No. 698,330. Patented Apr. 22, 1902.

E. C. SHILLING.

NON-REFILLABLE BOTTLE.

(Application filed July 20, 1901.)

(No Model.)

Fig. 1.

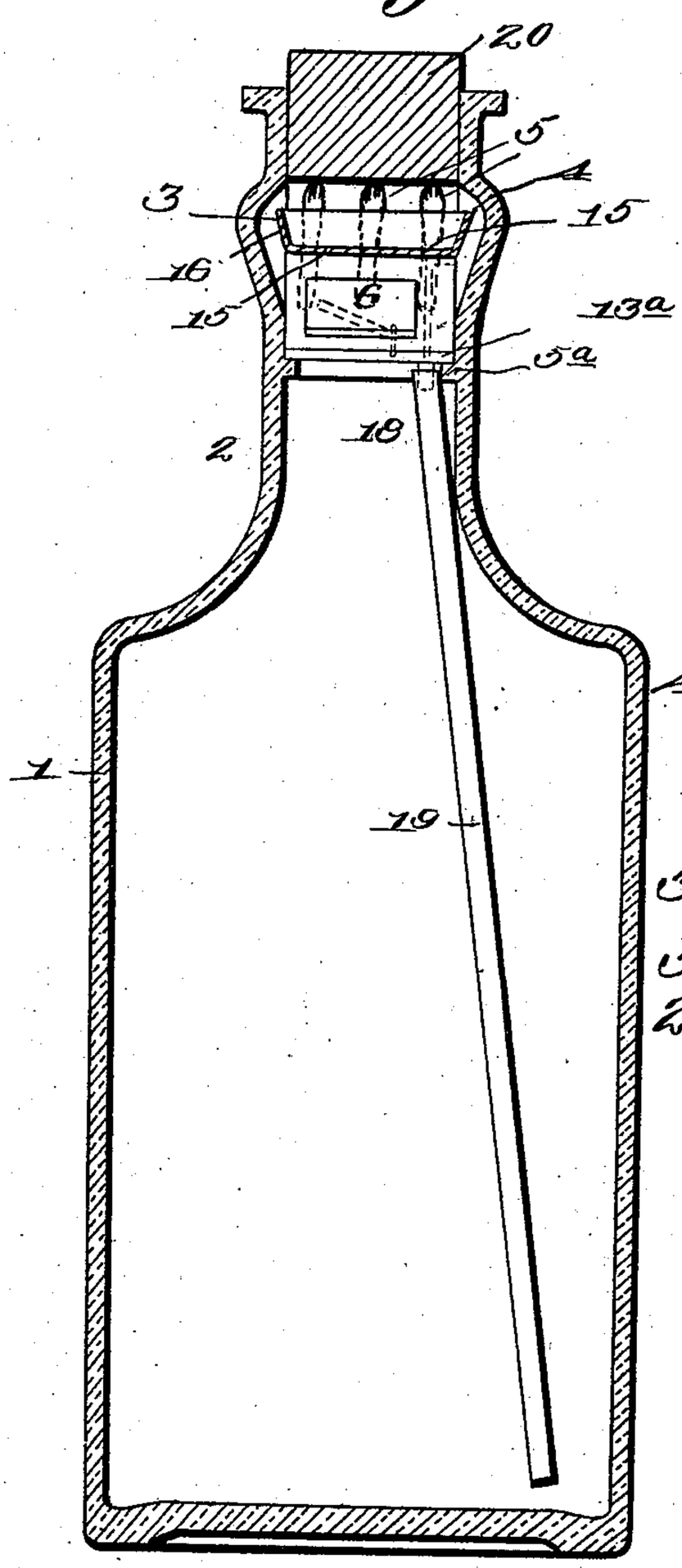


Fig. 2.

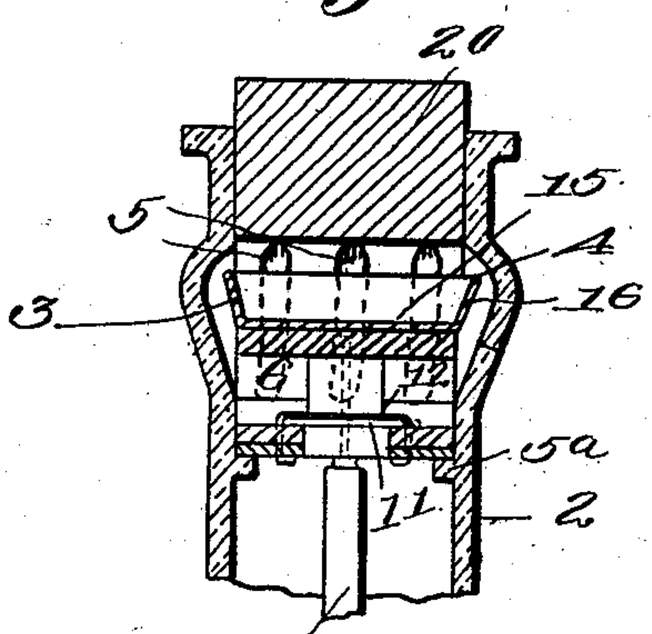


Fig. 3.

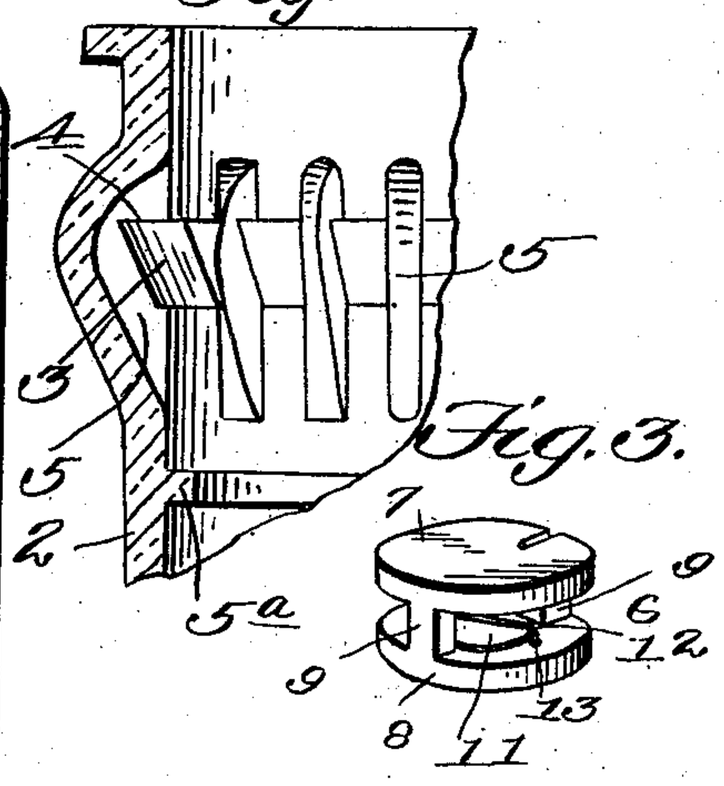
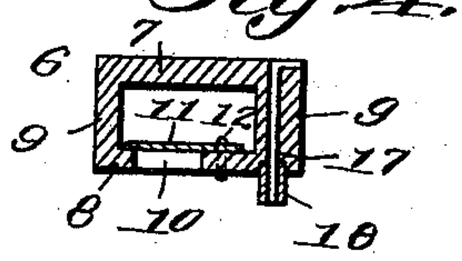


Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

EDWARD C. SHILLING, OF COLUMBUS, OHIO.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 698,330, dated April 22, 1902.

Application filed July 20, 1901. Serial No. 69,081. (No model.)

To all whom it may concern:

Be it known that I, EDWARD C. SHILLING, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

This invention relates to non-refillable bottles, and has for its object to provide a bottle of the character described which will be extremely simple in construction, efficient in operation, and capable of being manufactured at a small cost; and to these ends my invention consists in the features and in the construction, combination, and arrangement of parts hereinafter described, and specifically pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a vertical central sectional view of my improved bottle. Fig. 2 is a section taken on the line 2 2 of Fig. 1. Fig. 3 is a detail perspective view of the cage, and Fig. 4 is a vertical sectional view of the same. Fig. 5 is a detail sectional view illustrating the arrangement of the grooves in the bottle-neck.

Referring to the drawings, the numeral 1 indicates a glass bottle, the body of which is constructed as usual, and the neck 2 is provided upon its interior with an annular groove or recess 3, which terminates at its upper end in an abrupt shoulder 4. The neck is also provided with a series of vertical grooves or channels 5, that commence at a point below the annular groove 4 and extend vertically to a point slightly above said groove. The grooves or channels 5 are deeper than the groove 4 and form ducts for the passage of the liquid contents of the bottle, as will fully hereinafter appear. The neck is provided below the lower ends of the grooves 5 with an inwardly-projecting annular flange 5^a. Arranged within the neck of the bottle is a cage 6, comprising two disks 7 and 8, united at their opposite edges by braces 9. The disks 7 and 8 and braces 9 are preferably molded or cast in one integral piece of glass or other suitable material. The disk 7 is imperforate, while the lower disk 8 is provided with an aperture 10. Seated on the upper side of the disk 8 is a valve 11, formed of rubber or other suitable flexible material, and the said valve is held in place by a bail 12, preferably formed of wire, the ends of which are bent at right angles and are inserted in perforations 13, formed in the disk 8, and are clenched or upset against the lower surface of the latter. The bail 12 extends across or straddles the valve and holds the latter in place. A washer 13^a, of any material suitable for the purpose, is seated on the annular flange 5^a, formed in the neck of the bottle, and the cage above described rests upon the washer and accurately fits the interior of the neck of the bottle, the arrangement being such that the upper portion of the cage is surrounded by the vertical grooves 5, hereinbefore referred to. Seated on the top of the cage is a metallic cap consisting of a sheet-metal disk 15, provided on its periphery with an upturned or vertical extended flange 16. In practice the disk is made of such diameter that it may be inserted in the mouth of the bottle onto its seat upon the cage, and after having been thus placed in position the flange 16 is spread outwardly by means of an implement suitable for the purpose in such manner that the upper end of said flange will lie beneath the shoulder 4. Formed in one of the braces 9 of the cage is a duct or passage 17, which extends entirely through the bottom of said brace, and fitted in the lower end of said duct is a nipple 18. The upper end of said duct is extended laterally through the side of the brace and communicates with one of the vertical grooves 5. Fitted on the nipple is a tube 19, which extends to the bottom of the bottle. The cork 20 is employed to close the bottle in the usual manner.

The operation of my bottle will be readily understood. Let it be assumed that a portion of the contents of the bottle is desired to be poured off therefrom, the cork 20 having been first removed. Then upon tilting the bottle the liquid contents thereof will force the valve 11 from its seat. The liquid will flow through the cage into the grooves 5 and from thence out past the disk 15 and its flange 16 and thereon through the mouth of the bottle. It is evident that if liquid be attempted to be restored to the bottle the valve 11 will be forced to its seat and will prevent the entrance of the liquid into the bottle. It will

also be evident that if the bottle be inverted and it be sought to inject the liquid into the bottle by forcing it under pressure the valve will close in the manner before described. It will also be apparent that the flanged cap inserted in the neck of the bottle in the manner described will effectually prevent the introduction of any implement, such as a piece of wire or the like, for the purpose of lifting up the valve while the liquid is being attempted to be introduced, and that the shoulder 4 will effectually prevent the removal of the cap and cage. In pouring out the contents of the bottle the liquid will effect its discharge in the manner before described, and at the same time air will enter through the duct formed in the cage and through the vent-tube 19 and will fill the vacuum that is caused by the liquid flowing from the bottle, and will thus provide for an unobstructed discharge of the liquid.

From the foregoing it will be manifest that it will be impossible to introduce any liquid into the bottle after the cap and cage have been inserted in place, and at the same time the contents of the latter may be very readily poured out, and that the bottle may be manufactured at but a very slightly additional cost.

Having thus described my invention, what I claim is—

1. In a non-refillable bottle the combination with the bottle-neck having an internal annular groove or recess and vertical grooves extending above and below said annular groove or recess, of a cage fitted in the bottle-neck and having an open bottom and sides, said open sides communicating with said vertical grooves, a valve controlling the opening in the bottom of the cage, and a cap seated on top of the cage and provided with a peripheral upwardly-extending flange seated beneath the upper wall of the annular groove, substantially as described.

2. In a non-refillable bottle the combination with the neck thereof provided upon its interior with an annular groove or recess, and with an inwardly-projecting flange disposed beneath said recess, of a cage seated upon said flange, and comprising two disks connected together at their opposite sides or edges, the uppermost of said disks being imperforate and the lower one provided with a valve-opening, a valve controlling said opening and a cap seated upon said cage, and provided upon its periphery with an upwardly-extending flange seated in the annular groove or recess, substantially as described.

3. In a non-refillable bottle the combination with the neck thereof, provided upon its interior with an annular groove or recess, and an annular flange disposed beneath said recess, of a flexible washer seated upon said flange, a cage seated upon the washer and comprising two disks united at their opposite edges, the uppermost of said disks being imperforate and the lower one provided with a valve-opening, a valve controlling said opening and a cap seated upon said edge and provided with upwardly-extending flange arranged to engage the upper wall of the annular groove or recess and prevent the withdrawal of the parts, substantially as described.

4. In a non-refillable bottle the combination with the neck thereof provided with a seat formed therein, and with an annular groove or recess formed above the seat, of a cage resting upon said seat, and comprising two disks united at their opposite edges by perpendicular braces, the lower of said disks having a valve-opening, a valve controlling said opening, a cap seated on said cage and having an upwardly-extending flange projecting into said groove or recess, one of said braces having a duct formed therein and communicating at its upper end with a vertical groove formed in the neck of the bottle and extending above and below the annular groove or recess, and a vent-tube connected with the lower end of said duct and extending into the lower portion of the bottle, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EDWARD C. SHILLING.

Witnesses:
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