J. HUMPHREY.

NON-REFILLABLE BOTTLE.

APPLICATION FILED AUG. 16, 1909.

965,524.

Patented July 26, 1910.

3 SHEETS—SHEET 1.

Fig. 2.

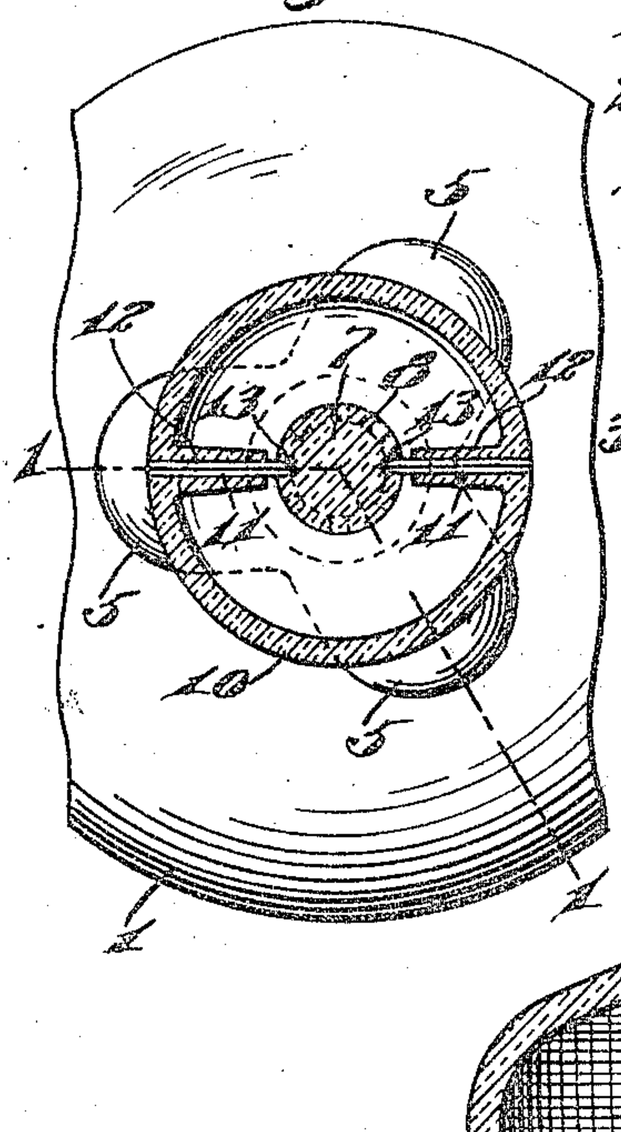


Fig. 1.

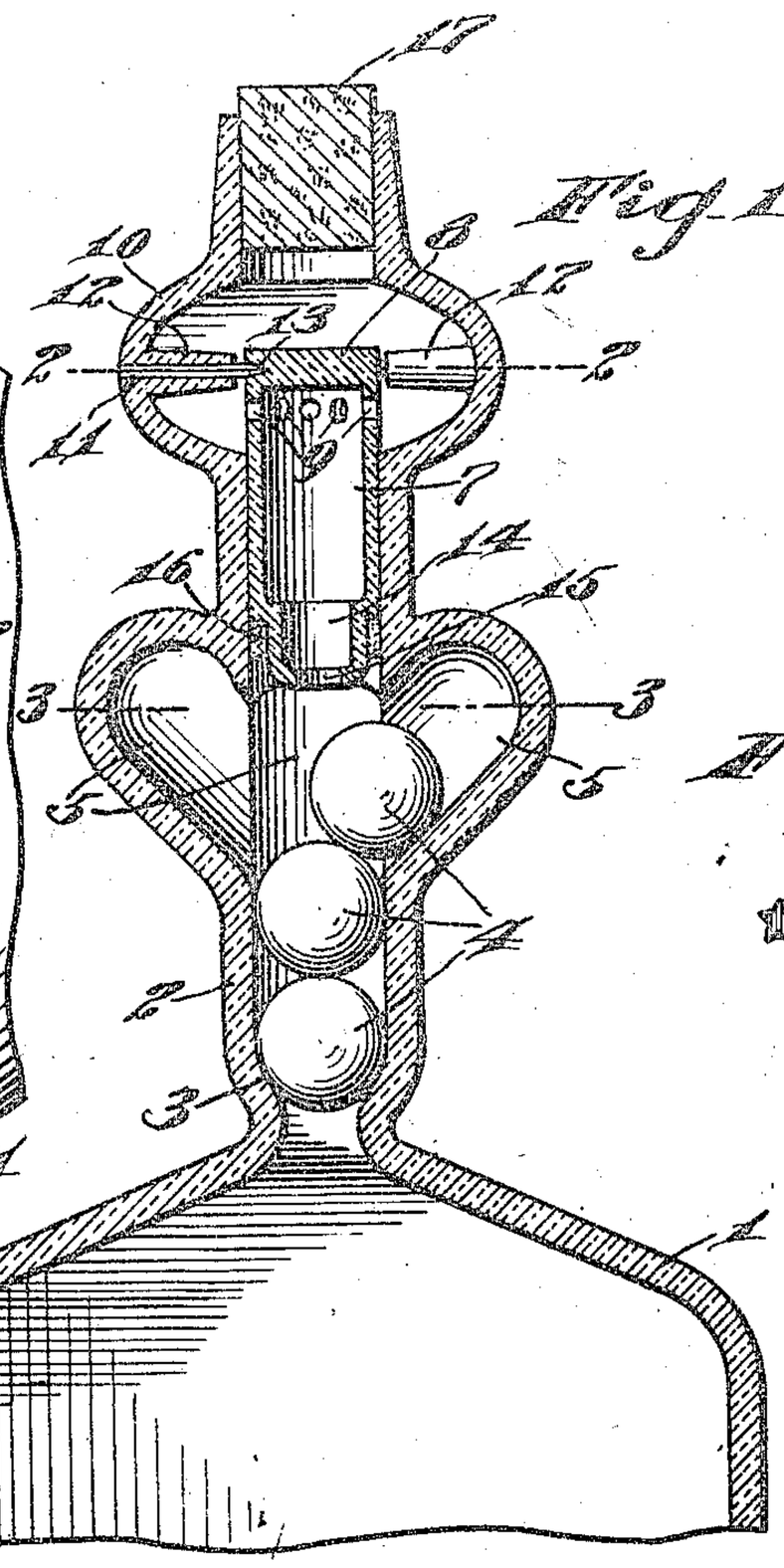


Fig. 4.

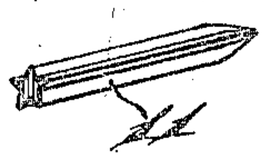
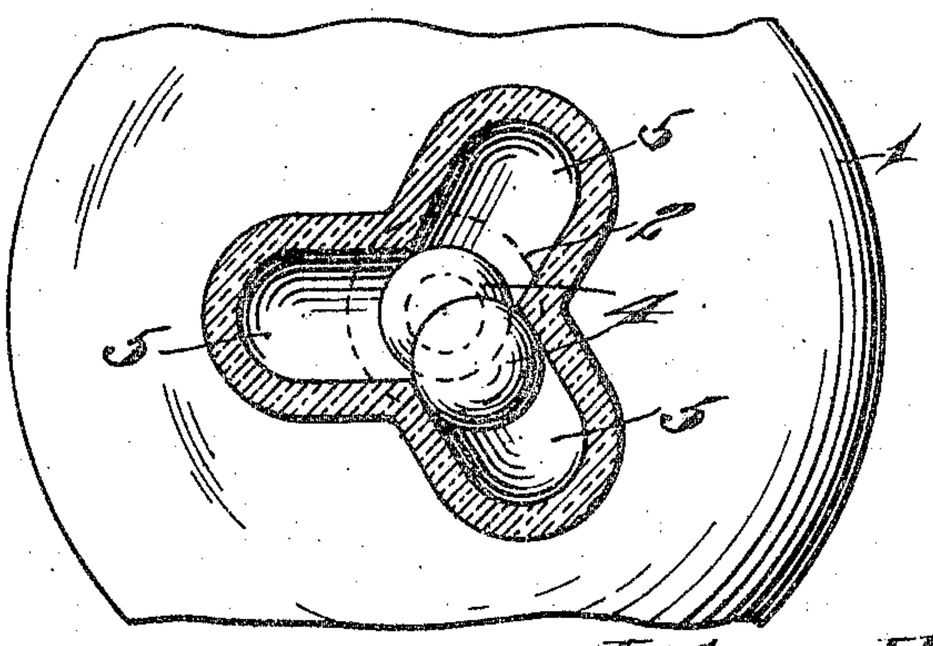


Fig. 3.



Witnesses

Theo. Kreimann.

F. A. L. Mulhall.

Inventor

Jabez Humphrey.

By Joshua R. H. Potts.

Attorney

J. HUMPHREY.

NON-REFILLABLE BOTTLE.

APPLICATION FILED AUG. 16, 1909.

965,524.

Patented July 26, 1910.

3 SHEETS—SHEET 2.

Fig. 5.

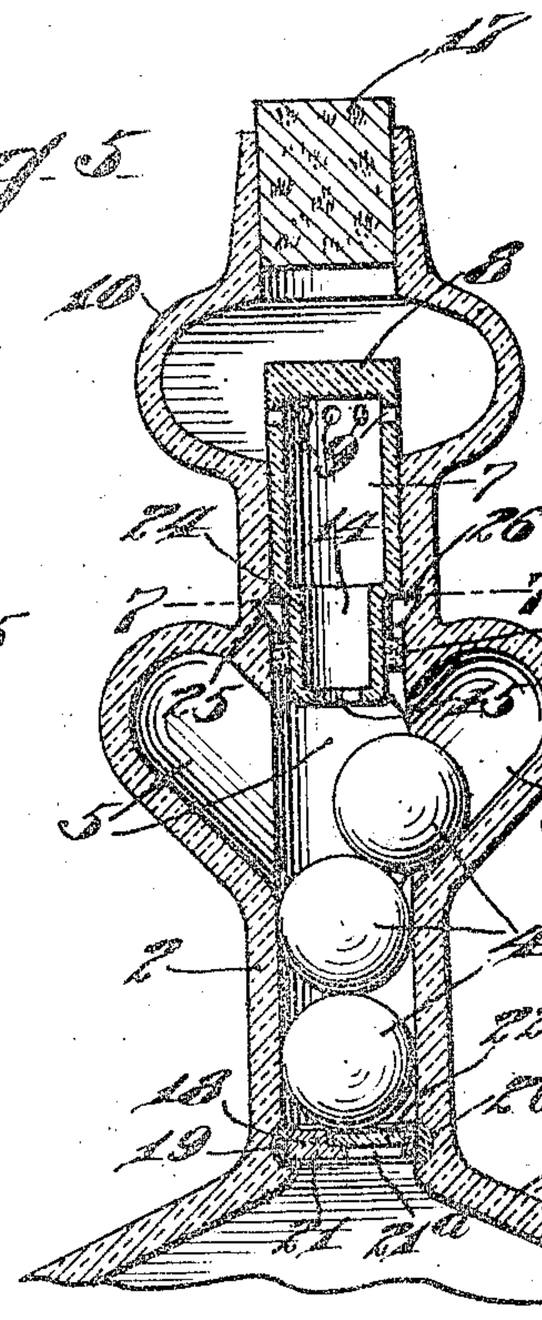


Fig. 8.

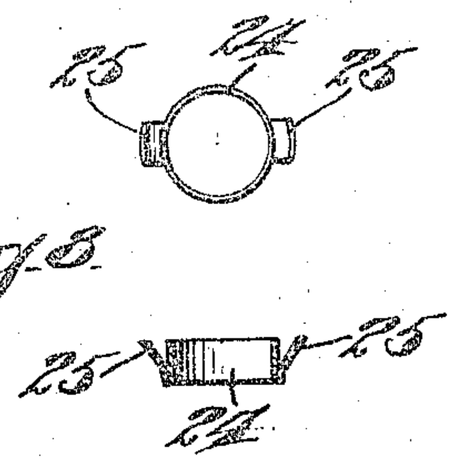


Fig. 7.

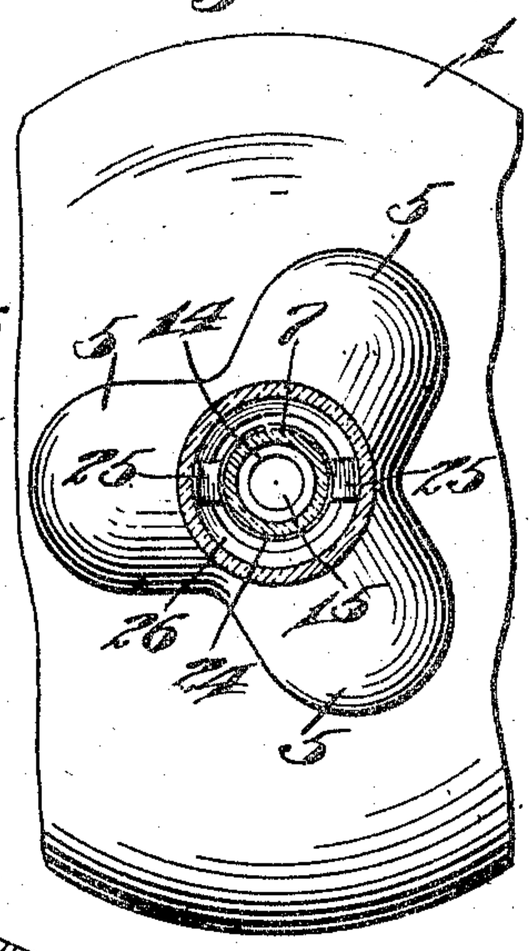


Fig. 6.

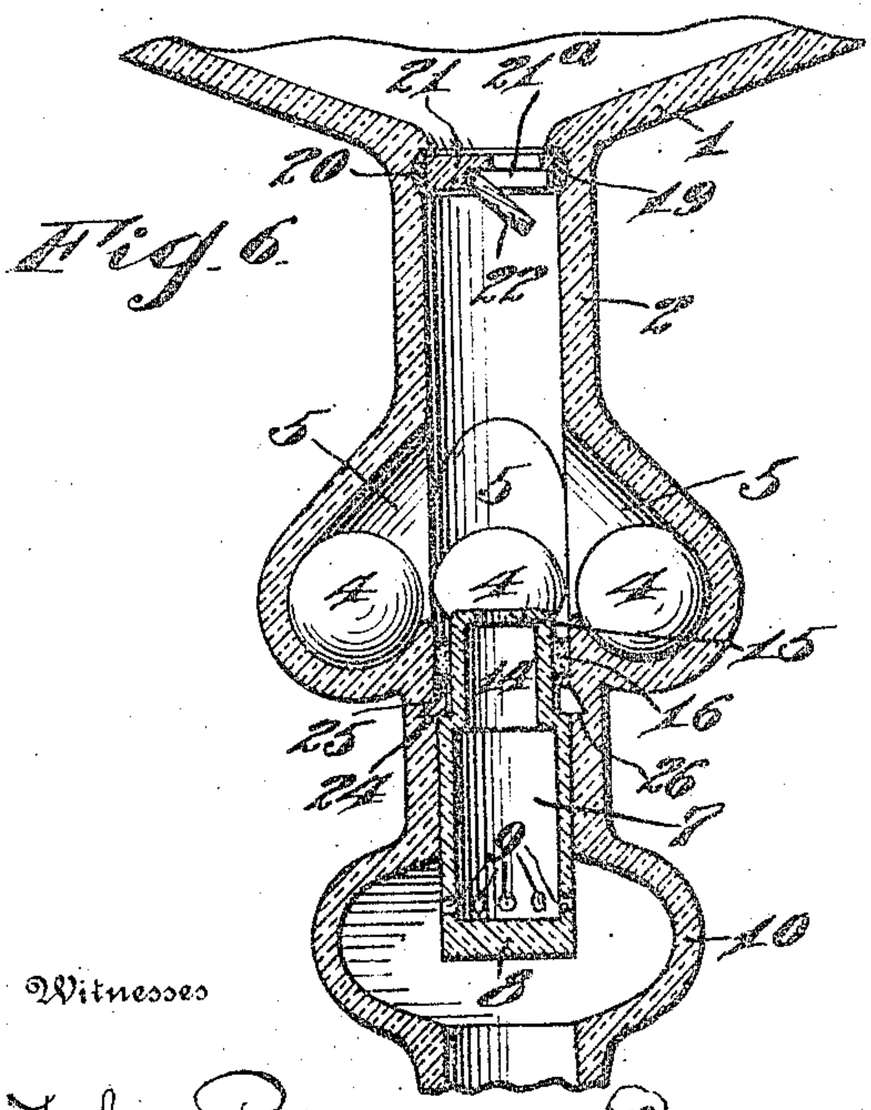
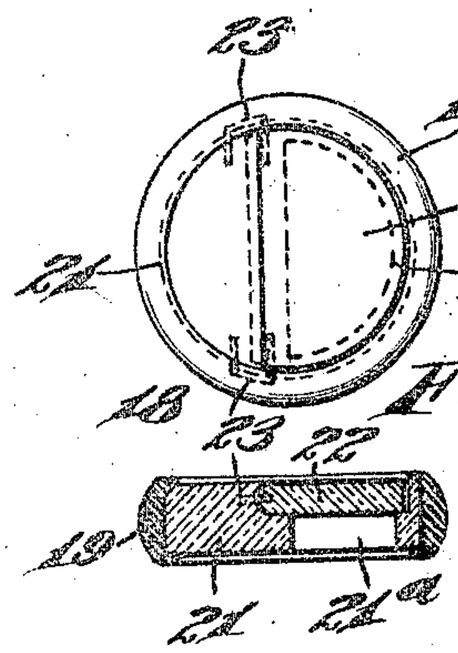


Fig. 9.



Witnesses

Thos. Rosemund.

J. A. L. Mulhall.

Inventor

Jabez Humphrey.

By Joshua C. Peters.

Attorney

J. HUMPHREY.

NON-REFILLABLE BOTTLE.

APPLICATION FILED AUG. 16, 1909.

965,524.

Patented July 26, 1910.

3 SHEETS—SHEET 3.

Fig. 10.

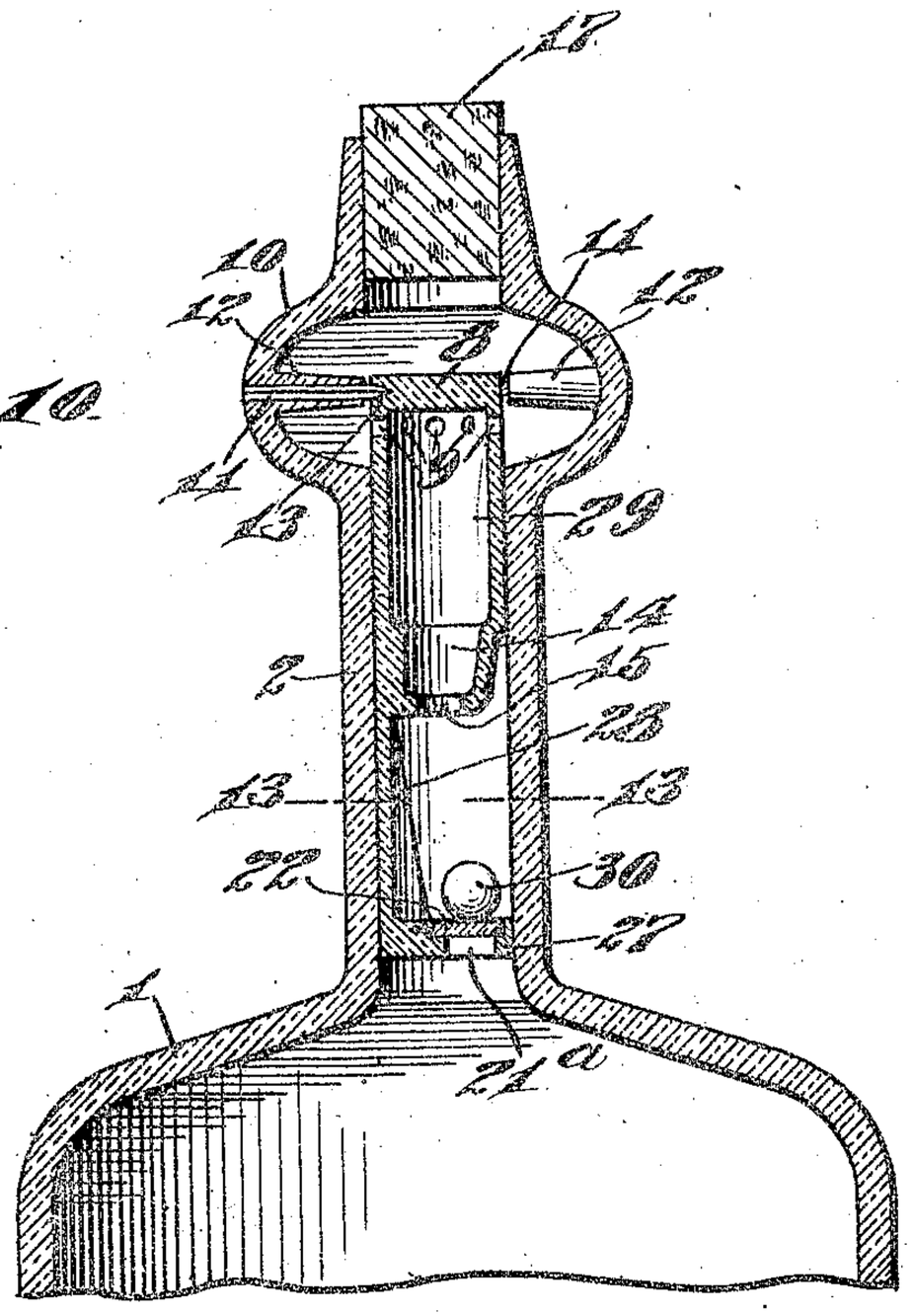


Fig. 11.

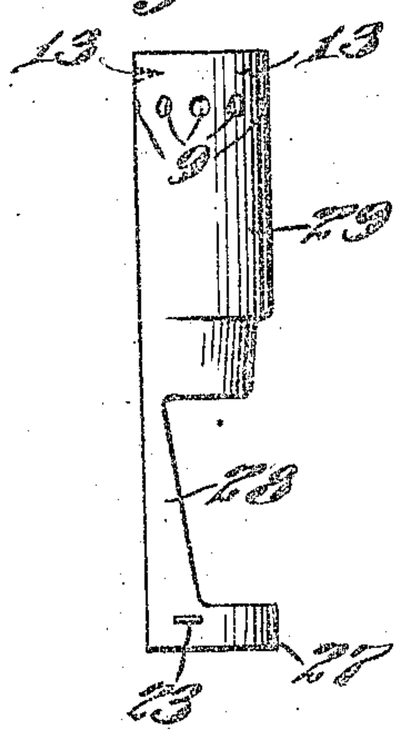


Fig. 12.

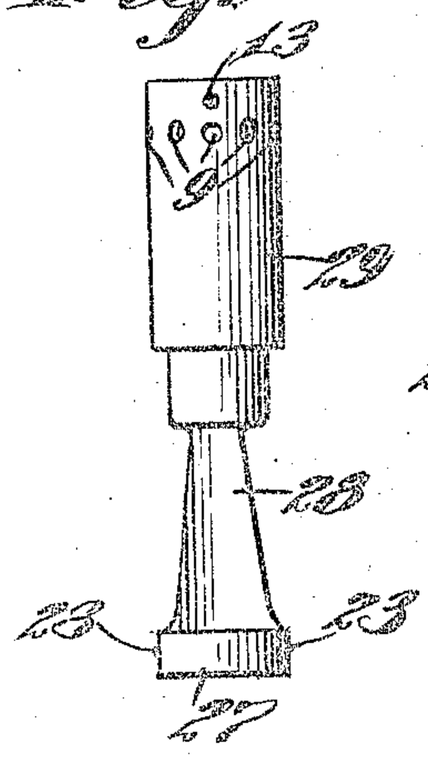
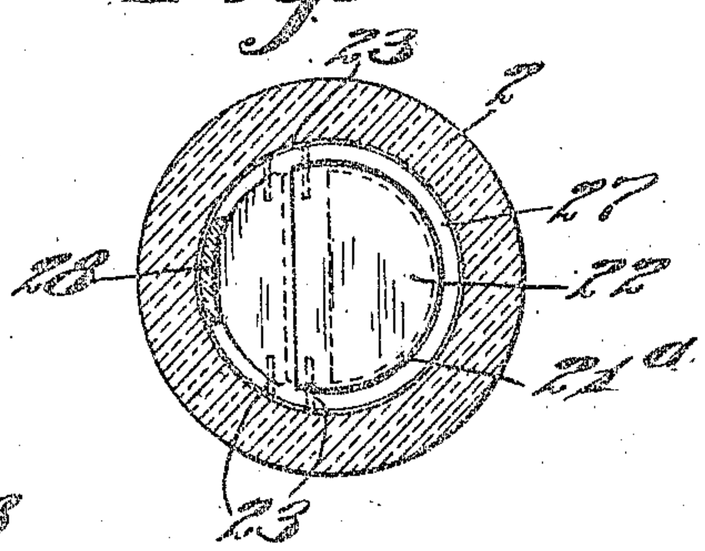


Fig. 13.



Witnesses

Thos. Brennan

F. A. L. Mulhall.

Inventor

Abbey Humphrey,

By Johnson & Payne.

Attorney

UNITED STATES PATENT OFFICE.

JABEZ HUMPHREY, OF PHILADELPHIA, PENNSYLVANIA.

NON-REFILLABLE BOTTLE.

965,524. Specification of Letters Patent. Patented July 26, 1910.

Application filed August 16, 1909. Serial No. 512,947.

To all whom it may concern:

Be it known that I, JABEZ HUMPHREY, a subject of the King of Great Britain, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

My invention relates to an improved non-refillable bottle, the object of the invention being to provide an improved construction of bottle neck, with an improved construction of tube in the neck, having a circuitous passage therethrough, in combination with means for closing the passage through the bottle neck when the bottle is in normal position.

A further object is to provide an improved arrangement of ball receiving pockets or recesses in the bottle neck, together with a series of balls, one ball for each pocket or recess, and so construct the neck as to prevent any passage of liquid through the same until each ball is in a recess or pocket.

A further object is to provide an improved construction of trap or valve, which is normally closed by the weight of a ball or balls thereon.

A further object is to provide improved means for securing the tube in the cylinder.

With these and other objects in view, the invention consists in certain novel features of construction, and combinations and arrangements of parts as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings, Figure 1, is a view in longitudinal section on the line 1—1 of Fig. 2. Fig. 2, is a view in cross section on the line 2—2 of Fig. 1. Fig. 3, is a view in cross section on the line 3—3 of Fig. 1. Fig. 4, is a detail perspective view of one of the holding pins. Fig. 5, is a view similar to Fig. 4 illustrating a modified construction. Fig. 6, is a view of the structure shown in Fig. 5, in an inverted position ready for pouring out. Fig. 7, is a view in section on the line 7—7 of Fig. 5. Fig. 8, illustrates in detail the structure of the inner tube holding device. Fig. 9, illustrates the trap or valve. Fig. 10, is a view in longitudinal section of another modification. Figs. 11 and 12, are views in elevation at right angles to each other of the inner tube, and Fig. 13, is a view in cross section on the line 13—13 of Fig. 10.

1 represents a bottle, and 2 an integral neck thereon, having a reduced portion constituting a valve seat 3, for any of a series of balls 4, which will more fully hereinafter appear. The bottle neck 2 is provided with a series of integral pockets or recesses 5, corresponding in number to the number of balls 4, three being shown, but I do not of course, limit myself to any particular number. These recesses or pockets 5 are of approximately the same diameter as the internal diameter of the bottle neck, and are of a depth sufficiently shallow to admit but a single ball, so that unless each pocket is filled with a ball, the passage through the bottle neck will be obstructed and the liquid cannot be poured out.

7 represents an internal tube, which has a closed upper end 8, and a series of perforations 9 in its side wall adjacent its upper end. This upper end of the tube 7, which latter snugly fits the bottle neck 2, is positioned in an enlarged portion 10 of the bottle neck, and is securely held by means of pins 11. These pins 11 are positioned in sleeves 12 integral with the enlarged portion 10, and provided with bores corresponding in shape to the diameter of the pins 11, which as shown most clearly in Fig. 4, may be of general star shape, but I do not limit myself to any particular shape.

The inner ends of the pins are pointed, and are positioned in recesses or sockets 13 in the end portion of tube 7, and securely hold the tube against longitudinal movement. The pins are preferably made flush with the outer edge of the enlargement 10, so as to prevent any possibility of their removal after once being inserted.

The lower end of tube 7 is restricted or contracted as shown at 14, and provided with an opening 15 in its end for the passage of liquid. Around this restricted portion 14, a packing ring 16, preferably of cork or other suitable material, is positioned, so as to snugly fill the space between the bottle-neck and the tube, and exclude any liquid passing between them.

An ordinary cork or stopper 17 is employed to close the upper end of the neck,

and the operation is as follows: Before any of the parts described are placed in position in the bottle neck, the bottle is filled, the balls 4 are then dropped into the neck, and tube 7 inserted in position, and secured by the pins 11, and after the cork 17 is inserted, the bottle is ready for shipment and sale.

In use, cork 17 is removed and the bottle inverted, and while being held at an angle, is turned so that the several balls 4 will be positioned in the several recesses or pockets 5, when the liquid can be poured out through the tube 7 through a circuitous passage, apparent from Fig. 1. These pockets or recesses 5 are so shallow that they will accommodate but a single ball, and hence unless all of the balls are within the pockets, one of them will position itself across the opening 15 and prevent the escape of liquid.

In the modification shown in Figs. 5, 6, 7, 8 and 9, I employ a valve or trap 18, which is provided with a ring or packing 19, of rubber, cork, or other suitable elastic material, which when the trap is forced into the bottle, will position itself in a recess 20 in the bottle neck, and hold the trap or valve in place. This trap or valve shown most clearly in Fig. 9, comprises a fixed part 21, having an opening 21^a therein, normally closed by a gate 22, the latter hinged by means of U-shaped staples 23. The balls 4 which rest upon this gate 22 normally hold it in closed position. In this modification, instead of employing pins 11 to hold the tube 7, I construct the tube with a somewhat longer reduced portion 14, and provide a metal ring 24 around the same, having spring tongues 25 adapted to spring into an internal groove 26 in the bottle neck, and hold the tube against movement. This grooved portion 26 serves to weaken the bottle neck at this point, so that in the event of pressure being applied to fill the bottle in an inverted position, such pressure is very apt to break the bottle neck at this point.

In the modification shown in Figs. 10, 11, 12 and 13, the trap 27 is connected by an integral upright 28 with tube 29, making the tube, upright and trap all one integral part. In this structure, I employ a smaller ball 30, and dispense with the balls 4 and recesses 5, but employ pins 11 to secure the tube 29 in place.

In constructing my improved bottle, all of the parts except packing ring 16, stopper 17 and staples 23, together with the ring 24 and tongues 25, are preferably all of glass, but I do not of course confine myself to any particular material.

A great many other changes might be made in the general form and arrangements of parts described without departing from my invention, and hence I do not restrict myself to the precise details set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the claims.

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

1. In a non-refillable bottle, the combination with a bottle and a neck thereon, having an enlargement or chamber near its upper end, a tube in said bottle neck having a closed upper end located centrally in said chamber and spaced from the wall thereof, and having a series of perforations in said chamber, of integral internal sleeves in said chamber, bridging the space between the wall and said tube, pins located in said sleeves and projecting into recesses in the tube, and devices in the bottle neck below the tube, normally preventing the passage of liquid therethrough.

2. In a non-refillable bottle, the combination with a bottle and a neck thereon, of a tube secured in the neck having a closed upper end and perforations in its side near its upper end, a plurality of balls normally in the neck one above the other and located between the lower end of the tube and bottle, each ball of substantially the diameter of the neck and adapted to close the passage through said neck when the bottle is in a normal upright position, and a plurality of upwardly, outwardly, and radially projecting pockets formed in the neck and adapted when the bottle is inverted, to accommodate in each a ball and permit a passage through said tube.

3. In a non-refillable bottle, the combination with a bottle and a neck thereon, having a contracted portion forming a valve seat, of a tube secured in the upper portion of the neck, and having a closed upper end and openings in its sides, a plurality of balls constituting valves normally in the neck one above the other and located between the lower end of the tube and the valve seat, any of said balls adapted to engage the valve seat and close the passage through the neck when the bottle is in a normal upright position, a plurality of upwardly and outwardly projecting radial pockets formed in the neck, said pockets conforming in number to the number of balls, and each pocket of an internal area just sufficient to accommodate a single ball, and said balls of a size whereby, unless all of said balls are in the pockets, passage through the tube will be obstructed when the bottle is inverted.

4. In a non-refillable bottle, the combination with a bottle and a neck thereon, said neck having an enlarged upper portion, of a tube secured in the neck and having perforations in its sides below the closing end, a plurality of balls in said neck adapted to close the passage through the neck when the bottle is in a normal, upright position, each

ball of approximately the same diameter as the internal diameter of the neck, a plurality of upwardly, outwardly, and radially projecting pockets formed in said neck, each of said pockets of an internal diameter approximating the internal diameter of the neck, and of an internal area sufficient to accommodate but a single ball, said pockets corresponding in number to the number of balls, whereby unless a ball is accommodated in each of the pockets, the passage through the neck is obstructed.

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

JABEZ HUMPHREY.

Witnesses:
EDWARD L. O'HARA,
R. H. KRENKEL.