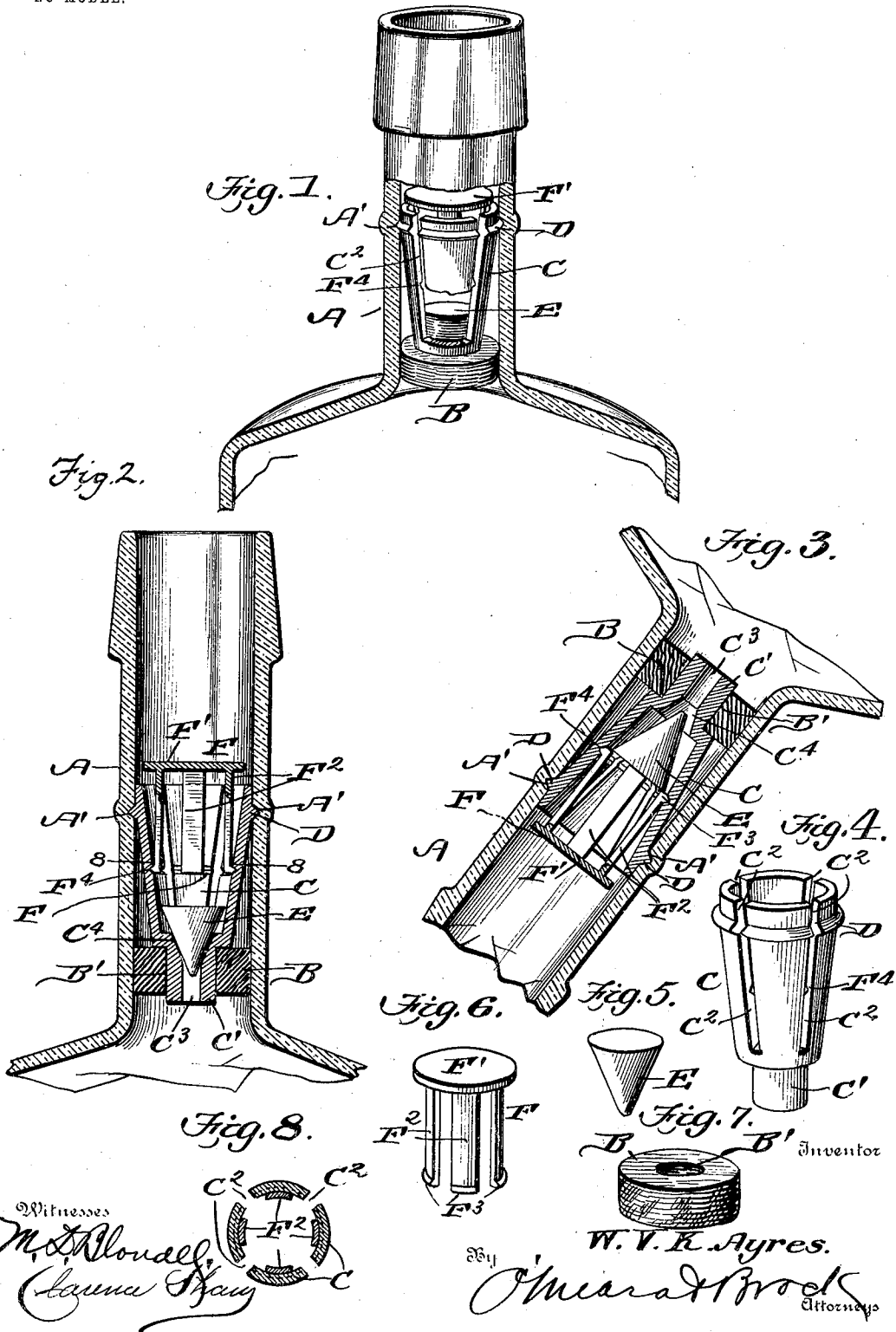


No. 769,979.

PATENTED SEPT. 13, 1904.

W. V. K. AYRES.
NON-REFILLABLE BOTTLE.
APPLICATION FILED OCT. 17, 1903.

NO MODEL.



UNITED STATES PATENT OFFICE.

WILLIAM V. K. AYRES, OF NEWARK, NEW JERSEY.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 769,979, dated September 13, 1904.

Application filed October 17, 1903. Serial No. 177,452. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM V. K. AYRES, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Non-Refillable Bottles, of which the following is a specification.

This invention is an improved construction of non-refillable bottle, the object being to provide a simple and inexpensive construction which can be applied to an ordinary bottle without materially adding to the initial cost of said bottle; and with this object in view the invention consists in the novel features of construction, all of which will be fully described hereinafter and pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a sectional view of a bottle, showing my invention applied to the neck thereof. Fig. 2 is a vertical sectional view showing the position the parts assume when the bottle is closed. Fig. 3 is a sectional view showing the position the parts assume when the bottle is tilted and the contents being poured therefrom. Fig. 4 is a detail perspective view of the spring-funnel. Fig. 5 is a detail perspective view of the valve. Fig. 6 is a detail perspective view of the cage. Fig. 7 is a detail perspective view of the inner cork or ring. Fig. 8 is a sectional view on the line 8 8 of Fig. 2.

Referring to the drawings, A indicates the neck of an ordinary bottle having an annular groove A', produced in the inner face of the neck a short distance above the middle portion of said neck. The inner cork or stopper B is inserted in the neck of the bottle and forced down to the lower end of the same, said cork or stopper being in the form of a ring, and fitting in the central opening B' is the reduced lower end C' of the spring-funnel C, the sides of said funnel being split one or more times, as shown at C², so that the said spring-funnel can be forced into the neck of the bottle. This spring-funnel has an annular rib D upon the exterior thereof adjacent the upper end, which rib is adapted to engage the annular groove in the neck of the bottle. The reduced portion C' has a central aperture

C³, the upper end of which is formed into a valve-seat C⁴, upon which seats the inverted cone-valve E. For the purpose of holding this valve within the neck of the bottle and still permit it to have a limited movement away from its seat, so that the contents of the bottle can pass through the lower end of the funnel, I employ a cage F, comprising the circular plate F^v and the spring-fingers F², said fingers having each an outwardly-projecting rib F³ at its lower end, which is adapted to fit into the grooves F⁴, produced in the sides of the funnel, thereby locking the cage in the funnel. By reference to Figs. 1 and 2 it will be noted that so long as the valve is seated it would be impossible to introduce liquid into the bottle; but by inverting the bottle, as shown, the valve will readily unseat itself and the contents can be poured from the bottle. The lower stopper or ring B prevents any of the liquid passing back into the bottle after the valve has been seated.

It will thus be seen that by constructing a bottle-stopper in accordance with my invention I employ only the inner stopper or ring, spring-funnel, valve, and cage, and the only alteration necessary to an ordinary bottle is the formation of the annular groove in the neck of said bottle.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with the bottle-neck having an annular groove, of an inner stopper fitted therein, a spring-funnel having an annular rib arranged in the bottle-neck and having a valve-seat at its lower end, a valve seated within the funnel, and a cage held within the funnel for limiting the outward movement of the valve, as set forth.

2. The combination with a bottle-neck, having an annular groove, of a spring-funnel having an annular rib adapted to engage the annular groove, a valve-seat at the lower end of the funnel, a valve working in said seat, and a cage arranged within the funnel and adapted to limit the outward movement of the valve, as set forth.

3. The combination with a bottle-neck, having an interior annular groove, of an inner

stopper having a central opening, a spring-funnel having a reduced lower end provided with a central opening, the upper end of which constitutes a valve-seat, the sides of the funnel being slotted and provided with an exterior rib adapted to engage the interior annular groove in the neck of the bottle, said funnel also having a plurality of interior grooves, an inverted cone-shaped valve arranged in the funnel and a cage comprising a top plate and spring-fingers, each having an outwardly-projecting rib, substantially for the purpose described.

4. The combination with a bottle-neck, of an inner stopper having a central opening, a funnel having a reduced lower end fitting in said stopper, said funnel having a valve-seat formed therein, a valve seated in said valve-seat, and

a cage held within said funnel and limiting the outward movement of said valve as set forth. 20

5. The combination with a bottle-neck having an annular groove, of an inner stopper having a central opening, a funnel having a reduced lower end fitting within said opening in said stopper and having an annular exterior rib and an annular interior groove, said rib fitting in the annular groove in the bottle-neck, a valve-seat formed in said funnel, a valve working therein, and a cage having outwardly-projecting ribs fitting in the annular groove formed in the funnel for limiting the outward movement of the valve, as set forth. 25 30

WILLIAM V. K. AYRES.

Witnesses:

EDWIN B. ENNIS,
WALTER PARSELLS.