpose described.

3. The combination of the exterior tube *c* of the mouth-piece B with the spiral passage *b*, tube E, and inverted cup F, all substantially as set forth.

4. The combination of the bottle, its perforated bottom, the annular base H and adjustable disk or plate J.

5. The combination of the flexible diaphragm, the pallet-lever L, and pallet-wheel K with mechanism substantially as described, through the medium of which motion is communicated by the diaphragm to the said lever.

6. The combination of the pallet-wheel K, having figures arranged in tens, and in a circle with a plate, J, having an opening, *f*, and marks and figures indicating units on the edge of the opening, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

F. S. BALDWIN.

Witnesses:
HARRY SMITH,
HUBERT HOWSON.