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J. A. MATSON

2,047,791

NONREFILLABLE BOTTLE

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Fig. 1.

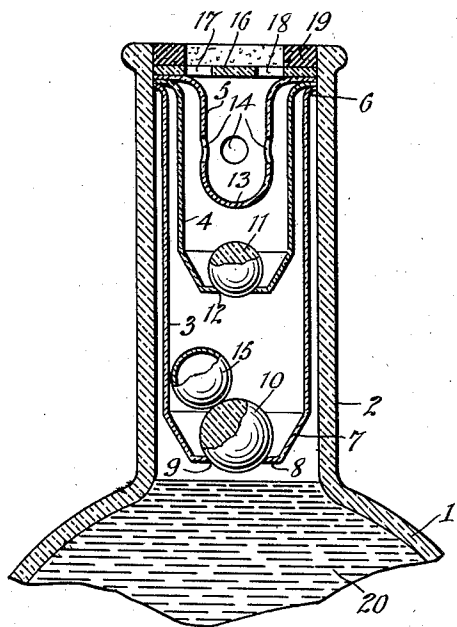


Fig. 5.

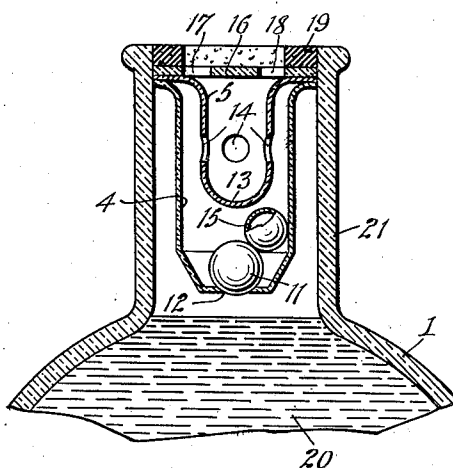


Fig. 4.

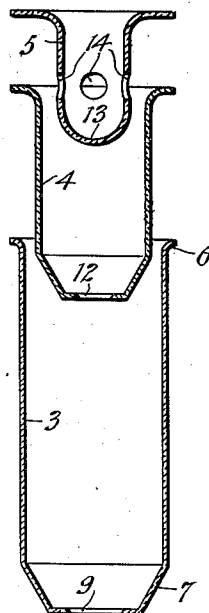


Fig. 2.

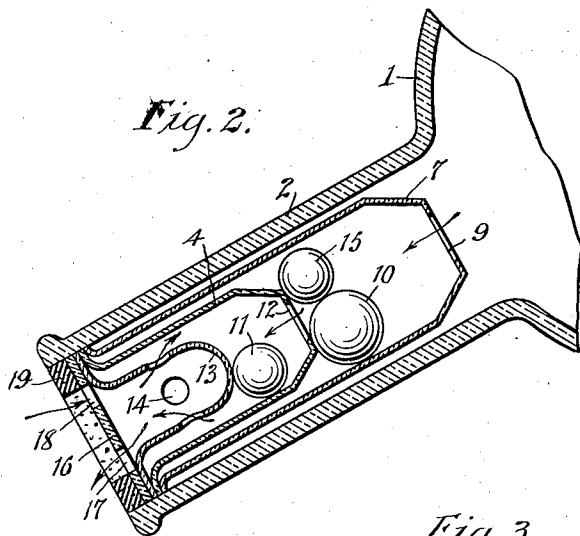
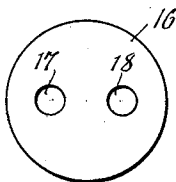


Fig. 3.



WITNESSES

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NONREFILLABLE BOTTLE

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3 Claims. (Cl. 215—20)

This invention relates to bottle closures and particularly to the type commonly known as non-refillable closures, an object being to provide a bottle structure wherein a simple non-refillable closure structure is presented adapted for use either with long neck bottles or short neck bottles.

Another object of the invention is to provide a non-refillable bottle with the closure structure capable of use with either short or long neck bottles and utilizing in all forms of the invention a comparatively heavy ball for closing the outlet passageway when the bottle is in an upright position and a buoyant ball for closing the same passageway when anyone attempts to insert liquid in the bottle when the bottle is inverted.

A still further object of the invention is to provide a non-refillable bottle closure which may be quickly and easily assembled and applied at the same time.

In the accompanying drawing:

Fig. 1 is a vertical sectional view of the upper part of a bottle disclosing an embodiment of the invention;

Fig. 2 is a view similar to Fig. 1 but showing the bottle partly inverted;

Fig. 3 is a plan view of a guarding washer embodying certain features of the invention;

Fig. 4 is a sectional view through a number of tubular guards embodying certain features of the invention, said guards being slightly spaced apart;

Fig. 5 is a view similar to Fig. 4 but showing the invention applied to a short neck bottle.

Referring to the accompanying drawing by numerals 1 indicates a bottle having a long neck 2 in which the closure is mounted. The closure for the neck 2 includes what may be termed an outer tubular guard 3, an intermediate tubular guard 4 and an inner tubular guard 5. Guard 3 presents a straight tubular structure for most of its length, but at the top is formed with a turned-out annular flange 6 and at the bottom with a tapering portion 7 having a bottom 8 in which the aperture 9 is positioned. A comparatively heavy ball 10 normally fills aperture 9. This ball may be made from any desired material as, for instance, glass, porcelain, or the like. The various guards 3, 4 and 5 also may be made from glass, porcelain, metal, or other desired material, though preferably they are made from glass or porcelain. Guard 4 is of the same shape as guard 3 but of less size and is provided with a closure ball 11 for closing the opening or passageway 12. The inner guard 5 is constructed similar to the other guards except that the end 13 is closed and the side wall is provided with a num-

ber of apertures 14 through which the liquid flows when the bottle is being discharged. The various flanges 6 on the various guards are preferably held in place by fitting tightly, though if desired glass cement could be used.

From Fig. 1 it will be observed that there is an appreciable space between the bottoms of guards 3 and 4, and in this space there is positioned a buoyant ball 15 which may be made from metal, glass, porcelain, or other material, but which will float in water or any liquid. Arranged exteriorly of the various guards 3 to 5 inclusive is a guarding disk 16 having apertures 17 and 18. This disk is preferably formed of glass or porcelain, but if desired might be formed of other material. A cork, gasket or ring 19 is positioned exteriorly of the guard 16. If desired a protecting cap of any standard kind as, for instance, a crown crimped cap could be used.

When all of the parts have been assembled as shown in Fig. 1 and it is desired to discharge some of the liquid 20 from the bottom 1, it is only necessary to invert or partly invert the bottle as shown in Fig. 2 whereupon air will enter one of the apertures 17 and 18 and the liquid will flow out of the other aperture. As indicated in Fig. 2 both the balls 10 and 15 are resting on the bottom of guard 4 while the ball 12 is resting against the bottom of guard 5 and the side wall of guard 3. This will allow a free passage of the liquid so that it may flow out through the aperture 17 and air may flow inwardly through aperture 18. In case anyone tried to force liquid into the bottle when inverted or partly inverted the ball 15 would float on the liquid and move into the aperture or outlet passageway 9 whereby the incoming liquid could not be inserted into the body of the bottle. It will therefore be seen that when the bottle is in an upright position it is closed by the balls 10 and 11 and when in an inverted or partly inverted position it is open but is ready to produce a closing action whenever there is a reverse flow of liquid.

As shown in Fig. 4, some bottles are provided with short necks 21, and when the invention is applied to a bottle of this kind the outer guard 3 is eliminated and the buoyant ball 15 is positioned within the intermediate guard 4. Aside from these changes the structure is identical.

I claim:

1. A non-refillable bottle comprising a body merging into a comparatively long neck, and a closure arranged in said neck, said closure comprising three tubular guards, the two inner guards having apertures arranged centrally thereof at

the bottom and the outer guard having an aperture arranged in the side thereof, a comparatively heavy ball closing each of the first two mentioned apertures, a buoyant ball arranged within the innermost tubular guard formed of a size to close the aperture in said innermost tubular guard when permitted, a guarding disk positioned exteriorly of the three tubular guards, said disk having a pair of spaced apertures, one aperture acting as an air inlet aperture and the other as a liquid outlet aperture, and a gasket arranged in said neck exteriorly of said last mentioned guard.

2. A non-refillable bottle comprising a bottle structure formed with an elongated neck, and a closure arranged wholly within said neck, said closure including three tubular guards, each guard having at one end a radiating flange fitting against said neck, the flanges of the guards being grouped together adjacent the inlet end of said neck with the inner guard extending to adjacent the inner end of said neck, the intermediate guard to a middle position between the respective ends of said neck, and the outer guard to

a point about midway the length of the intermediate guard, the two inner guards each having an aperture at the center of the bottom thereof and the outer guard having an aperture in the side wall, a ball loosely mounted in each of the two inner guards and normally closing the apertures thereof, and a buoyant ball arranged between the two innermost tubular guards.

3. A non-refillable bottle comprising a body merging into a neck, and a closure arranged in said neck, said closure including a pair of tubular members, one tubular member having apertures in the side wall and the other in the end wall, a comparatively heavy ball for normally closing the aperture in the end of one of the tubular members, a float for closing the same aperture when liquid attempts to pass in a reverse direction through the tubular member, and an apertured guard positioned within said neck and arranged above the tubular members when the ball is upright.

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