May 11, 1937. J. A. PATTERSON 2,080,215

NONREFILLABLE BOTTLE

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Fig. 1.

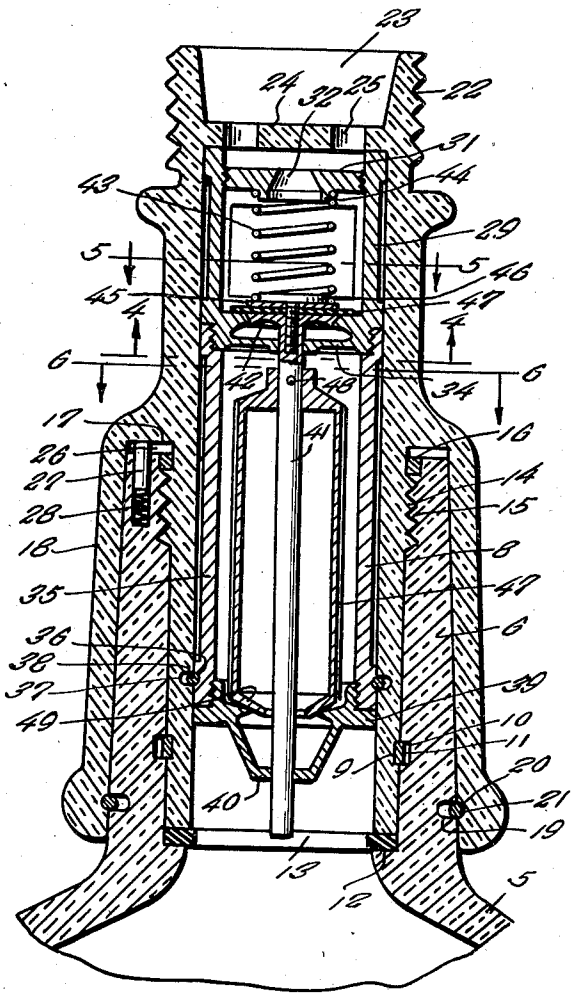
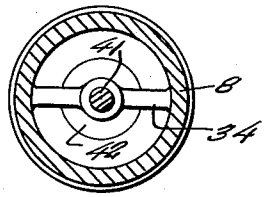


Fig. 4.



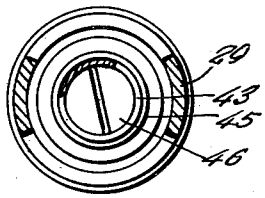
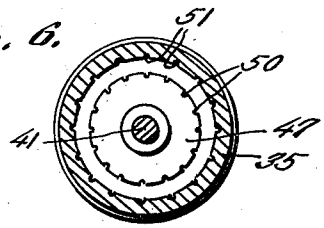


Fig. 5.

Fig. 6.



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NONREFILLABLE BOTTLE

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Fig. 2.

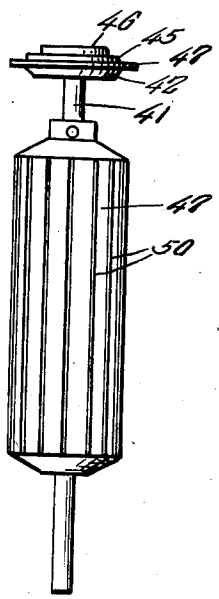


Fig. 3.

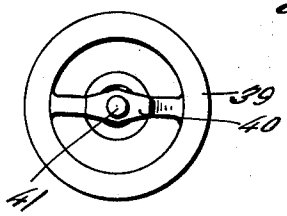


Fig. 7.

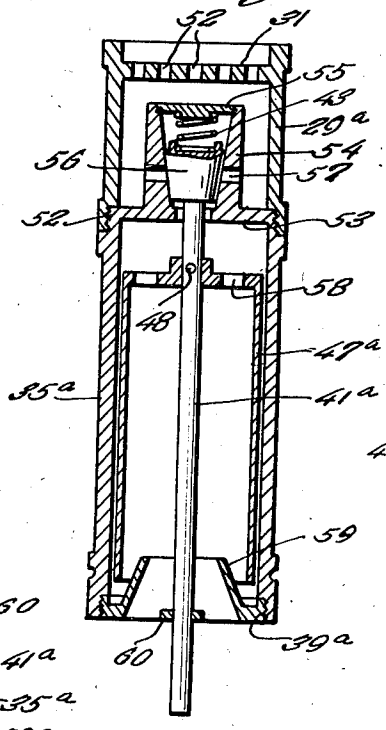


Fig. 8.

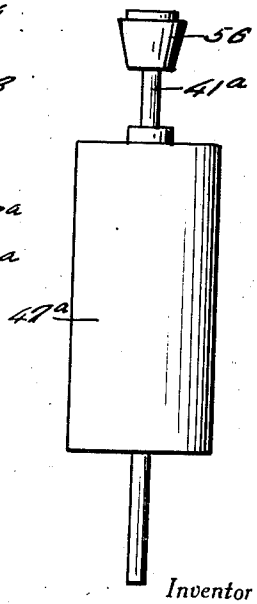
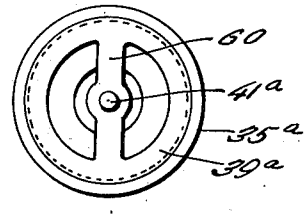


Fig. 9.



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UNITED STATES PATENT OFFICE

2,080,215

NONREFILLABLE BOTTLE

Joseph A. Patterson, Brave, Pa.

Application September 17, 1936, Serial No. 101,314

7 Claims. (Cl. 215—30)

This invention relates to non-refillable bottles and more particularly to non-refillable bottles of the type shown in my co-pending applications for patents respectively identified as patent application Serial No. 59,984, filed January 20, 1936, and Serial No. 66,903, filed March 3, 1936, each application being entitled "Non-refillable bottle".

The present invention has particular reference to an improved valve structure for non-refillable bottles and more particularly for non-refillable bottles involving generally the structural features of those bottles disclosed, illustrated and claimed in my aforementioned and above identified applications for patents.

The present 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 and associated parts of a non-refillable bottle involving the features of the present invention.

Figure 2 is an elevational view of a valve forming part of the invention.

Figure 3 is a bottom plan view of the valve assembly shown in Figure 2.

Figures 4, 5 and 6 are detail sectional views taken substantially on the lines 4—4, 5—5, and 6—6 respectively of Figure 1.

Figure 7 is a sectional view through a slightly modified form of valve.

Figure 8 is an elevational view of the valve assembly shown in section in Figure 7.

Figure 9 is a bottom plan view of the second form of valve assembly.

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

An elongated tube 8 formed of glass or other suitable material has an end portion fitting snugly within the bore of the bottle neck 6, and adjacent the lower ends thereof tube 8 and neck 6 are complementarily grooved as at 9, 10 respectively to accommodate a split locking ring 11 which serves to lock neck 6 and tube 8 against longitudinal separation.

At the inner end thereof the neck 6 is provided with a shoulder 12 between which and the lower end of the tube 8 is confined a gasket 13 of suitable material.

Intermediate its ends tube 8 is provided with threads 14 complemental to internal threads 15 provided adjacent the upper end of the neck 6 whereby to effect a screw-threaded engagement of neck 6 and tube 8.

Disposed between the wall of the neck 6 and the tube 8 immediately above the threads 14, 15 is a gasket 16.

The tube 8 above the threaded section thereof is also formed with a shoulder 17 that has integral therewith a skirt 18 snugly receiving the neck 6 of the bottle as shown. Adjacent the lower ends thereof neck 6 and skirt 18 are provided with mating grooves 19 and 20 respectively to accommodate a locking ring 21 which serves as a further medium for preventing axial separation of the bottle neck and the tube 8.

At its upper end tube 8 is provided externally with threads 22 to receive a screw cap or the like, and at said upper end tube 8 is also bored as at 23 to receive a cork or the like.

At the inner end of the cork-receiving section 23 of the bore tube 8 is formed integrally with an internal disk 24 perforated as at 25 and as best shown in Figure 1.

To prevent relative rotation between the bottle and the parts just described and associated with the neck of the bottle, I provide a locking means in the form, preferably of ratchet teeth 26 provided on the internal surface of shoulder 17 and with which cooperates a spring-pressed dog 27 suitably accommodated as at 28 within the wall of the bottle neck 6 adjacent the upper end of the neck.

The invention as above described is more fully disclosed in my above identified application for patent Serial No. 59,984.

As stated in the statement of invention the present invention is particularly concerned with a valve assembly for a bottle having the features of construction above disclosed.

In the preferred embodiment thereof the valve assembly consists of a substantially cylindrical cage 29 which fits within the upper end of the tube 8 in abutting relation with the disk 24.

The cage 29 intermediate its respective ends is circumferentially reduced to provide a suitable air space between the peripheral wall of the cage and the wall of the tube 8.

Inwardly from its upper end cage 29 is also provided with threads or otherwise to removably and securely accommodate therein a disk or wall plate 30 having in alignment with the solid center portion of the disk 24 a passage 32.

Adjacent its bottom end the cage 29 is provided with a valve seat 33 and below the valve seat with a valve stem guide 34.

Also at its lower end the cage 29 is externally

threaded and is adapted to have screw-threaded thereon one end of a valve casing 35.

Valve casing 35 is substantially cylindrical and at its lower end the valve casing 35 and the tube 8 are complementarily grooved as at 36 and 37 respectively to receive a split locking ring 38 which serves to removably secure the valve assembly within the tube 8.

Also threaded into the lower end of the valve casing 35 is a valve seat 39 provided with a valve stem guide 40.

Working through the valve stem guides 34 and 40 is a valve stem 41 that at its upper end is formed with an integral disk valve 42 engageable with the valve seat 33.

The valve 42 is yieldably engaged with the seat 33 through the medium of a coil spring 43 housed within the cage 29 and at one disposed about a flange 44 provided at the inner end of the opening or port 32 while at its lower end the spring 43 seats on a metal washer 45 confined between the enlarged head of a screw 46 threaded into the stem 41 and a disk 47 of rubber or other suitable material interposed between the washer 45 and the valve disk 42. Thus it will be seen that valve 42 normally closes communication between the valve casing 35 and the cage 29.

Working within the valve cage 35 is an elongated hollow float cylinder 47 that at one end is secured to the stem 41 as at 48. At its lower end or bottom the float cylinder 47 is formed as at 49 to present a valve adapted to engage the seat 39 for closing communication between the bottle 5 and the valve casing 35.

For vent purposes and to relieve vacuum the peripheral walls of the float cylinder 47 and the valve casing 35, exteriorly of the float 47 and internally of the casing 35 are complementarily grooved or ribbed as at 50, 51. (See Figure 6.)

From the description of the invention thus far it will be seen that with the bottle in an upright position the parts will assume the position shown in Figure 1 which will preclude a refilling of the bottle.

To pour the contents, or a portion thereof from the bottle 5, the latter is inverted. In this inverted position the pressure of the contents of the bottle on the end 49 of the member 47 will cause said end 49 to unseat as also the valve 33 against the action of spring 43. Thus the liquid will flow through the valve casing 35 to cage 29 through the port 32 to discharge from the bottle through the perforations 25.

Immediately upon the bottle being brought to an upright position end 49 of the member 47 will seat as will also the valve 33 thus closing the bottle. Thus it will be seen that after all the contents of the bottle have been emptied therefrom it will be impossible to refill the bottle.

In the form of valve assembly shown in Figures 7 to 9 inclusive, there is embodied a cage 29^a, a valve casing 35^a, a threaded connection between cage 29^a and 35^a as indicated generally at 52, a disk 39^a threaded in the bottom end of the casing 35^a, a valve stem 41^a, a float cylinder 47^a, and a valve seating spring 43^a.

However, in this form of the invention the disk 31^a provided inwardly from the upper end of the cage 29 is provided with a series of perforations 52.

Also, in this form of the invention the valve casing 35^a is provided at its upper end with an integral end wall 53 from which rises an integral socketed boss 54 having a conical internal wall structure as shown. Also threaded into or spun into the upper end of the socket 54 is a disk 55 between which and a frusto-conical valve member 56 working in the socket 54 is interposed the aforementioned spring 43 which serves to cause the valve member 56 to suitably seat in the lower end of the socket 54. Adjacent said lower end the socket 54 is provided with lateral ports 57 which are closed by the valve element 56 when the latter is in the fully seated or lowered position as shown in Figure 7.

Also in this form of the invention the member 47^a which at its upper end is secured to the stem 41^a as at 48^a is provided with perforations 58 while the member 47^a at its bottom is entirely open as shown.

Also the seat member 39^a is in the form of a disk threaded into the lower end of the casing 35^a and provided at its center with an enlarged opening having a conical flange 59 rising therefrom to extend into and through the open end of the member 47^a. Also the member 39^a is provided with a valve stem guide 60 through which the valve stem 41^a works as shown.

It will be seen from the above that with this type of valve employed in the bottle the contents of the bottle, when the bottle is inverted, will pass from the bottle proper through the opening in the disk 39^a and into the member 47 and the pressure of the liquid within the member 47^a will cause the valve 56 to move against the action of spring 43^a to uncover or open the ports 57. Thus the contents will flow through the openings 58 and the ports 57 into the cage 29^a to discharge through the perforations 52. When the bottle is set upright the parts under action of spring 43^a will return to the normal position which is the position shown in Figure 7 in a manner to securely close the bottle and to preclude the filling of the bottle.

It is thought that a clear understanding of the construction, utility and advantages of an invention of this character will be had without a more detailed description and that further, it will be appreciated that a bottle having a valve construction as anticipated by this invention will be particularly useful in bottling alcoholic beverages and the like under such laws and regulations as prohibit re-use or refilling of the bottle.

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

1. In a non-refillable bottle, a cylindrical valve cage and an elongated cylindrical valve casing arranged in vertical alignment, a valve seat at the meeting ends of the cage and casing, a valve engaging said seat and provided with a stem extending longitudinally through the valve casing, a spring device arranged within the cage and engaging said valve for yieldably retaining the same in seated position, and a hollow float member working in the valve casing and secured to the valve stem.

2. In a non-refillable bottle a tubular member fitting snugly and securely within the neck of the bottle, and provided at one end with a perforated disk, a valve cage arranged in said tubular member and having a perforated end in abutting engagement with said disk, a valve casing arranged in said tubular member in alignment with the valve cage, a valve seat at the bottom of the valve cage, a valve member engaging said seat for controlling communication between the valve casing and valve cage, said valve member provided with a stem extending longitudinally through the valve casing and a tubular hollow

float member arranged in the valve casing and secured at one end to said valve stem.

3. In a non-refillable bottle a tubular member fitting snugly and securely within the neck of the bottle, and provided at one end with a perforated disk, a valve cage arranged in said tubular member and having a perforated end in abutting engagement with said disk, a valve casing arranged in said tubular member in alignment with the valve cage, a valve seat at the bottom of the valve cage, a valve member engaging said seat for controlling communication between the valve casing and valve cage, said valve member provided with a stem extending longitudinally through the valve casing and a tubular hollow float member arranged in the valve casing and secured at one end to said valve stem, a spring device arranged within the valve cage and bearing on said valve member for releasably securing the same in seated position.

4. In a non-refillable bottle a tubular member fitting snugly and securely within the neck of the bottle, and provided at one end with a perforated disk, a valve cage arranged in said tubular member and having a perforated end in abutting engagement with said disk, a valve casing arranged in said tubular member in alignment with the valve cage, a valve seat at the bottom of the valve cage, a valve member engaging said seat for controlling communication between the valve casing and valve cage, said valve member provided with a stem extending longitudinally through the valve casing and a tubular hollow float member arranged in the valve casing and secured at one end to said valve stem, a spring device arranged within the valve cage and bearing on said valve member for releasably securing the same in seated position, a seat member in the lower end of said valve casing, and said hollow float member having an apertured end formed to engage said seat member.

5. In a non-refillable bottle a tubular member fitting snugly and securely within the neck of the bottle, and provided at one end with a perforated disk, a valve cage arranged in said tubular member and having a perforated end in abutting engagement with said disk, a valve casing arranged in said tubular member in alignment with the valve cage, a valve seat at the bottom of the valve cage, a valve member engaging said seat for controlling communication between the valve casing and valve cage, said valve member provided with a stem extending longitudinally through the valve casing and a tubular hollow float member arranged in the valve casing and secured at one end to said valve stem, a spring device arranged within the valve cage and bearing on said valve member for releasably securing the same in seated position, a seat member in the lower end of said valve casing, and said hollow float member having an apertured end formed to engage said seat member, and means engaging said neck and said tubular member for locking the tubular member and neck against axial separation.

6. In a non-refillable bottle a tubular member fitting snugly and securely within the neck of the bottle, and provided at one end with a perforated disk, a valve cage arranged in said tubular member and having a perforated end in abutting engagement with said disk, a valve casing arranged in said tubular member in alignment with the valve cage, a valve seat at the bottom of the valve cage, a valve member engaging said seat for controlling communication between the valve casing and valve cage, said valve member provided with a stem extending longitudinally through the valve casing and a tubular hollow float member arranged in the valve casing and engaging one end of said valve stem, a spring device arranged within the valve cage and bearing on said valve member for releasably securing the same in seated position, a seat member in the lower end of said valve casing, and said hollow float member having an apertured end formed to engage said seat member, and means engaging said neck and said tubular member for locking the tubular member and neck against axial separation, and means engaging said tubular member and said valve casing for securing the valve casing and valve cage axially within said tubular member.

7. In a non-refillable bottle a tubular member fitting snugly and securely within the neck of the bottle, and provided at one end with a perforated disk, a valve cage arranged in said tubular member and having a perforated end in abutting engagement with said disk, a valve casing arranged in said tubular member in alignment with the valve cage, a valve seat at the bottom of the valve cage, a valve member engaging said seat for controlling communication between the valve casing and valve cage, said valve member provided with a stem extending longitudinally through the valve casing and a tubular hollow float member arranged in the valve casing and secured at one end to said valve stem, a spring device arranged within the valve cage and bearing on said valve member for releasably securing the same in seated position, a seat member in the lower end of said valve casing, and said hollow float member having an apertured end formed to engage said seat member, and means engaging said neck and said tubular member for locking the tubular member and neck against axial separation, and means engaging said tubular member and said valve casing for securing the valve casing and valve cage axially within said tubular member, and interengaging means on the bottle neck and on said tubular member locking the tubular member against rotation relative to the neck in one direction.

JOSEPH A. PATTERSON.