

Dec. 15, 1936.

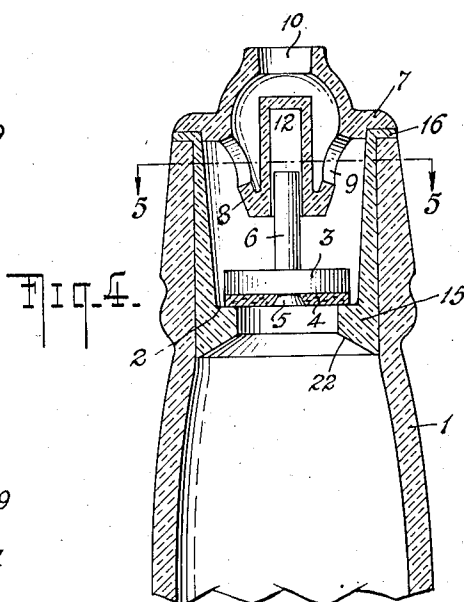
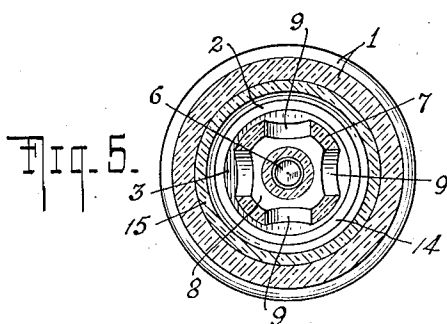
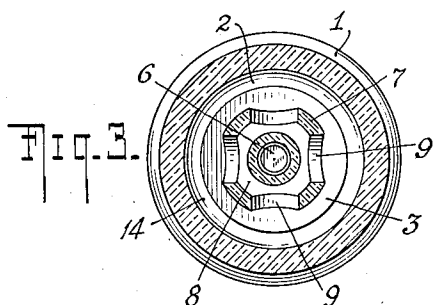
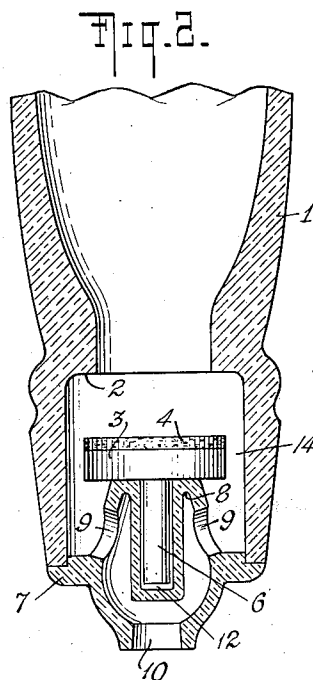
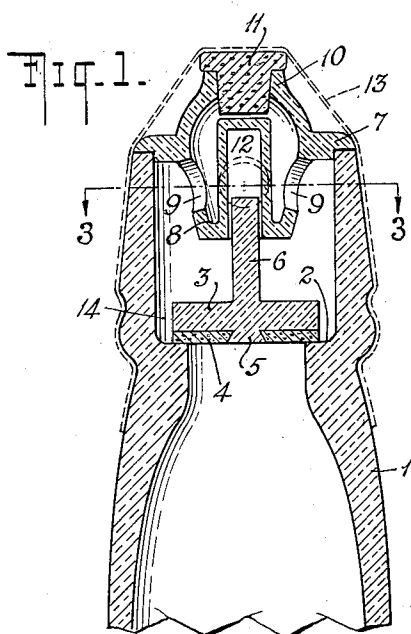
S. HERZOG

2,064,002

NONREFILLABLE BOTTLE CLOSURE

Filed July 24, 1934

2 Sheets-Sheet 1



WITNESS

G. V. Rasmussen.

INVENTOR

SAMUEL HERZOG

BY

BY
Biesen Schreck
ATTORNEYS

ATTORNEYS

Dec. 15, 1936.

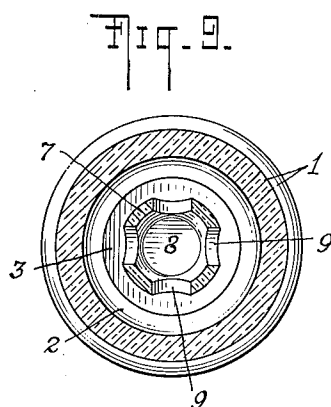
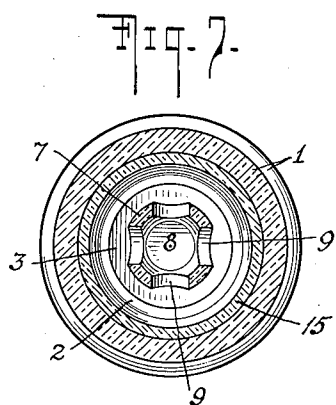
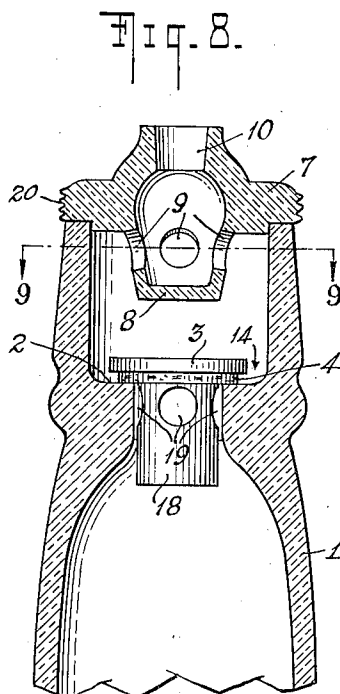
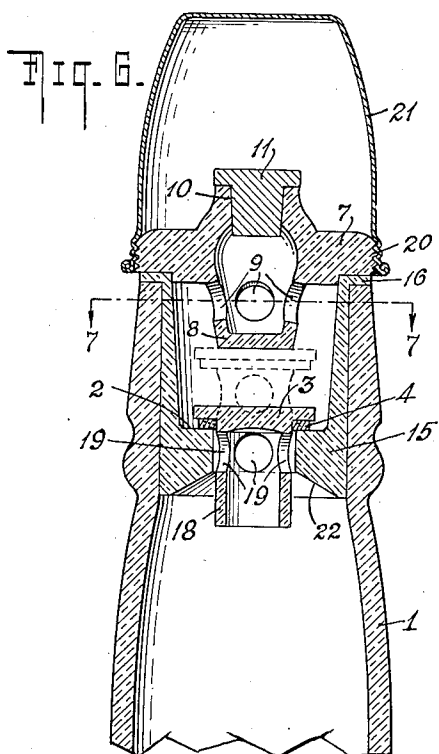
S. HERZOG

2,064,002

NONREFILLABLE BOTTLE CLOSURE

Filed July 24, 1934

2 Sheets-Sheet 2



WITNESS

G. V. Rasmussen

INVENTOR

SAMUEL HERZOG

BY

Biesen Schenk
ATTORNEYS

UNITED STATES PATENT OFFICE

2,064,002

NON-REFILLABLE BOTTLE CLOSURE

Samuel Herzog, White Plains, N. Y.

Application July 24, 1934, Serial No. 736,643

3 Claims. (Cl. 215--23)

The invention relates to non-refillable bottles and has for its object to supply a structure which will be efficient, easily installable, and sufficiently inexpensive to warrant general adoption. The invention contemplates a structure in which the salient parts are constituted of vitreous material such as glass, earthenware, porcelain, or the like, so that the fluid in the bottle does not come into contact with any metallic or other substance likely to affect it. It is also desirable in such structures that liquid should flow freely from the bottle when the latter is turned to the pouring position. This feature is also prominently present in my device.

The invention is illustrated in the accompanying drawings in which Fig. 1 is a sectional view of a preferred form of the invention; Fig. 2 is a sectional view of the structure of Fig. 1 with the bottle inverted; Fig. 3 is a transverse section taken along line 3--3 of Fig. 1; Fig. 4 is a sectional view similar to Fig. 1 of a modified form of the structure shown in Fig. 1; Fig. 5 is a transverse section taken along line 5--5 of Fig. 4; Fig. 6 is a view similar to Fig. 4 showing a modification in the movable valve; Fig. 7 is a transverse section taken along line 7--7 of Fig. 6; Fig. 8 is a sectional view illustrating the same valve shown in Fig. 6, the valve seat being as in Fig. 1 integral with the bottle neck; Fig. 9 is a transverse section taken along line 9--9 of Fig. 9.

In the drawings the bottle neck is indicated at 1. Positioned within the neck of the bottle is an inner annular seat 2, such seat being preferably integral with the bottle neck as in Figs. 1, 2, and 8. The seat 2 supports the valve 3, whose under surface may be cork-lined as at 4. In the constructions illustrated in Figs. 1, 2, and 3, the lower part of the valve 3 is provided with an integral slightly flaring button 5 which assists in retaining the cork washer 4 on the valve 3. In the constructions illustrated in Figs. 6 and 8 the washer 4 is placed on the stem of the valve. In all the constructions illustrated the cork washer may be held in place against the under surface of the valve by the use of adhesive such as silicate of soda.

Referring more particularly to the construction illustrated in Figs. 1, 2, and 3, the valve has an integral extension or stem 6 to guide the valve in its various movements. The open neck of the bottle has sealed to it by silicate or similar means a mouth section 7. The mouth section is an integral hollow element having a closed bottom 8, openings 9 through the side, both said bottom and side portions being spaced from the inner

wall of the bottle neck. A mouth 10 extends upwardly from the bottle neck and is shaped to receive a cork or other closure 11. Within the confines of the entire mouth section 7 is the recessed portion 12 for the valve stem 6. If desired, the entire upper portion of the neck of the bottle, including the cork 11, may be covered with metal or foil as indicated at 13, such metal, of course, being used only when an unopened bottle is delivered to a customer. The mouth section 7 and its valve 3 and its stem 6 are all preferably made of a porcelain-like material. The shapes of these parts are such that they can be readily and cheaply manufactured. The assembly of the parts presents no difficulty whatsoever. When a bottle has been filled, the valve 3 is placed in position on the shoulder 2 and the mouth section 7 is positioned and permanently attached to the upper portions of the bottle neck by silicate or the like. As the bottle is tilted to a pouring position the valve leaves its seat 2 and its stem 6 slides along the recess 12. Fluid from the bottle can now freely flow past the valve 3 and then through the openings 9 into the interior of the mouth section 7 and out through the mouth 10. The rate of such flow approximates about 40-50 seconds per pint and even faster especially with larger bottle sizes. The arrangement is such that the flow of the fluid is smooth, even, and rapid, and not jerky. The arrangement furthermore is such that the bottle can be completely emptied and that no part of the contents is trapped in the bottle by any part of the structure.

If it is attempted to refill such a bottle, the presence of the recessed portion 12 in the interior of the mouth section 7, the diameter of the recessed section, which is about the same as that of the mouth 10, and the closely adjacent arrangement of the recessed section with respect to the mouth proper, makes it practically impossible to insert any instrument capable of manipulating the valve 3 and the use of any such instrument is very likely to break the porcelain parts of the mouth section 7. If it is attempted to refill such a bottle by turning it upside down and attempting to force liquid in under pressure, the liquid will lift the valve 3 from the position shown in Fig. 2 and force it against its seat 2 and thus prevent the entry of fluid into the interior of the bottle. It is somewhat important in that connection that the valve 3 shall be materially wider than the bottom 8 of the mouth section 7 so as to present sufficient surface to fluid entering under pressure to raise

the valve against its seat. There must, of course, also be a space 14 between the periphery of the valve 3 and the inner wall of the neck of the bottle to permit the contents of the bottle to
 5 freely flow past the valve 3 when the bottle is in proper position for the discharge of its fluid. In a typical example, where the bottle neck of a quart bottle has an inner diameter of one inch, the space 14 may be $\frac{3}{8}$ of an inch, while the pe-
 10 ripheral parts of the valve 3 extend $\frac{1}{8}$ of an inch beyond the edge of the bottom 8. In the arrangement described, not only does the fluid smoothly flow from the bottle when properly tilted, but simultaneously ample space is provided for the
 15 admission of air to take the place of the fluid as it flows from the interior of the bottle. This is an important consideration in connection with non-refillable closures.

In Fig. 4 the ledge or valve seat 2 is not a
 20 part of the bottle itself but consists of a cylindrical section preferably of porcelain-like material which is permanently sealed to the bottle neck by the use of silicate or the like. This inserted section 15 cooperates with the valve 3
 25 precisely in the same manner as described in connection with Fig. 1. It is convenient in this case to provide the section 15 with the flange 16 and to permanently unite the mouth section 7 with the flanges 16 by silicate or the like.

In Figs. 6 and 8 the valve stem is inverted and passes through an annular space 17 which is defined by a constricted section of the bottle neck as in Fig. 8 or by an insert porcelain-like member such as 15 in Fig. 6. The valve stem
 35 18 of Figs. 6 and 8 is tubular and is provided with orifices 19 for the discharge of fluid there-through when the bottle is in fluid-discharging position. Between the orifices 19 and the under surface of the valve portion 3 there is a cork
 40 or other resilient washer 4. In the case of Figs. 6 and 8, as in the case of Figs. 1 and 4, the periphery of the valve 3 must extend sufficiently outwardly from the bottom 8 of the mouth section 7 to cause the valve to be driven toward
 45 its seat whenever an empty bottle is inverted and fluid under pressure is attempted to be forced into the bottle. In Figs. 6 and 8 the mouth section 7 is somewhat thickened and provided with a helically grooved exterior for
 50 the accommodation of a metallic drinking cup correspondingly grooved in cases where the presence of such a cup is desired. The plug 15 is preferably given a slightly tapered under surface as indicated in Figs 4 and 6.

55 I claim:

1. A non-refillable bottle comprising closure means permanently secured to the mouth of the bottle and having an aperture therethrough, a downwardly tapered hollow section comprised
 60 of downwardly converging annular walls supported by said closure means and limiting together with said closure means a downwardly tapered chamber, said walls being spaced away from the walls of the bottle and having radially
 65 spaced passages therethrough adapted to form

jets of inflowing liquid entering under pressure, a slidable valve consisting of a horizontally disposed circular member of a size greater than the lower end of said hollow section so that the peripheral portions thereof extend into the path
 5 of inflowing liquid, a guide stem associated with said circular member and perpendicular thereto, a guide passage adapted to receive therein said guide stem and a valve seat consisting of an inwardly extending annular shoulder spaced be-
 10 low said hollow section a distance at most no greater than the length of said guide stem.

2. A non-refillable bottle comprising closure means permanently secured to the mouth of the bottle and having an aperture therethrough, a
 15 downwardly extending hollow section supported by said closure means and enclosing a hollow space into which inflowing liquid must enter, the walls of said section being spaced away from the interior walls of the bottle and having radially
 20 spaced apertures therethrough adapted to form jets of inflowing liquid entering under pressure, a vertically disposed substantially cylindrical section supported by the lower end of said hollow section and having a cross-sectional area
 25 smaller than that of said hollow section, a slidable valve consisting of a horizontally disposed circular member of a size greater than the lower end of said hollow section so that the peripheral portions thereof extend into the path of in-
 30 flowing liquid, a stem associated with said circular member and extending upwardly therefrom, the latter being adapted to slidably engage in said cylindrical hollow section and a valve seat comprising an inwardly extending shoulder
 35 spaced below the lower face of said cylindrical section a distance at most no greater than the length of said stem.

3. A non-refillable bottle comprising closure means permanently secured to the mouth of the
 40 bottle and having an aperture therethrough, a downwardly extending hollow section supported by said closure means and enclosing a hollow space into which inflowing liquid must enter, the walls of said section being spaced away from
 45 the interior walls of the bottle and having radially spaced apertures therethrough adapted to form jets of inflowing liquid entering under pressure, a slidable valve consisting of a horizontally disposed circular member of a size
 50 greater than the lower end of said hollow section and a valve seat for said circular member consisting of an inwardly extending shoulder spaced below said hollow section, the apertures in said hollow section being so arranged with re-
 55 lation to said circular member that inflowing liquid entering under pressure will act against the peripheral portions of said circular member and force said member against said seat, a guide stem associated with said circular member and perpendicular thereto and a guide passage adapted to receive therein said guide stem throughout the range of movement of said circular member.

SAMUEL HERZOG. 65