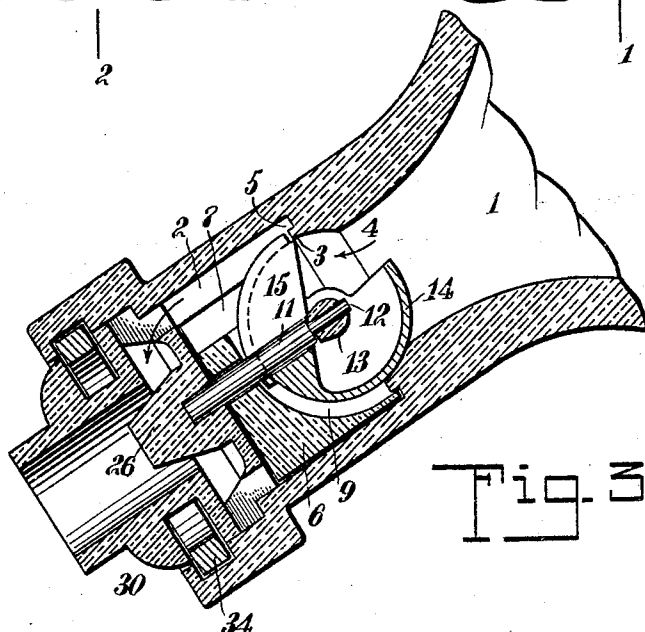
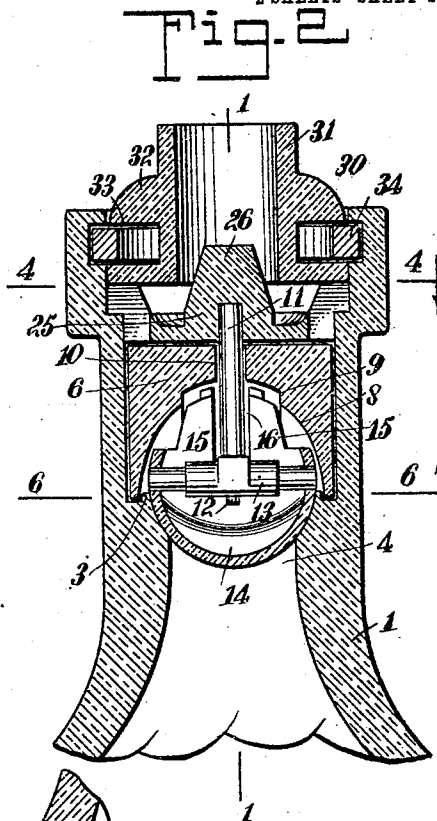
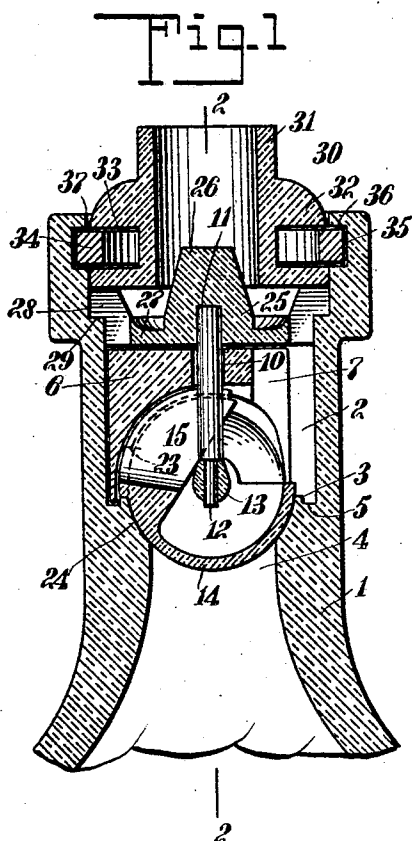


J. BIRNER & E. J. HEIL.
NON-REFILLABLE BOTTLE.
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943,334.

Patented Dec. 14, 1909.

2 SHEETS—SHEET 1.



WITNESSES

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Fig. 4

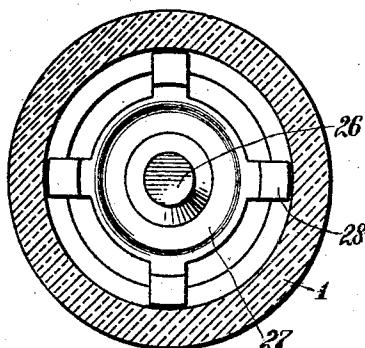


Fig. 6

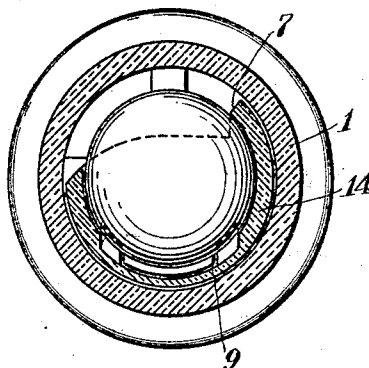


Fig. 5

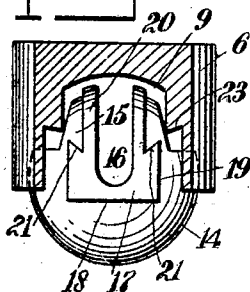
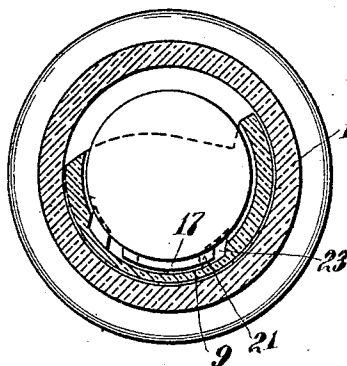


Fig. 7



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UNITED STATES PATENT OFFICE.

JOSEPH BIRNER, OF ELIZABETH, AND EDWARD J. HEIL, OF CARTERET, NEW JERSEY.

NON-REFILLABLE BOTTLE.

943,334.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed August 20, 1909. Serial No. 513,848.

To all whom it may concern:

Be it known that we, JOSEPH BIRNER and EDWARD J. HEIL, both citizens of the United States, and residents, respectively, of Elizabeth, in the county of Union and State of New Jersey, and Carteret, in the county of Middlesex and State of New Jersey, have invented a new and Improved Non-Refillable Bottle, of which the following is a full, clear, and exact description.

This invention relates to non-refillable bottles, and the object of the invention is to produce a bottle of this class having a simple construction which will operate normally to prevent the bottle from being refilled, but which may be manipulated in such a way as to open readily to allow the liquid within the bottle to be poured out.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical section taken through the neck of a bottle and illustrating the details of its construction, this view showing the valve in its closed position, and being a section taken on the line 1—1 of Fig. 2; Fig. 2 is also a vertical section similar to Fig. 1, but taken in a plane at right angles, that is, on the line 2—2 of Fig. 1; Fig. 3 is a longitudinal section through the neck taken in the same plane with Fig. 1, but showing the valve in its open position, permitting the liquid to flow from the bottle; Fig. 4 is a horizontal section on the line 4—4 of Fig. 2; Fig. 5 is a detail view showing the valve in rear elevation and showing a portion of the plug which coöperates with the valve so as to lock it against opening, the said plug being shown in cross section; Fig. 6 is a horizontal section taken on the line 6—6 of Fig. 2; and Fig. 7 is a view similar to Fig. 6, but showing the valve in its interlocked relation with the plug.

Referring more particularly to the parts, 1 represents the neck of the bottle, the upper portion of which is enlarged in bore so as to form a cylindrical chamber 2, said chamber having an upwardly projecting annular lip 3 at the bottom thereof, surrounding the throat 4 of the bottle. Around the lip 3 an

annular groove 5 is formed which receives the lower edge of a plug 6. This plug is in the form of a cylindrical block, one projecting side of which is cut away so as to form a duct 7 for the fluid. On the under side, this block is cut away so as to form a spherical curved pocket 8, and on its rear side this pocket is formed with a broad depression or groove 9 in the wall thereof. The upper portion of the plug is provided with an opening 10 through which a stem 11 passes downwardly. The lower end of this stem 11 has a reduced tip 12, and on this tip 12, an arbor 13 is mounted. This arbor 13 has reduced ends, upon which a valve 14 is rotatably mounted. This valve is in the form of a hemispherical shell, one side of the shell being formed with upwardly projecting guide horns 15, as indicated most clearly in Fig. 5. Between these horns 15, an opening or slot 16 is formed, and this slot is intended to receive the stem 11 when the valve rotates on the axis of the arbor 13, as will be described hereinafter.

On the outer face of the shell, at its point of junction with the horns, the material presents a projection or boss 17, having an elevated spherical face. This boss presents a horizontal lower edge 18 which is nearly on a level with the axis of the arbor 13, and the boss further presents side edges 19 which are disposed at right angles to the edge 18. The adjacent sides of the horns or spurs 15 have enlarged ribs 20 which constitute an extension of the boss 17. These ribs 20 are narrow and at the point where they join the boss 17, the boss is extended upwardly so as to present inclined shoulders 21. At a slight elevation above the normal level of these shoulders 21, the groove 9 has its side wall cut away so as to present shoulders 23, as indicated most clearly in Figs. 1 and 5.

In the normal position of the valve, the lower edge 18 of the boss 17 rests upon the lip 3, as indicated in Fig. 1. In this position, if the boss 17 is in the position in which it is shown in Fig. 5, it will be evident that the valve can rotate, but if the bottle be shaken so as to bring one of the shoulders 21 under the shoulders 23, then it would become impossible for the valve to rotate. In other words, the valve will interlock with the plug so as to lock the valve against rotation. The upper part of the throat 4 is enlarged so as to form a spherical seat 24 for the under side of the valve.

The upper end of the stem 11 is attached to the under side of a crown 25 which is held in the upper part of the neck. This crown has a solid center with a centrally disposed cone 26 which projects upwardly, said cone being made integral with an enlarged base or plate 27. The edges of this plate 27 are provided with short arms 28 which extend over to the inner face of the wall of the neck, and the neck at this point is enlarged so as to form an annular shoulder 29, upon which the under sides of these arms 28 rest. The crown 25 is held in position by means of a mouth piece 30, which mouth piece has a tubular body 31 through which the liquid may pass, and an enlarged base 32. This base has a deep groove 33 on the side thereof, and in this groove a resilient ring 34 is received. The inner part of the bottle neck at this point is provided with an undercut groove 35, having an overhang or shoulder 36. In placing the mouth piece in position, the ring 34 is contracted until it will pass into the mouth 37 of the neck; it will then expand in the groove 35 although still projecting into the groove 33. In this way the ring locks the mouth piece to the bottle neck.

The mode of operation of the bottle will now be described: Fig. 1 shows the valve in its normal closed position. It should be understood that by reason of the presence of the horns 15 the center of gravity of the valve is disposed to the left of the axis of the arbor, as viewed in Fig. 1, so that the valve will normally tend to hold itself in a closed position. If it is attempted to pour from the bottle, the bottle may be tipped in the usual manner, and unless the boss 17 is disposed exactly in alinement with the groove 9, one of the shoulders 21 will engage with one of the shoulders 23 and interlock the valve with the plug so that it will not rotate. However, if the bottle be held in a tilted position and shaken, the shoulders 21 and 23 can be disengaged and the tilting of the bottle will permit the valve to assume the relation shown in Fig. 3. In this position the shell is tilted with respect to the bottle neck so as to permit the liquid within the bottle to flow out between and around the horns 15 and through the duct 7 which is presented at the side of the plug. The liquid then passes between the arms 28 and inwardly around the cone 26; the cone guides the liquid through the tubular body 31 of the mouth piece. From this arrangement it should be understood that when the bottle is in an upright position the valve tends to remain in a closed position, and unless the bottle is shaken when tilted, the valve will interlock with the plug so that it will not rotate into its open position as the bottle neck becomes inclined.

The mouth piece 30 and the crown 25 act

as guards to prevent instruments being introduced into the neck of the bottle to hold the valve open.

Having thus described our invention, we claim as new and desire to secure by Letters Patent,—

1. A non-refillable bottle having a neck and a valve chamber formed therein, a plug mounted in said valve chamber and presenting a pocket with a concavely curved face on the under side thereof; a curved valve rotatably mounted below said pocket and having a face guided along the said curved face of said pocket, said valve having its center of gravity removed from the axis of rotation thereof, and means mounted in said bottle neck beyond said plug obstructing the mouth of the bottle, said bottle having a duct by means of which a fluid may pass said plug.

2. A non-refillable bottle having a neck with a valve chamber therein, a fixed plug mounted in said valve chamber and having a duct formed at the side thereof, a substantially hemispherical valve rotatably mounted below said plug, normally closing said neck and having its center of gravity removed from its axis of rotation, whereby said valve tends to rotate when the neck of the bottle is disposed in an inclined position, and means in said neck beyond said plug for obstructing the neck.

3. A non-refillable bottle having a neck and a valve chamber formed therein, a plug received in said valve chamber, presenting a duct on one side and having a pocket on the under side thereof, presenting a concave wall constantly on the under side thereof, a valve in the form of a hemispherical shell having upwardly extending guide members at one side thereof normally received in said pocket, said valve having its center of gravity removed from the axis of rotation thereof, whereby said valve may open when said bottle neck is tilted to pour from the bottle, and a crown mounted in the bottle neck above said plug and affording means for supporting said valve.

4. A non-refillable bottle having a valve chamber in the neck thereof, a plug mounted in said neck and presenting a duct at the side thereof, a crown mounted in said neck above said plug, a stem passing downwardly from said crown, and a substantially hemispherical valve supported on said stem to rotate on a horizontal axis, the center of gravity of said valve being removed from the axis of rotation thereof, whereby said valve tends to rotate to its open position when the bottle neck is tilted to pour from the bottle.

5. A non-refillable bottle having a neck with a valve chamber formed therein, said valve chamber having a guide lip in the bottom thereof, a plug seating on said guide

lip having a pocket formed and constantly maintained on the under side thereof, a substantially hemispherical valve rotatably mounted below said plug and having its upper portion received in said pocket, said valve having its center of gravity removed from the axis of rotation thereof, whereby said valve tends to rotate when the bottle neck is inclined to pour from said bottle, a crown mounted in the bottle neck above said plug, means for supporting said valve from

said crown, and a tubular mouth piece mounted in said neck beyond said crown.

In testimony whereof we have signed our names to this specification in the presence of 15 two subscribing witnesses.

JOSEPH BIRNER.
EDWARD J. HEIL.

Witnesses:

F. D. AMMEN,
PHILIP D. ROLLHAUS.