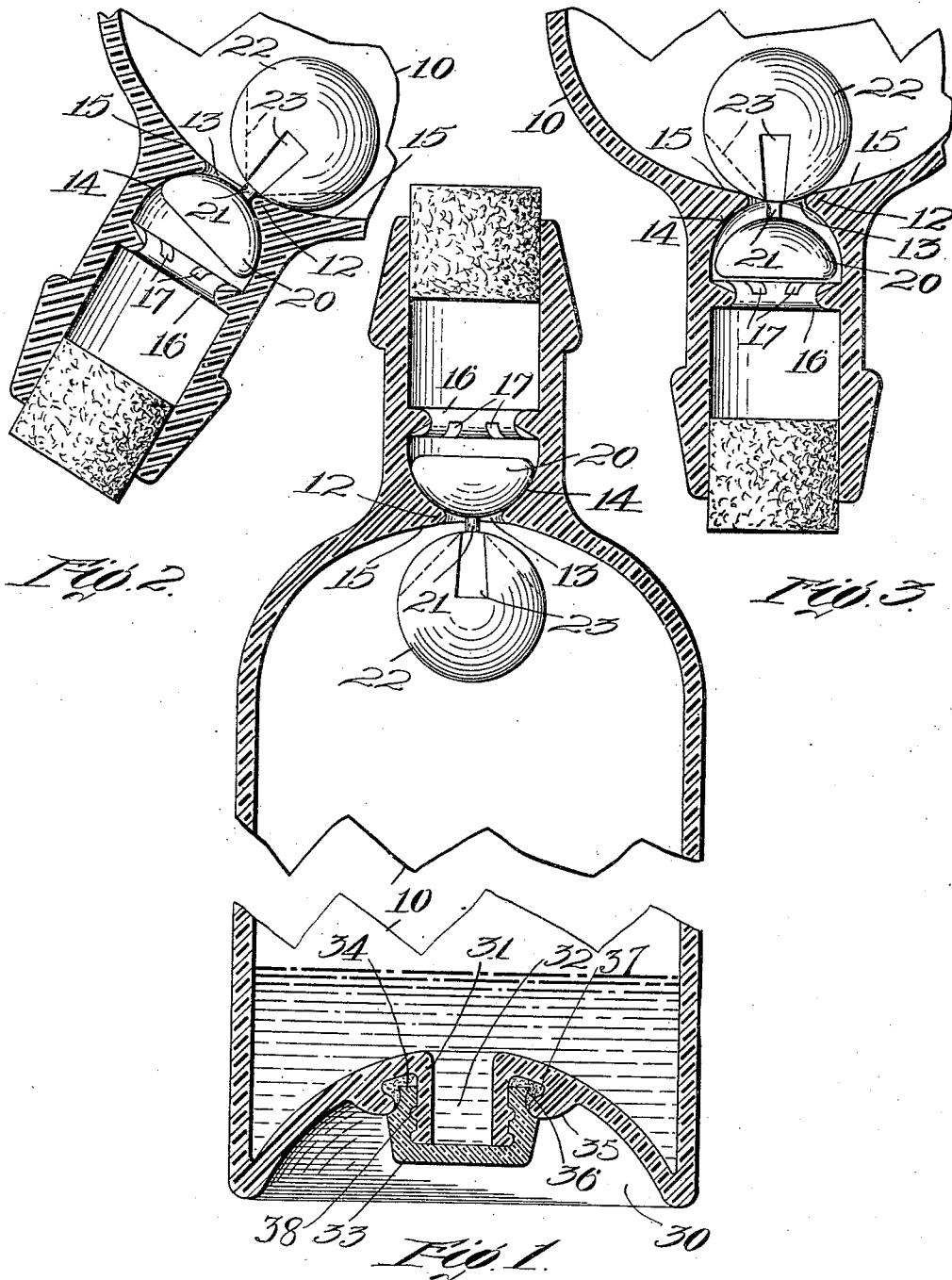


S. W. PHELPS.
NON-REFILLABLE BOTTLE.
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984,844.

Patented Feb. 21, 1911.



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UNITED STATES PATENT OFFICE.

SIDNEY W. PHELPS, OF SOUTHBRIDGE, MASSACHUSETTS.

NON-REFILLABLE BOTTLE.

984,844.

Specification of Letters Patent.

Patented Feb. 21, 1911.

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To all whom it may concern:

Be it known that I, SIDNEY W. PHELPS, a citizen of the United States, residing at Southbridge, in the county of Worcester and State of Massachusetts, have invented a new and useful Non-Refillable Bottle, of which the following is a specification.

This invention relates to a non-refillable bottle.

The principal objects thereof are to provide a simple and effective construction whereby the bottle can be prevented absolutely from being refilled; and to provide a permanent seal for the bottom of the bottle adapted to be sealed after the bottle is once filled through the bottom.

Several bottles have been devised in which a valve in the neck is controlled by a weight hanging down into the bottle. So far as I am aware, however, these depend entirely upon the efficiency of the mere weight of the counterweight below.

One of the important objects of this invention is to provide means whereby the weight in itself will be able to exert a wedging action on the adjacent portions of the bottle so as to hold the valve firmly on its seat whenever the bottle is in inclined position.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is an elevation of a bottle partly in section showing one form of the invention applied thereto; Fig. 2 is a sectional view showing the upper part of the bottle only and illustrating the parts when in inclined position; and Fig. 3 is a similar view showing the parts of the bottle in inverted position.

The bottle 10 is shown as provided with a neck having at some convenient point, preferably near the bottom thereof, a circular inwardly extending flange 12. This flange is provided with a central passage 13 therethrough, and on the top of the flange is a valve seat 14 which is shown as of hemispherical form. The lower side of the passage is provided with a surface 15 which gradually slants off into the inner surface of the bottle. Above the valve seat 14 is an integral, inwardly extending ring or projection 16 having grooves 17 on its underside. Below this ring is a hemispherical valve 20 adapted to fit the valve seat 14.

This valve is provided with a central, integral stem 21 which extends through the passage 13 and has rigidly mounted upon it below a counterweight 22. This weight is shown as of spherical form, and has passages or grooves 23 on its upper surface.

The operation of the device is as follows:—When the bottle is in upright position as shown in Fig. 1, the valve 20 is held on its seat by the combined weight of the valve and the counterweight 22, so that no liquid can be introduced without raising the valve. When the bottle is inclined as shown in Fig. 2 the weight 22 moves down along the surface 15 and on account of the wedge-shaped cross section of the flange 12 and the gradual sloping shape of the surface 15 the valve 20 will be held to its seat as indicated in Fig. 2, not only by the weight of the counterweight 22 but also by the wedging action thus secured. It will be seen that the counterweight and valve are wedged on the opposite sides of the flange 12 so that in order to remove the valve from its seat it will be necessary to turn it so as to get the weight 22 out of contact with the surface 15. This obviously is much more difficult than merely to draw the valve forward in the neck as would be the case with those constructions in which the weight alone is depended upon to hold the valve on its seat in all positions of the bottle. It will be understood of course that on account of the shape of the valve and its seat a complete closure of the passage for the liquid will be obtained in all angular positions of the valve. It will also be understood that although both the valve and its seat are shown as constituting complete hemispheres, most of the objects of this invention can be secured if either one of them is of this form, the other being of annular form, but its surface constituting a part of a sphere of equal diameter to that of the other part. In order to remove the contents from the bottle it must be completely inverted in which case the weight 22 rests on the surface 15 and covers the passage 13. The slots or passages 23 are provided for the purpose of permitting the liquid to pass out at this time. At the same time it will be understood that the top of the valve 20 will be close to the ring 16 so that the desirability of the passages 17 will be seen. It will be understood of course that any of the ordinary well-known means may be employed in the

neck in addition to the ring 16 for the purpose of preventing tampering with the valve if that should be thought necessary or desirable.

5 As a bottle constructed in this way must be complete in all its parts when it leaves the factory, means outside the neck must be provided through which it can be filled. For this purpose the bottom 30 is shown as
10 of the reëntrant style having a cylindrical projection 31 at the center thereof through which is a passage 32 communicating with the interior. Through this passage the bottle is filled preferably while in inclined position, so that the valve 20 shall be on its seat. After the bottle is filled a cap 33 is placed over the projection 31. The edge 34 of the cap extends inside a circular flange 35 which projects inwardly and downwardly from the bottom of the bottle. Before the cap is placed in position, the space between the flange 35 and the projection 31 is filled with a glass cement in a plastic form. Then the cap is placed in position
25 and forced to its seat and the cement allowed to harden. This permanently seals the bottle at the bottom. The cap preferably is provided with a groove 36 for admitting the cement, and forming a lock, it being observed that the lock on the outside is formed by the reëntrant angle 37 at the bottom of the flange 35. Preferably screw-threads 38 are employed between the projection and the cap for further assisting
35 in holding it while the same is hardening.

While I have illustrated and described a preferred embodiment of the invention, I am aware that many modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited to all the details of construction shown and described, but

45 What I do claim is:—

1. As an article of manufacture, a non-refillable bottle having a neck provided with an opening therethrough and at the bottom thereof an inwardly extending flange provided with an opening therethrough at the center, the top of said flange having a hemispherical valve-seat, and the bottom of said flange having a surface gradually sloping downwardly toward the sides of the bottle,
50 a valve in the neck of the bottle above said flange, of spherical shape on the bottom adapted to fit said valve seat in all positions thereof and provided with a central radial short stem projecting downwardly through
55 said opening, a weight heavier than said valve rigidly mounted on said stem below said flange and of such shape as to engage said sloping surface on the underside of the flange when the bottle is tilted so as to
60 cause the valve and weight to be wedged on

opposite sides of the flange, whereby the valve will be held firmly against its seat whenever the bottle is tilted the said weight and valve being supported by the flange when the bottle is in inverted position, said
70 weight having means whereby liquid can flow into the neck of the bottle when it is inverted, and means in the neck for preventing the insertion of an instrument to hold up the valve.

2. As an article of manufacture a non-refillable bottle having a body and a neck and provided at a point between the body and neck with an inwardly extending integral flange having a central opening, the
80 top of said flange having a hemispherical valve-seat, and the bottom having a curved surface gradually sloping downwardly toward the sides of the body, the neck being provided with an integral inwardly-extending
85 ring above said valve-seat having grooves for the lower side thereof, a valve fitting said hemispherical valve seat and having a short stem fitted through said opening and provided on the bottom there-
90 of with a counter weight heavier than said valve in position to engage the curved surface on the bottom of said flange when the bottle is inclined or inverted said weight having means whereby liquid can flow into
95 the neck of the bottle when it is inverted, and means in the neck for preventing the insertion of an instrument to hold up the valve.

3. As an article of manufacture, a bottle
100 having an open neck provided at the bottom thereof with a flange extending inwardly and having a central passage there-through the upper surface of said flange being provided with a valve seat, and the
105 lower surface thereof sloping gradually downward toward the sides of the bottle, a valve adapted to fit on said seat in various angular positions and having a stem extending through the passage, and a spherical
110 weight mounted rigidly on said stem at a point immediately below the valve and adapted to engage said lower surface to hold said valve firmly on its seat when the bottle is tilted and of sufficient size to fill
115 said passage when the bottle is inverted, said weight having passages along its upper surface adapted to permit the flow of liquid when the bottle is inverted said neck having means above said valve for preventing
120 the insertion of an instrument to hold up the valve.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

SIDNEY W. PHELPS.

Witnesses:

A. E. FAY,

C. FORREST WESSON.