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A. W. PARTRICK.
NON-REFILLABLE BOTTLE.
APPLICATION FILED JULY 1, 1909.

Patented May 31, 1910.

2 SHEETS—SHEET 1.

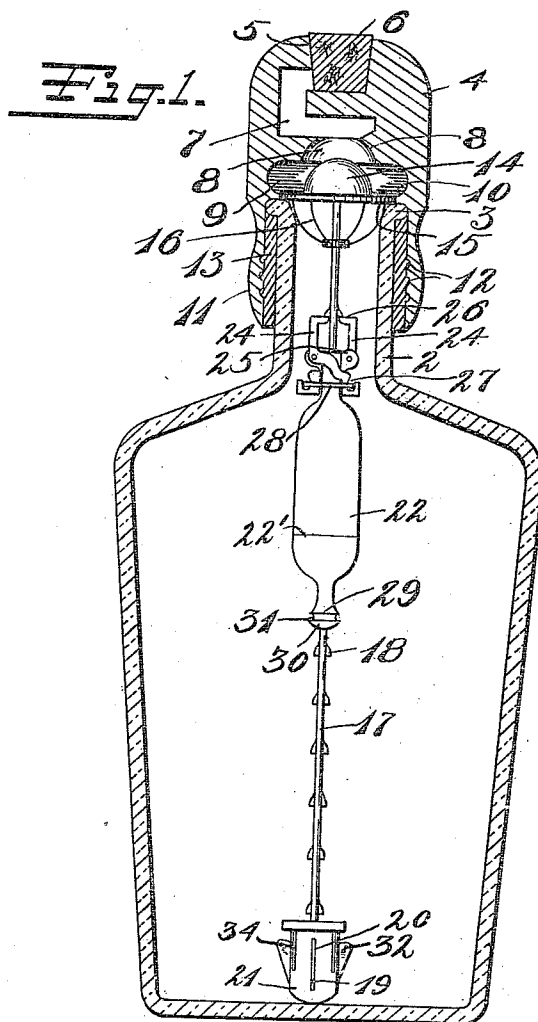
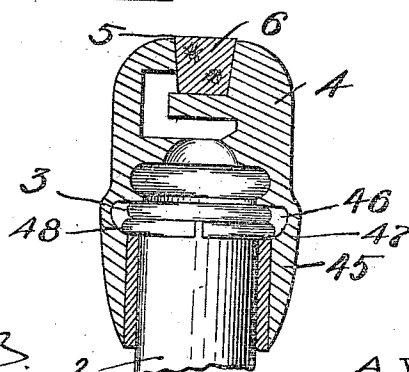


Fig. 5.



Witnesses:
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Fred M. Dannufelser

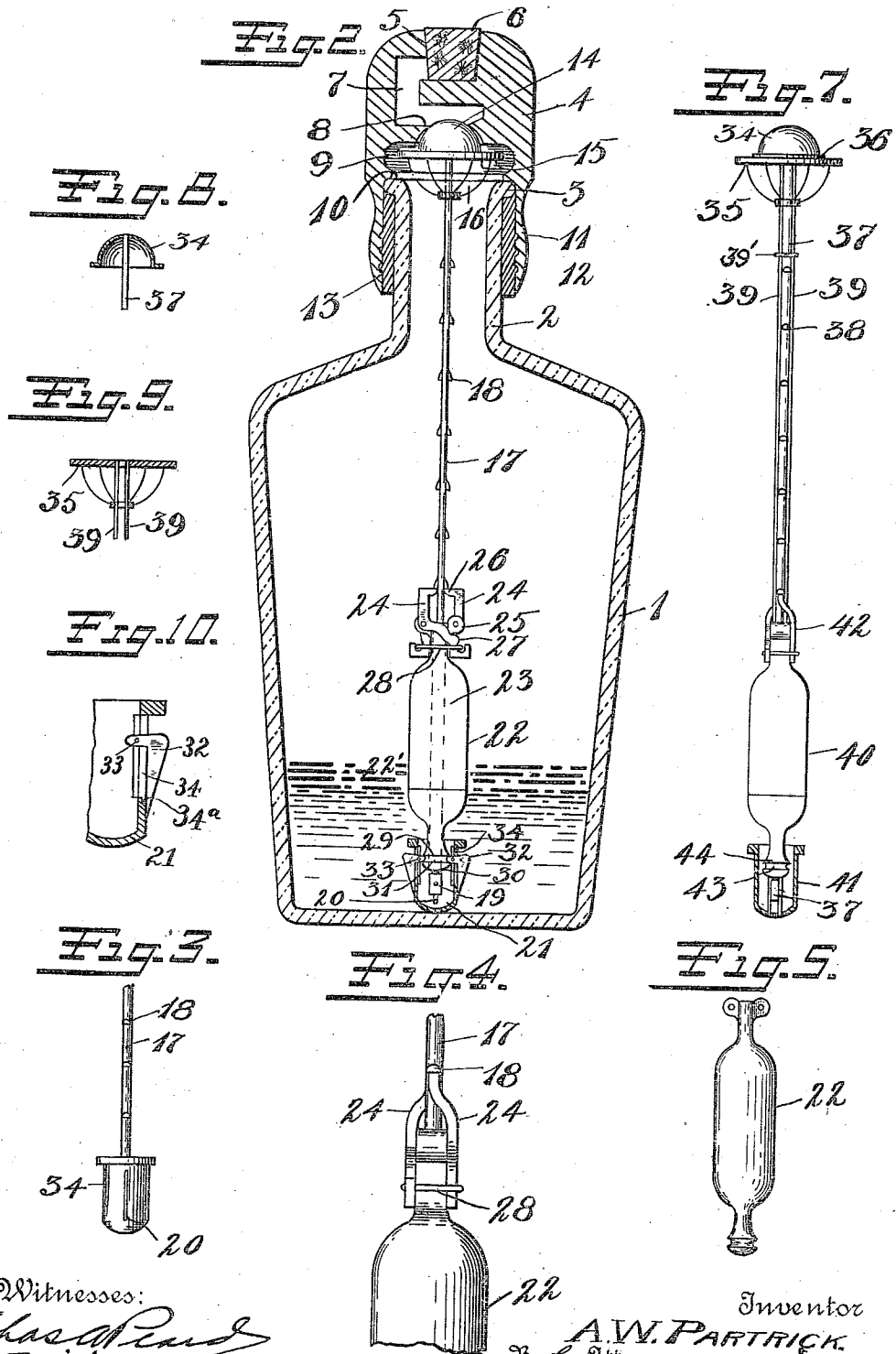
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UNITED STATES PATENT OFFICE.

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NON-REFILLABLE BOTTLE.

959,794.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALFRED W. PARTRICK, a citizen of the United States, residing at Yonkers, county of Westchester, State of New York, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a full, clear, and exact description.

My invention relates to improvements in so-called "non-refillable" bottles.

The object of the invention is to provide a construction which will serve to effectually prevent the re-use of bottles after they have been emptied, and a further object is to provide means to indicate to an observer that the bottle has already been used.

A further object is to so arrange this indicating means that should a fraudulent user by any means succeed in partially refilling the bottle, this fact would be apparent to an observer upon an inspection of the position of the means for preventing refilling with relation to the level of the liquid in the bottle.

A further object of the invention is to provide improved means for securing the non-refilling mechanism to the bottle.

With these and other objects in view, as will appear from the appended specification, the invention consists in the construction and arrangement of parts, preferred embodiments of which are illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a bottle and the non-refilling mechanism, the parts being in elevation and showing the valve open. Fig. 2 is a view similar to Fig. 1, showing the position of the mechanism after the bottle has been partially emptied and refilling attempted, showing the valve closed. Figs. 3, 4 and 5 are detail views respectively of separate parts of the mechanism. Fig. 6 is a sectional view of a modified form of head or cap. Fig. 7 is a view of a modified form of the non-refilling mechanism. Figs. 8 and 9 are detail sectional views of parts shown in Fig. 7. Fig. 10 is a detail view of the valve locking mechanism.

My invention illustrated in Figs. 1 to 5 inclusive, comprises a bottle 1 having the usual neck 2 and lip 3. Over the neck and lip is fitted a cap or head 4, preferably composed of porcelain, or other like rigid material. Said cap is provided with an aperture 5 adapted to receive the cork 6, which aper-

ture is connected by a sinuous passage 7 to a valve opening and seat 8, and below the valve opening is an annular comparatively wide recess 9 to accommodate portions of the valve mechanism. Below the recess 9 is a ledge or shoulder 10, adapted to rest upon the top of the lip of the bottle when the cap is in place, and extending downwardly from said cap is a cylindrical portion 11, whose bore is sufficient to pass over the lip 3 of the bottle. The inner surface of the cylindrical bore is provided preferably with annular recesses 12, so that after the cap is in position the annular recess formed between the cylindrical portion of the cap and the neck of the bottle may be filled with suitable cement 13 and thus secure the cap permanently in position upon the neck of the bottle, the annular recesses 12 forming locking recesses to maintain the cement securely attached to the cylindrical portion 11 of the cap.

The non-refilling mechanism proper comprises a semi-circular valve 14 formed preferably of a blank of sheet metal, such as aluminum, and having an annular flange or rim 15 preferably integral therewith, and from the lower side of said flange inwardly extending wires or prongs 16 may depend, which fit snugly within the lip of the bottle and serve to properly seat and center the valve and its flange within the lip of the bottle. These wires also act as guides to control the movement of the valve as hereinafter described. Secured to the under surface of the valve 14 is a rod 17 having a plurality of stop shoulders 18 thereon and arranged at comparatively close intervals throughout the greater portion of the length of said rod but leaving a smooth portion of the rod near its upper end. The lower end of said rod is provided with a cross pin 19, Fig. 2, which engages vertical slots 20 in a hollow weight 21, which normally rests upon the bottom of the bottle, said slots permitting the rod and with it the valve 14 to move vertically for a limited distance with respect to said weight.

Upon the rod 17 is mounted a float 22, which may be formed of any suitable material, preferably porcelain or glass, and is provided with a tubular passage 23 adapted to receive the rod 17, so that the float may be slid freely along said rod. The upper end of the float is provided with a pair of engaging fingers 24 pivoted on suitable ears 25, and having inward projections 26 adapted

to engage beneath the stop shoulders 18 on the rod. The ends of the stop fingers below the pivots, as viewed in Figs. 1 and 2, are of greater weight than those portions
 5 above said pivots, so that when the apparatus is in upright position the engaging ends 26 of said fingers will be held in engagement with the shoulders 18 of the rod 17. Furthermore, the lower ends of said fingers
 10 are widened slightly, as at 27, so that a metal ring, such as 28, and surrounding said lower ends, will slip down over said widened portions and tend to keep said fingers in engagement with the rod 17 when the bottle is
 15 turned upside down. By this means the float 22, while free to slide down the rod 17 as the level of the liquid falls, cannot travel upwardly or toward the valve either when the bottle is tilted or turned completely up-
 20 side down.

The lower end of the float is provided with a pair of annular shoulders 29 and 30, Fig. 2, forming an annular groove 31, which, when the float is in its lowermost position,
 25 will be engaged by a pair of locking fingers 32 having pins 33 by which their inner or locking ends are slidably held in vertical slots 34 in the weight 21. Normally these locking fingers lie at the lowermost position
 30 upon the weight 21 with their lower ends lying against the outer surface of the weight, so that the float must reach its lowermost position before it may be engaged thereby, for the purpose hereinafter to be
 35 described.

In the operation of the device, the bottle is first filled with the desired liquid, the float, weight, rod and valve are then inserted therein, with the float in position on the rod 17.
 40 The cap 4 is then placed over the neck of the bottle and secured thereto. In Fig. 1 the float is shown in the position it will occupy after a portion of the liquid has been removed to an extent to permit the fingers 24
 45 to engage beneath the highest projection on the rod. It is to be understood, however, that when the bottle is full, the float will occupy a position well within the neck of the bottle and the fingers 24 will be above
 50 and free of the highest projection 26. The parts are so balanced that the buoyancy of the float and mass of the weight will be just sufficient to permit the valve to remain open as shown in Fig. 1. When it is desired to
 55 pour out a portion of the contents of the bottle, cork 6 is removed and upon tilting the bottle upon its side the rod and weight will fall to one side, these parts being fulcrumed on the guide wires 16 which move
 60 angularly on the lip of the bottle. Under the guidance of the wires 16, the valve 14 will be moved out of alinement with its seat, hence even though the bottle be tilted sufficiently to cause the valve to slip toward
 65 its seat, it will not be seated accurately

enough to close the valve opening 8. When the bottle is returned to upright position, the rod 17 will again assume the vertical position shown, with the valve resting upon the lip of the bottle and closing the same, while
 70 the float will slip down the rod 17 until the fingers 24 have engaged one of the shoulders 18 on said rod, such downward movement of the float, of course, being determined by its buoyancy with respect to the liquid. It is
 75 to be understood that the shoulders 18 may be spaced apart at sufficiently short intervals to insure the engagement of the fingers 24 therewith, however small the quantity of liquid taken from the bottle, the arrange-
 80 ment of the shoulders here indicated being merely conventional, wherein the shoulders are shown as considerably spaced apart for clear illustration.

When the level of the liquid has been
 85 lowered sufficiently to permit the locking fingers 32 to engage with the shoulders 29 and 30 at the lower end of the float 22, the float and weight 21 will be permanently secured together. Allowance for movement of
 90 the locking fingers 32 upon the weight is provided to permit the float to rise sufficiently and carry with it the rod 17 to seat the valve 14 in the aperture 8, should any fresh liquid be introduced into the bottle.
 95 In tilting the bottle the disk 15 moves around freely in the annular recess 9 and said recess affords ample clearance for egress of the liquid and for admission of air to the
 100 emptying bottle.

Should an attempt be made to refill the bottle when the float is thus in its lowermost position and locked to the weight 21, the rise of the liquid in the bottle will automatically raise the float and with it rod 17
 105 and valve 14 a short distance until the latter is seated in the valve opening 8, thus preventing any considerable further filling of the bottle. Such rise of the float, moreover, will draw up the locking fingers 32 until
 110 their lower ends engage shoulders 34^a, Fig. 10, at the lower ends of the slots 34, thus locking the valve rigidly and securely against its seat. Such fraudulent attempt to refill, however, would be immediately apparent to an observer, by reason of the excessive height of the liquid on the float. To facilitate the detection of such fraud, the float might, if desired, be provided with an
 115 indicating mark, such as 22', to show the normal height of liquid thereon to maintain the balance of the parts and to permit the valve to rest on the lip of the bottle.

In the modified form of my invention illustrated in Figs. 7, 8 and 9, the valve 34 is
 125 made separate from the disk 35, the valve being provided with a flange 36 adapted to be supported by said disk. The rod 37 may pass freely through the disk 35 and be secured to the valve 34 and is provided with
 130

stop shoulders 38. To the disk 35 are secured in any suitable manner the rods 39, which extend down parallel with the rod 37, and, together with said rod, pass through a tubular passage in the float 40, and are secured at their lower ends to the weight 41, whereby the disk 35 and weight 41 are rigidly secured together, the lengths of the rods being such that the disk rests on the lip of the bottle when the weight rests on the center of the bottom of the bottle. The float 40 is provided with the stop engaging fingers 42, similar in all respects to those heretofore described. Likewise the lower end of the float is provided with shoulders 43 and 44 to engage locking fingers also similar to those heretofore described, and operating in the same manner. The rods 39, moreover, are connected by a ring 39' near their upper ends located just above the upper stop shoulders 38 and arranged to be engaged by the fingers 24 to limit the upward movement of the float. It is found that this form of the invention is better adapted for use in bottles having uneven bottoms or in which the bottom is higher in one part than in another.

The modified form of cap indicated in Fig. 6 corresponds in all respects to that heretofore described, except in the manner of attaching the same to the bottle. In this form, the inner bore of the cylindrical portion 45 is provided with a recess 46 having an inclined lower wall 47. In this recess is seated a resilient ring 48, preferably of metal, which, when the cap is placed over the lip of the bottle, is forced back into the wider portion of the recess 46, thus permitting the lip of the bottle to pass there-through. Should an attempt be made, thereafter, to remove the cap from the bottle, the outward movement of the cap would draw the ring down into the contracted portion of the recess 46 and cause said ring to engage the neck of the bottle beneath the lip. Obviously the annular recess between the neck of the bottle and the cylindrical portion 45 of the cap may be filled with cement or any other suitable packing.

While I have herein described preferred embodiments of my invention, it is to be understood that the same may be altered in detail or in arrangement of parts without departing from the spirit and scope thereof.

What I claim is:

1. A non-refillable bottle comprising a bottle proper, a cap secured upon the neck thereof and having a valve seat therein, a valve located adjacent said seat, a float movably connected with said valve and adapted to seat the same within its seat by the action of the liquid upon said float, and means to permit said float to descend with the descent of the liquid in said bottle but to prevent its return to a higher level.

2. In a non-refillable bottle, a bottle proper, a cap adapted to be secured upon the neck thereof, a valve seat in said cap, a valve located adjacent said seat, a rod depending from said valve, a float movably mounted on said rod adapted to seat said valve, and means to permit said float to descend with the descent of the liquid but to prevent its return to a higher level.

3. In a non-refillable bottle, a bottle proper, a cap adapted to be secured to the neck thereof, a valve seat in said cap, a valve within said cap adjacent said seat, a rod secured to said valve and extending substantially to the bottom of the bottle, a float movably mounted on said rod and adapted to raise the same and seat the valve through the action of the liquid, stops on said rod, and means connected with said float arranged to cooperate with said stops, said parts arranged to permit the float to descend with the descent of the liquid and to prevent its return to a higher level.

4. In a non-refillable bottle, a bottle proper, a cap adapted to be secured to the neck thereof, a valve seat in said cap, a valve within said cap cooperating with said seat, a float connected with said valve and arranged to seat the same through the action of the liquid, means to permit said float to follow the descending level of the liquid but to prevent its return to a higher level, and means to tilt said valve when the bottle is tilted to permit the exit of the liquid.

5. In a non-refillable bottle, a bottle proper, a cap secured to the neck of said bottle, a valve seat in said cap, a valve adjacent said valve seat, and a float connected with said valve and adapted to hold the same against said seat at excessive levels of the liquid.

6. In a non-refillable bottle, a bottle proper, a cap adapted to be secured to the neck thereof, a valve seat in said cap, a valve adjacent said seat, a rod connected with said valve and extending substantially to the bottom of said bottle, a float slidable on said rod, means on said rod cooperating with said float to permit the latter to descend with the descent of the liquid but to prevent its return to a higher level, a weight slidably mounted on the lower end of said rod adapted to tilt the valve when the bottle is tilted but to permit relative upward movement of said valve and rod by the action of the liquid on said float.

7. In a non-refillable bottle, a bottle proper, a cap adapted to be secured to the neck of said bottle, a valve seat in said cap, a valve adjacent said valve seat, a sinuous passage in said cap preventing access to said valve, and a float connected with said valve arranged to maintain the valve in contact with its seat upon any rise of the level of the liquid.

8. In a non-refillable bottle, a bottle proper, a cap adapted to be secured to the neck of said bottle, a valve seat in said cap, a valve located adjacent said seat, an annular air recess below said seat, a float connected with said valve, and means to enable said float to maintain said valve in contact with said seat upon any rise of the level of the liquid.

10 9. A non-refillable bottle comprising a bottle proper, a cap therefor, a valve seat in said cap, a sinuous passage communicating with but preventing access to said valve seat, an air recess located adjacent to and
15 beneath said valve seat, a valve adjacent said seat, a float connected with said valve, means to permit said float to descend with the descent of the liquid and to maintain said valve against its seat through the action
20 of the liquid, and means to prevent the return of said float to a higher level.

10. In a non-refillable bottle, a bottle proper, a cap adapted to be secured to the neck of said bottle, a valve seat in said cap,
25 a valve adjacent said seat, means to maintain said valve against said seat controlled by the level of the liquid, an annular recess in said cap, a resilient ring in said recess, said recess and ring arranged to permit the
30 cap and ring to be slipped over the lip of the bottle but to prevent removal of the cap from said bottle.

11. In a non-refillable bottle, a bottle proper, a cap adapted to be secured to the
35 neck thereof, a valve seat in said cap, a valve located adjacent said seat, a rod se-

cured to said valve and extending substantially to the bottom of said bottle, stop shoulders on said rod, a float slidably mounted on said rod, pivoted fingers on said float adapted to engage said stop shoulders and arranged to permit the float to descend upon said rod but to prevent its return thereon, a weight connected with the lower end of said rod, a locking finger on said weight, 45 and a shoulder on said float adapted to be engaged by said locking finger when said float is in its lowermost position to lock said float to said weight in said position.

12. In a non-refillable bottle, a bottle proper, a cap arranged to be secured to the neck thereof, a valve seat in said cap, a valve adjacent said seat, a float connected with said valve, and means to permit said float to descend with the descent of the liquid but to prevent its return, said float having means to serve as an indicator of an attempt to refill the bottle. 50 55

13. In a non-refillable bottle, a bottle proper, a cap adapted to be secured to the neck thereof, a valve seat in said cap, a valve adjacent said seat, and means connected with said valve to maintain the same against its seat upon any rise of the level of the liquid in said bottle, said means also arranged to serve as an indicator of an attempt to refill the bottle. 60 65

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