

Feb. 1, 1938.

J. A. PATTERSON

2,107,083

NONREFILLABLE BOTTLE

Filed April 22, 1937

2 Sheets-Sheet 1

Fig. 1.

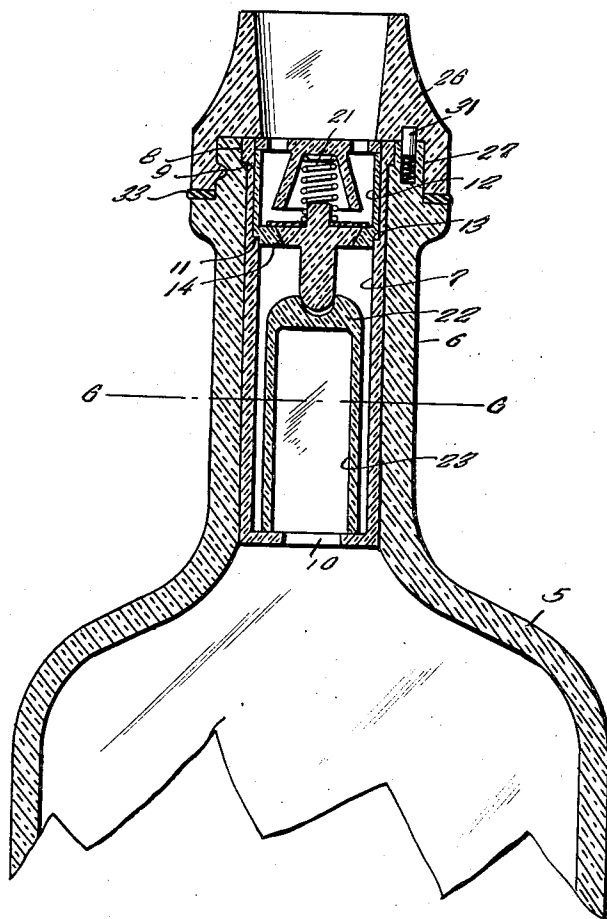


Fig. 8.

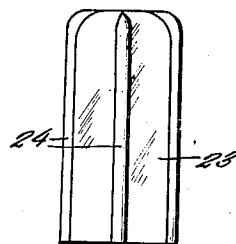
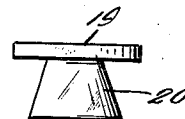


Fig. 7.

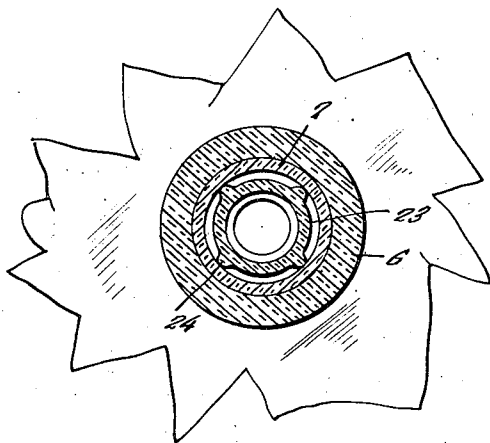


Fig. 6.

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Fig. 2.

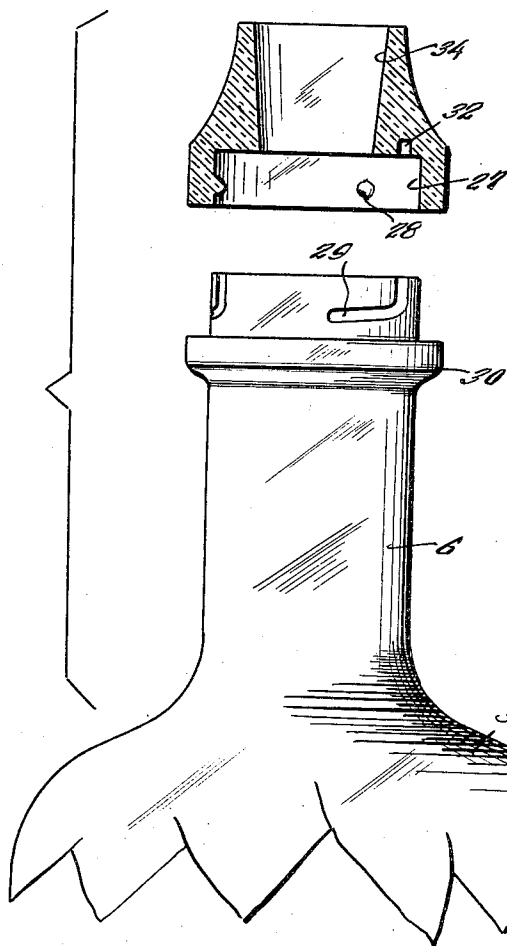


Fig. 3.

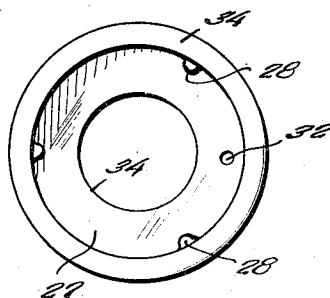
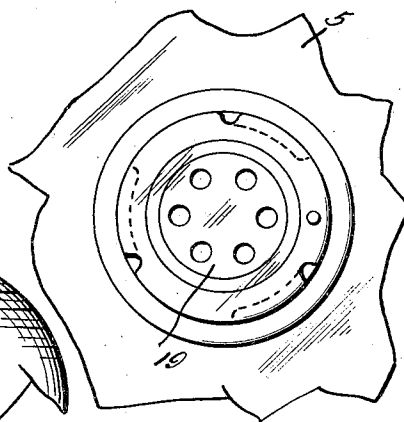


Fig. 4.

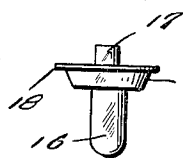


Fig. 5.

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2,107,083

NONREFILLABLE BOTTLE

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Application April 22, 1937, Serial No. 138,441

3 Claims. (Cl. 215-19)

This invention relates broadly to bottles, and more particularly to that type known as "non-refillable bottles."

An object of the present invention is to provide an improved valve assembly for disposition within the neck of a bottle, and which assembly will efficiently operate to permit pouring of the contents of the bottle, but to positively preclude the refilling of the bottle.

A further object of the invention is to provide an improved means for securing the valve assembly within the neck of the bottle.

The invention, together with its objects and advantages, will be best understood from a study of the following description, taken in connection with the accompanying drawings, wherein:

Figure 1 is an enlarged vertical sectional view through the neck portion of a bottle illustrating the application of my invention thereto.

Figure 2 is a view showing the neck portion of a bottle in elevation, and a cork-receiving cap for association therewith, the cap being shown separated from the neck of the bottle and in vertical section.

Figure 3 is a bottom plan view of the cap.

Figure 4 is a fragmentary top plan view of the invention.

Figure 5 is an elevational view of a valve member.

Figure 6 is a horizontal sectional view taken substantially on the line 6-6 of Figure 1.

Figure 7 is an elevational view of a perforated disk forming part of the invention, and

Figure 8 is an elevational view of a hollow float member.

Referring to the drawings by reference numerals, it will be seen that 5 indicates a portion of a bottle equipped with a neck 6.

In accordance with the present invention, there is provided within the neck 6 of the bottle a valve assembly which includes a cylinder 7 fitting snugly within the neck and preferably formed of glass. The cylinder 7 is open at its upper end and at said upper end is provided with an external flange 8 that fits within an internal groove 9 provided therefor in the mouth end of the neck 6. At its inner closed end the cylinder 7 is provided with a single opening 10.

Inwardly from the upper open end thereof the cylinder 7 is provided with an internal annular shoulder 11 on which seats a cylindrical valve cage 12.

Cage 12 fits snugly within the upper end of the cylinder 7 and is preferably formed of glass. At the bottom thereof the cage 12 is provided with

an external groove 13 that accommodates the shoulder 11 as is clearly shown in Figure 1.

In the bottom thereof, valve cage 12 is provided with a conical valve seat 14 against which normally seats a valve disk 15 having a chamfered edge to conformably engage the seat 14.

The valve disk 15 is provided with a stem 16 that extends downwardly from the under face of the valve disk and a pin extension 17 which projects upwardly from the top face of the disk 15 and through a thin disk of rubber 18 which seats on the valve disk 15. The rubber disk 18 projects beyond the periphery of the disk 15 to bridge the joint between the valve disk 15 and the seat 14 as clearly shown in Figure 1 to insure a sealing of the valve when in seated or closed position.

A perforated disk 19 of glass or other suitable material fits snugly within the upper end of the cylinder 7 and rests on the upper edge of the peripheral wall of the valve cage 12 as shown in Figure 1. At the center thereof, the disk 19 is provided on its under side with a depending frusto-conical socket 20 which substantially houses a coil spring 21, one end of which is convoluted about the pin 17 and bears on the disk 15 for yieldingly urging the valve disk 15 engaged with its seat 14, and the lower end of the pin 16 in a recess 22 provided externally and in the closed upper end of a hollow float member 23.

The float member 23 is arranged within the cylinder 7 below the valve cage 12 and is formed of glass. Also, the float member 23 is substantially cylindrical and in order to maintain the float member 23 in spaced relation to the wall of the cylinder 7, either the cylinder 7 internally, or the float member 23 externally thereof, is provided with longitudinal ribs. In the present instance, as shown, the ribs indicated by the reference numeral 24 are being provided on the periphery of the float member 23 which latter is opened at its bottom or lower end as clearly shown in Figure 1.

From the above it will be seen that all of the parts thus described, with the exception of course, of spring 21 and disk 18 are formed wholly of glass, although it will be understood that any other suitable materials may be employed if found desirable.

The assembly just described is secured within the neck 6 through the medium of a cap 26. The cap 26 is preferably formed of glass and is provided at its enlarged end with a recess 27 which receives the free end of the neck 6.

Internally of the recess 27 there are provided

suitably positioned teats or protuberances 28 cooperable with bayonet slots 29 provided on the periphery of the neck 6 above the external shoulder 30 of said neck for threading the cap 26 onto the neck.

For locking the cap 6 on the neck after once being positioned thereon, there is provided a spring-pressed locking plunger 31 working in a suitable bore or recess provided in the wall of the neck 22 and projectible outwardly into a socket 32 provided at the inner end of the recess 27 to lock the cap 26 in position after it has been threaded home against the gasket 33 that rests on the shoulder 30 as shown in Figure 1.

The inner wall of the recess 27 extends inwardly sufficiently far enough to overlap the peripheral edge of the disk 19 for securing the latter positively within the upper end of the cylinder 7, and consequently, all of the parts within the neck 6 against unauthorized removal, or against any removal without recourse to the breaking of the neck.

Cap 26 is provided with a tapered bore 34 to accommodate a cork or other sealing or closing element.

From the above it will be apparent that in actual practice, when the bottle 5 is tilted to pour the contents therefrom, the contents of the bottle will pass through the opening 10 into the float element 23 causing the latter to move in the direction of the cage 12 against spring 21. This will result in an unseating of valve 15 so that the contents of the bottle entering the cylinder 7 will flow around the float 23, through the port 14 into the cage 12 to pass from the cage 12 through the perforations in the disk 21 finally discharging through the bore 34 of the cap.

It will be further appreciated that the arrangement is such that access cannot be had to the valve 15 for mechanically unseating the valve with the result that while the device will operate to permit the contents of the bottle 5 to be poured therefrom, the device will operate to positively preclude a refilling of the bottle.

Having thus described the invention, what is claimed as new is:

1. In a non-refillable bottle, the combination of a bottle neck, a cylinder snugly fitted and secured within said neck, said cylinder being open at one end and provided with an inlet opening at its opposite or inner end, a valve cage secured within the open end of said cylinder and having a bottom wall provided with a valve seat, a perforated disk member substantially closing the top of said valve cage and provided with an inwardly extending socket, a valve disk engaging said seat, a spring housed within said socket

and having an end bearing against the valve disk for yieldably urging the same into engagement with said seat, said valve disk having a pin extending therefrom inwardly of the cylinder, and a hollow float member working within the cylinder and in contact with said pin whereby upon movement of the float member longitudinally of the cylinder and in the direction of said valve cage, said valve disk will be unseated to permit uninterrupted flow of the contents of the bottle through the neck of the bottle.

2. In a non-refillable bottle, the combination of a bottle neck, a cylinder snugly fitted and secured within said neck, said cylinder being open at one end and provided with an inlet opening at its opposite or inner end, a valve cage secured within the open end of said cylinder and having a bottom wall provided with a valve seat, a perforated disk member substantially closing the top of said valve cage and provided with an inwardly extending socket, a valve disk engaging said seat, a spring housed within said socket and having an end bearing against the valve disk for yieldably urging the same into engagement with said seat, said valve disk having a pin extending therefrom inwardly of the cylinder, and a hollow float member working within the cylinder and in contact with said pin whereby upon movement of the float member longitudinally of the cylinder and in the direction of said valve cage, said valve disk will be unseated to permit uninterrupted flow of the contents of the bottle through the neck of the bottle, said bottle neck being provided internally with a shoulder, and said cylinder at one end having an external flange seating against said shoulder, and a cap member engaging the free end of said neck and having a part extending inwardly to engage the end edge of said cylinder and the peripheral edge of said disk whereby, in cooperation with the internal shoulder of said neck to secure said cylinder and associated parts positively combined within the bottle neck.

3. In a non-refillable bottle, the combination of a bottle neck, a cylinder confined within said neck, a perforated disk at one end of said cylinder, a valve seat intermediate the ends of said cylinder, a disk valve normally engaging said seat, means intermediate said seat and said perforated disk precluding access to said valve, a float member arranged within said cylinder below said seat, and said valve and said float member being complementarily provided for contact one with the other to transmit movement from one to the other, as and for the purpose specified.

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