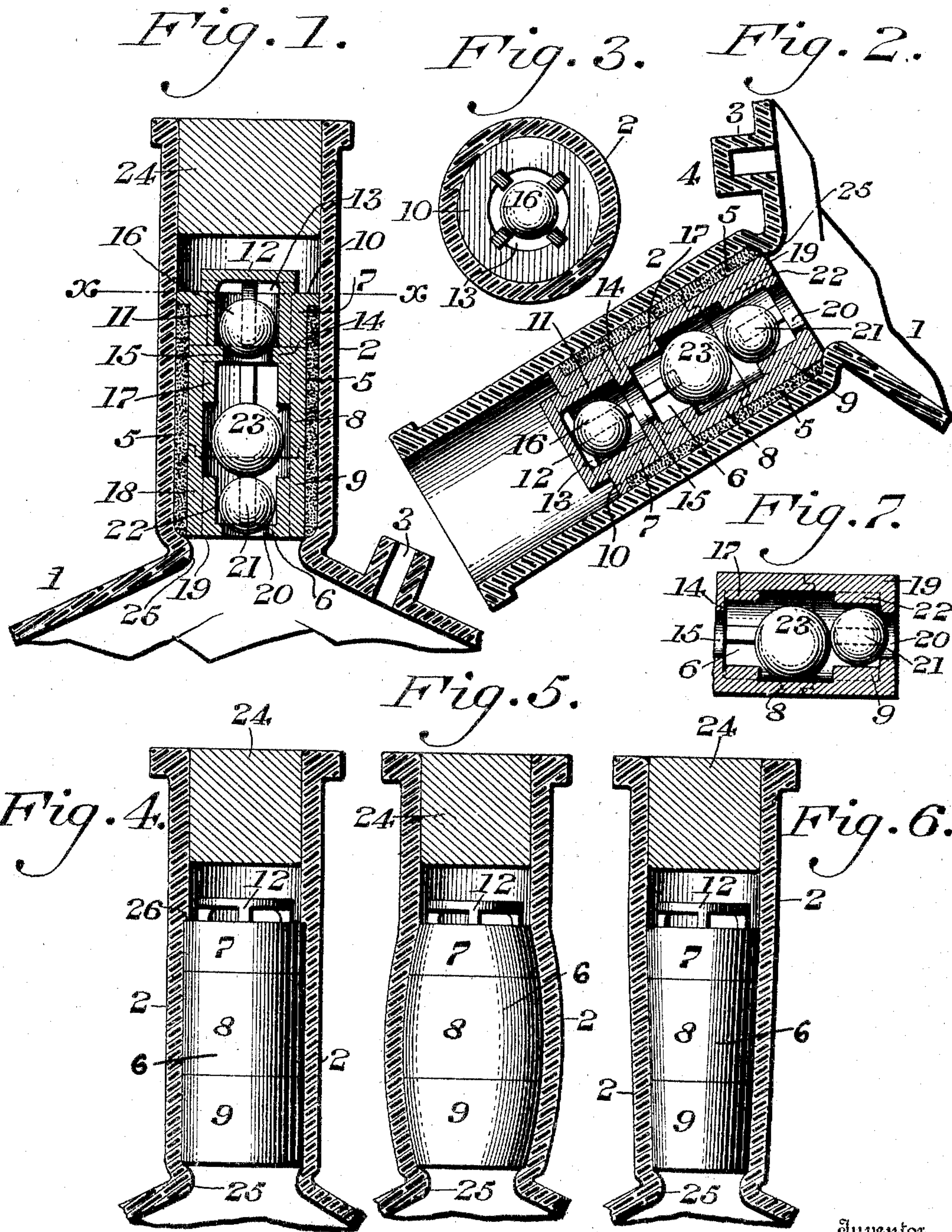


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W. PLISH.  
NON-REFILLABLE BOTTLE.  
APPLICATION FILED MAR. 4, 1904.



Witnesses

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## NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 780,062, dated January 17, 1905.

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*To all whom it may concern:*

Be it known that I, WALTER PLISH, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Non-Refillable Bottles, of which the following is a specification.

My invention relates to non-refillable bottles. It comprises a plurality of valves on separate seats adapted to prevent ingress of a liquid.

It further consists in providing additional means for retaining one of said valves on its seat.

It further consists of a cage or retaining device in which the valves are assembled before the device is placed in the bottle.

Figure 1 represents in vertical section the neck and upper portion of a bottle embodying my device. Fig. 2 represents the same portion in an inverted position. Fig. 3 represents a plan view through the lines *x x*, Fig. 1. Figs. 4, 5, and 6 represent, partly in elevation, partly in section, modifications of my device. Fig. 7 shows a portion of the device in a different position.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, 1 designates a bottle, of which 2 is the neck, 3 a shoulder-aperture through which the bottle may be filled, and 4 a cap for said aperture. In the neck 2 is secured, by means of a body of cement 5, a cage 6, consisting of superposed portions 7, 8, and 9. The portion 7 is of cylindrical form, preferably provided with an outwardly-extending flange 10, adapted to fill the neck of the bottle 2 and protect the cement, with a plurality of radial wings 11, and with a cap 12, supported above the flange 10 and provided with lateral apertures 13. The middle portion 8 of the cage 6 is also of cylindrical form and provided with a top wall 14, in which is a preferably circular opening 15, adapted to form a seat for a valve 16, contained within the portion 7 of the device. In the upper part of the cylinder 8 are inwardly-extending wings 17. The lower portion 9 of the device has a cylindrical wall 18

and bottom plate 19, in which is a preferably circular aperture 20, adapted to seat a ball 21. Radial wings 22 extend upward from the bottom 19. A ball 23, preferably of larger diameter than the valve-ball 21, plays freely within the portions 8 and 9 of the device and is prevented by the wings 17 from contacting with the opening 15 in the upper wall 14 of the portion 8.

The operation is as follows: The cage 6 and the balls therein contained may be made of china, clay, or any suitable material. The portions 7, 8, and 9 are assembled by placing the balls therein, as shown in Figs. 1 and 2, and cementing them together. The entire device is then cemented into the neck 2 of the bottle, as shown, leaving space thereabove for the insertion of a cork or stopper 24 of usual or convenient form or material. The bottle may be filled either before the cage 6 is secured therein or preferably afterward through the aperture 3. This aperture 3 may then be permanently capped or sealed, as shown in Fig. 2 of the drawings. It is obvious that when the bottle is in its upright position, as shown in Fig. 1, access thereto is effectually prevented by reason of the valves 16 and 21, the latter of which is forced to its seat by the weight of the larger ball 23. It is also clear that when the bottle is tilted, as shown in Fig. 2, all the balls will move from the positions shown in Fig. 1, whereby both apertures 15 and 20 will be opened. The wings 11, 17, and 22 will act to keep the balls in position and to prevent their seating themselves so as to interfere with the outflow of the liquid and also act as guides to properly direct the valves in their seats. It is obvious that by providing a plurality of valves on separate seats, through all of which liquid must pass, a return or inflow of liquid is effectually prevented and that the larger and heavier ball 23 will act to forcibly seat the valve 21 and prevent its sticking even if it were slightly gummed by liquid thereon. It will be noted that the heavy ball 23 engages with the wings 17, so that it can under no circumstances be gummed against any wall of the cage.



In Figs. 4, 5, and 6 of the drawings I have shown various forms of my device engaged in the neck 2 of the bottle without the use of cement.

5 In Fig. 4 of the drawings the neck 2 of the bottle is provided with an interior shoulder 26, adapted to engage over the upper portion of the portion 7 of the cage 6. In this case the cage is put into the neck of the bottle  
10 during its construction and before it is placed in the leer and firmly held therein by the contraction of the glass during cooling.

In Fig. 5 of the drawings the cage 6 is shown as barrel-shaped, the lower portion of  
15 the neck of the bottle 2 being adapted to inclose the same and to be tightly engaged therewith by the process of cooling.

Fig. 6 of the drawings shows the lower portion of the bottle 2 as tapered and the cage  
20 6 as having a corresponding taper. In this case the cage may be introduced into the neck of the bottle after it is blown and before it goes into the leer.

In all the forms shown an internal shoulder  
25 25 is formed between the body 1 and neck 2 of the bottle. This acts to seat the cage 6 when first dropped into position.

It will be noted that the flange 10 is of the same diameter as the interior of the neck 2  
30 of the bottle, so that it acts to force before it the mass of cement 5 when the cage is being inserted into the neck.

An important feature of my device is shown in Fig. 7 of the drawings, which represents  
35 a part of the cage 6 with the balls therein as it would appear when the bottle was placed in a substantially horizontal position. It will be seen that the valve-ball 21 is held to its seat 20 by the pressure thereagainst of the  
40 larger and heavier weight-ball 23, which tends to drop down on the side wall of the portion 8. In doing so it is forced by the wings 17 against the ball 21, whereby the latter is seated.

45 Among the particular advantages of my device may be named the feature last described by means of which the bottle is prevented from being partially refilled when immersed in a horizontal position in a liquid. Among  
50 other advantages are the lateral openings 13 under the cap 12, by which the introduction of a wire to tamper with the valve is obstructed. It will also be seen that even if the wire were introduced into one of these aper-  
55 tures and could be operated to raise the ball 16 it could not pass this ball to reach the ball 23, and if by any possibility this last-named ball was moved from its seat the lower valve-ball 21 would still remain seated and prevent  
60 ingress of liquid into the bottle. The upper ball 16, therefore, is not a mere duplication of a valve. It serves the additional purpose of forming a very efficient obstruction to the access of any instrument to the second valve

21 beneath or will prevent filling by suction 65 and vacuum combined.

It will be evident that various changes may be made by those skilled in the art which may come within the scope of my invention, and I do not, therefore, desire to be limited in  
70 every instance to the exact construction herein shown and described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

75 1. A non-refilling device adapted to be secured in the neck of a bottle and consisting of a cage providing a plurality of valve-seats, balls engageable in each of said seats, a movable weight adapted to force one of said balls  
80 into position, and wings having recesses therebetween by which the outward travel of said weight is limited.

2. A non-refilling device comprising a cage formed of a plurality of portions of material  
85 adapted to resist the heat of the leer providing valve-seats and heat-resisting valves therein in combination with a bottle, said cage being secured in said bottle by its contraction  
90 during cooling.

3. A non-refilling device comprising a plurality of superposed valve-seats, movable ball-valves on said seats, a weight-ball above one of said valve-balls and operative to force said  
95 valve-ball to its seat, and a plurality of radial wings having recesses therebetween against which said weight impinges when the bottle is inverted.

4. A non-refilling device comprising a valve-seat, a valve-ball on said seat, a weight-ball  
100 adjacent said valve-ball and a plurality of radial wings having spaces therebetween against which said weight-ball impinges, whereby said weight-ball is operative to hold said valve-ball to its seat when the device is in a sub-  
105 stantially horizontal position.

5. A non-refilling device comprising a cylindrical portion, a valve-seat in said portion, a valve-ball on said seat, a weight-ball adjacent  
110 said valve-ball and wings having recesses therebetween in said cylindrical portion adapted to force and hold said weight-ball against said valve-ball when the device is in a substantially horizontal position.

6. A non-refilling device comprising a cylindrical portion, a valve-seat in said portion, a valve-ball for said seat, wings in said portion  
115 having recesses therebetween for guiding the said ball to said seat, a weight-ball adjacent said valve-ball, wings in said portion adapted to force and hold said weight-ball against said  
120 valve-ball, a second seat, a ball-valve for said second seat, and wings for guiding said second ball-valve to said second seat.

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