No. 859,055. PATENTED JULY 2, 1907.

T. J. FITZGERALD.

NON-REFILLABLE BOTTLE STOPPER.

APPLICATION FILED APR. 1, 1907.

Fig. 1.

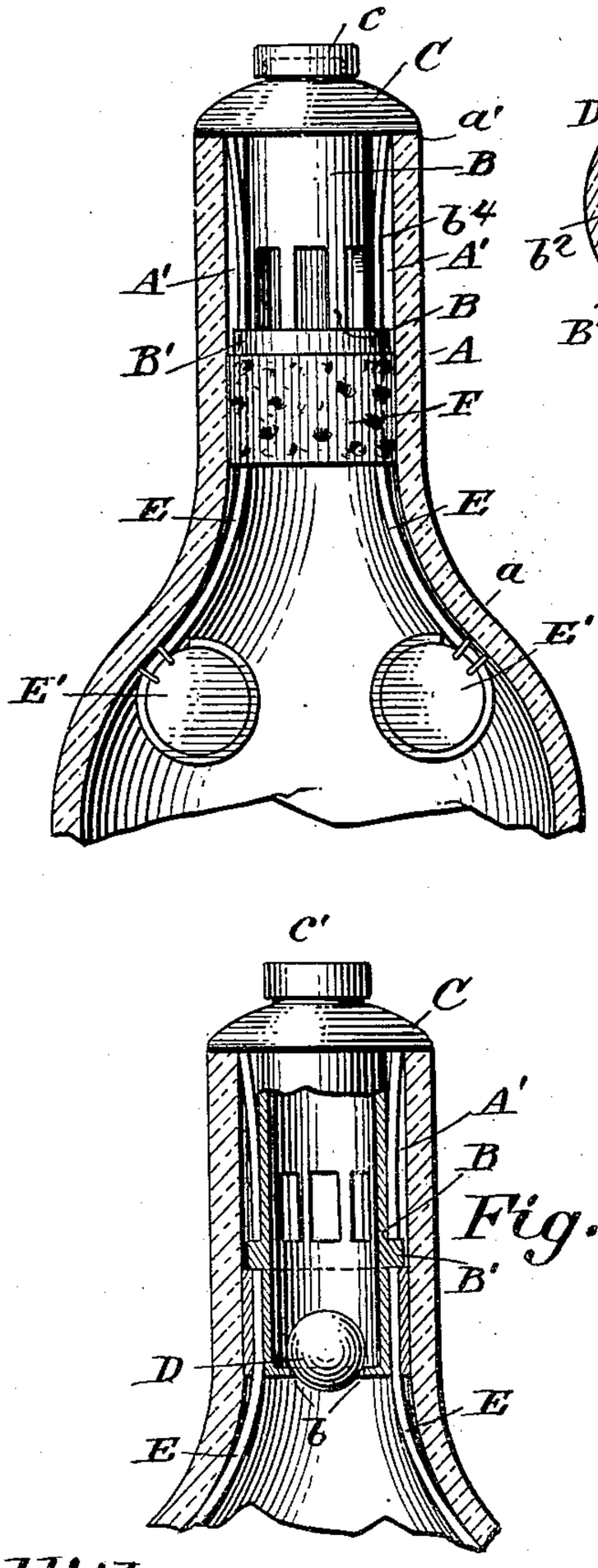

Fig. 3.

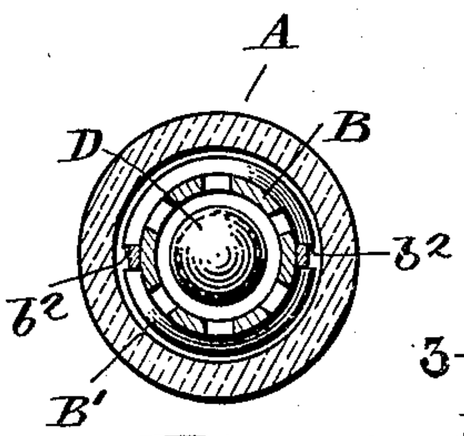

Fig. 2.

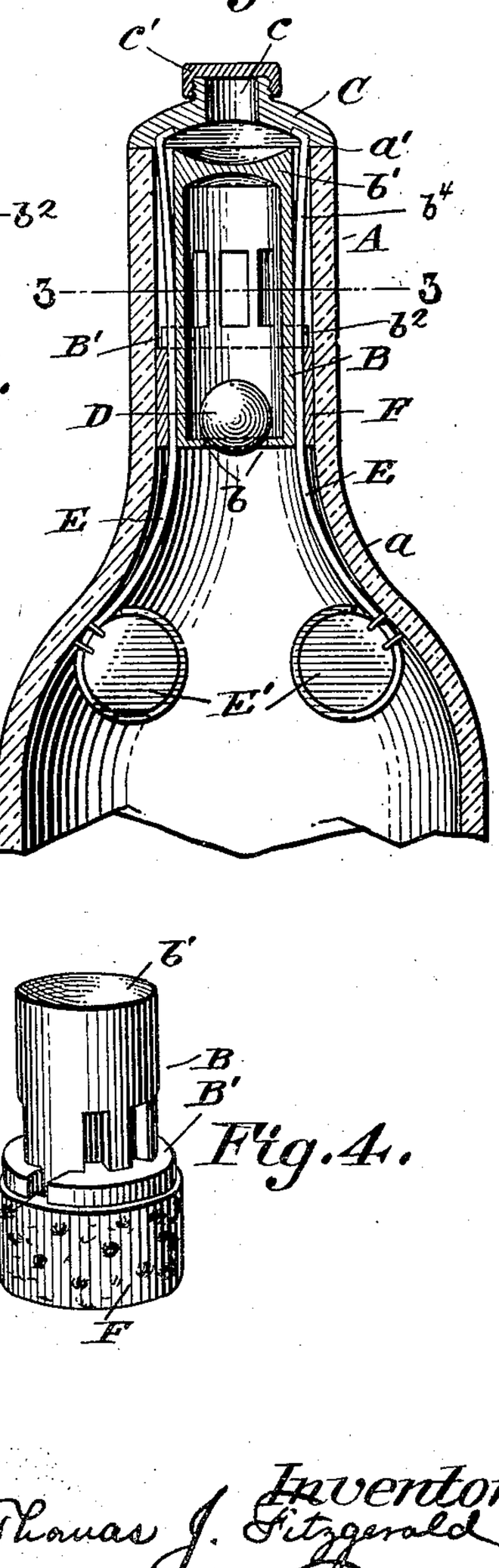

Fig. 5.

Fig. 4.

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UNITED STATES PATENT OFFICE.

THOMAS J. FITZGERALD, OF ALBANY, NEW YORK.

NON-REFILLABLE-BOTTLE STOPPER.

No. 859,055. Specification of Letters Patent. Patented July 2, 1907.

Application filed April 1, 1907. Serial No. 365,763.

To all whom it may concern:

Be it known that I, THOMAS J. FITZGERALD, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Non-Refillable-Bottle Stoppers, of which the following is a full, clear, and exact specification.

This invention relates to that class of bottle stoppers or closures designed for use with bottles of ordinary construction or shape to prevent the refilling thereof.

One object of my invention is to produce an efficient bottle closure that may be inserted by unskilled labor without special apparatus or tools into bottles of usual shape, and when so inserted, cannot be withdrawn, and while permitting the pouring of the contents of the bottle effectually prevents introduction of liquid into the bottle, or refilling.

A further object of the invention is to produce a bottle closure of this nature at such small cost as to be available for general use.

With these and other objects in view, the invention consists in the construction described in detail in this specification and set forth in the appended claims.

In the accompanying drawings, illustrating one embodiment of my invention: Figure 1 is a view showing in vertical section a bottle neck of usual form, and in side elevation a stopper embodying my invention closing the same; Fig. 2 is a similar view of a bottle neck, the stopper being shown in vertical section therein; Fig. 3 is a transverse section on lines 3—3 of Fig. 2. Fig. 4 is a perspective view of the valve casing; and Fig. 5 is a view showing the bottle neck in vertical section, and partly in vertical section a stopper embodying my invention in modified form.

Referring to the drawings, the upper part of a bottle of usual size is shown comprising a cylindric neck, A, merging through the ogee curve of the breast a into the full diameter of the bottle, the mouth a' of the bottle presenting the flat circular surface, well known.

The stopper comprises a cylindric metal valve casing B closed at the top and connected to a cap C to be seated on the mouth of a bottle, the casing B being tubular and containing a gravity valve D, having a seat b at the lower end of the casing, the casing carrying spring arms E provided at their lower ends with stops E′ so constructed and arranged that they may be readily inserted in the bottle mouth and passed downward through the neck, the arms after passing the breast of the bottle springing apart and preventing withdrawal.

As shown in Figs. 2 and 5, the valve casing B is of less diameter than the interior diameter of the bottle neck, and is provided intermediate its ends with a collar B′, its upper end being closed by a head b' concaved on its upper and lower surfaces, as shown in Fig. 2.

The lower end of the valve casing B, as stated, is partly closed by an inwardly projecting annular flange, which forms a valve seat b for the valve D contained within the casing.

To the exterior of the casing, above the collar B′ are secured vertical pusher or thrust rods b^2, the upper ends of which are connected to dome-shaped cap C of equal diameter to the bottle mouth and designed to rest with its edges upon the bottle mouth, as shown. Spring arms E preferably formed of flat ribbon or strips of spring metal are secured to the exterior of the casing, below the collar B′, they being curved outward and carrying at their lower ends flat disks E′ E′, which in use will rest adjacent to the inner wall of a bottle, below the curve of the breast a', these disks being so proportioned in thickness and diameter that the two cannot pass edge to edge through the bottle neck, but may be passed therethrough when pressed face to face, their carrying springs being torsionally bent to admit of this operation. Inclosing the lower end of the valve casing, below the collar, and embracing the spring arms, is a sleeve F preferably of cork, which in conjunction with the valve D prevents escape of liquid through the bottle neck.

The valve casing above the collar B is provided with openings b^3, as shown, to admit the outward flow of liquid through the valve casing to the annular space A′ between it and the bottle mouth, when the bottle is tilted to unseat the valve, and the cap C is provided with a contracted tubular vent c to permit the flow of liquid, the vent c being normally closed by a screw top, c', as shown.

The push rods b^4 and spring arms E may be formed of one piece as shown in Fig. 2, or of separate pieces, as in Fig. 5, the upper ends of the rods being permanently connected to the cap C, as for instance, being cast thereinto, and in the construction shown in Fig. 5, their lower ends may be connected to the valve casing, or its collar, or both, by casting, but in the form shown in Fig. 2, wherein the push rods and spring arms are in one length passing through diametrically disposed notches b^2 in the collar of the casing, it may be found in practice that uniting these parts by casting will draw the temper of the spring arms to an undesirable degree, in which case other securing means are to be used.

Referring to Fig. 2, it will be seen that the pouring opening in cap C is so narrow in proportion to length and so distanced from the closed head of the valve casing that attempt to tamper with the stopper by use of a wire would fail, inasmuch as the wire could contact with the concaved surface of said head and be bent up away from the edge thereof.

In practice, to insert a stopper, the stop disks are grasped and their holding wires turned torsionally sufficiently to permit the edges of the disks passing each other, when they may be held face to face until inserted in the bottle mouth, their individual diameters, in this position, admitting of their ready passage down the bottle neck until the neck widens, when the disks will spring apart and present their edges to each other, their united diameters being greater than that of the bottle neck, so that withdrawal of the stopper is prevented.

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

1. A non-removable bottle stopper, consisting of a valve casing closed at top, provided at its lower end with a valve seat, and intermediate its ends with openings, connecting rods, a cap secured above the top of the casing by said connecting rods, and diverging springs secured to opposite sides of the casing and curved at their lower ends whereby withdrawal of the stopper is prevented.

2. A non-removable bottle stopper, consisting of a valve casing closed at top, provided at its lower end with a valve seat, and intermediate its ends with openings, connecting rods, a cap secured above the top of the casing by said connecting rods, and diverging springs secured on opposite sides of the casing and provided at their lower ends with stop disks.

3. In combination with a bottle, a non-removable stopper therefor comprising a valve casing and gravity valve, connecting rods, a cap secured to the casing by said connecting rods or arms and adapted to rest on the bottle mouth, a packing between the lower end of the casing and the bottle neck, and diverging springs secured to the casing and provided at their lower ends with stop disks, the combined diameter of which is greater than the bottle neck.

4. A non-removable bottle stopper, comprising a valve casing having a valve seat at the lower end, a closed upper end and intermediate openings, a gravity valve, a cap connected with the casing, and stops consisting of diverging spring arms connected to the casing and disks secured to the lower ends of said spring arms.

5. A non removable bottle stopper comprising a valve casing having a valve seat at its lower end, and a closed upper end, an annular collar intermediate the ends of the casing and openings in the casing above the collar, and a cork or packing inclosing the end below the collar, a cap, rods permanently connecting said cap with the casing, and stops consisting of diverging spring arms secured to and depending from the casing and carrying disks at their lower ends.

6. A non-removable bottle stopper comprising a valve casing closed at top, provided at its lower end with a valve seat, and intermediate its ends with openings, spring arms on opposite sides of said casing provided at their upper ends with a cap above said casing and at their lower ends with stop disks.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS J. FITZGERALD.

Witnesses:
HARRY C. GOTT,
TIMOTHY S. SULLIVAN.