

No. 841,860.

PATENTED JAN. 22, 1907.

J. T. GILMER.
NON-REFILLABLE BOTTLE.
APPLICATION FILED JUNE 11, 1906.

Fig. 1.

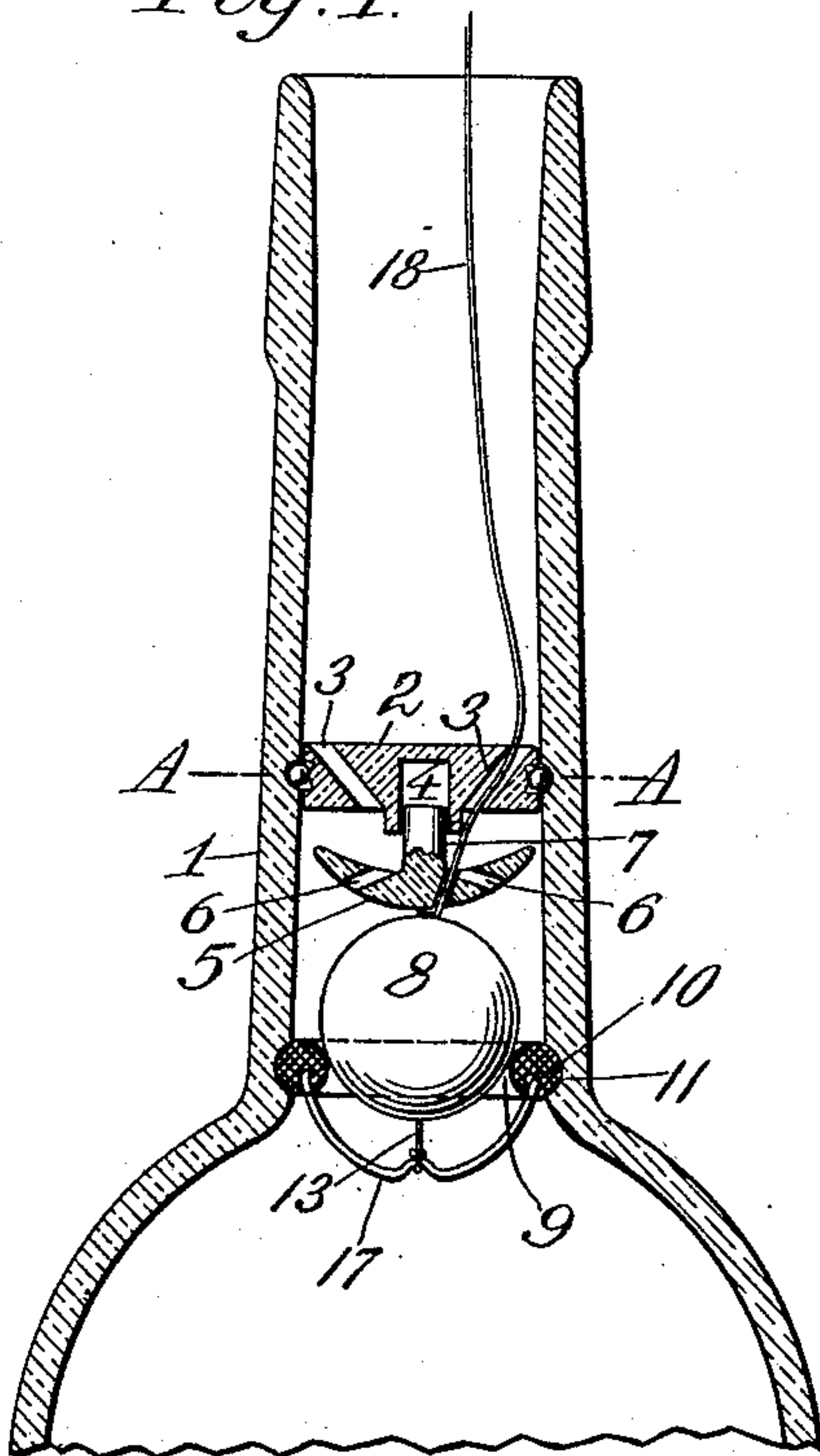


Fig. 3.

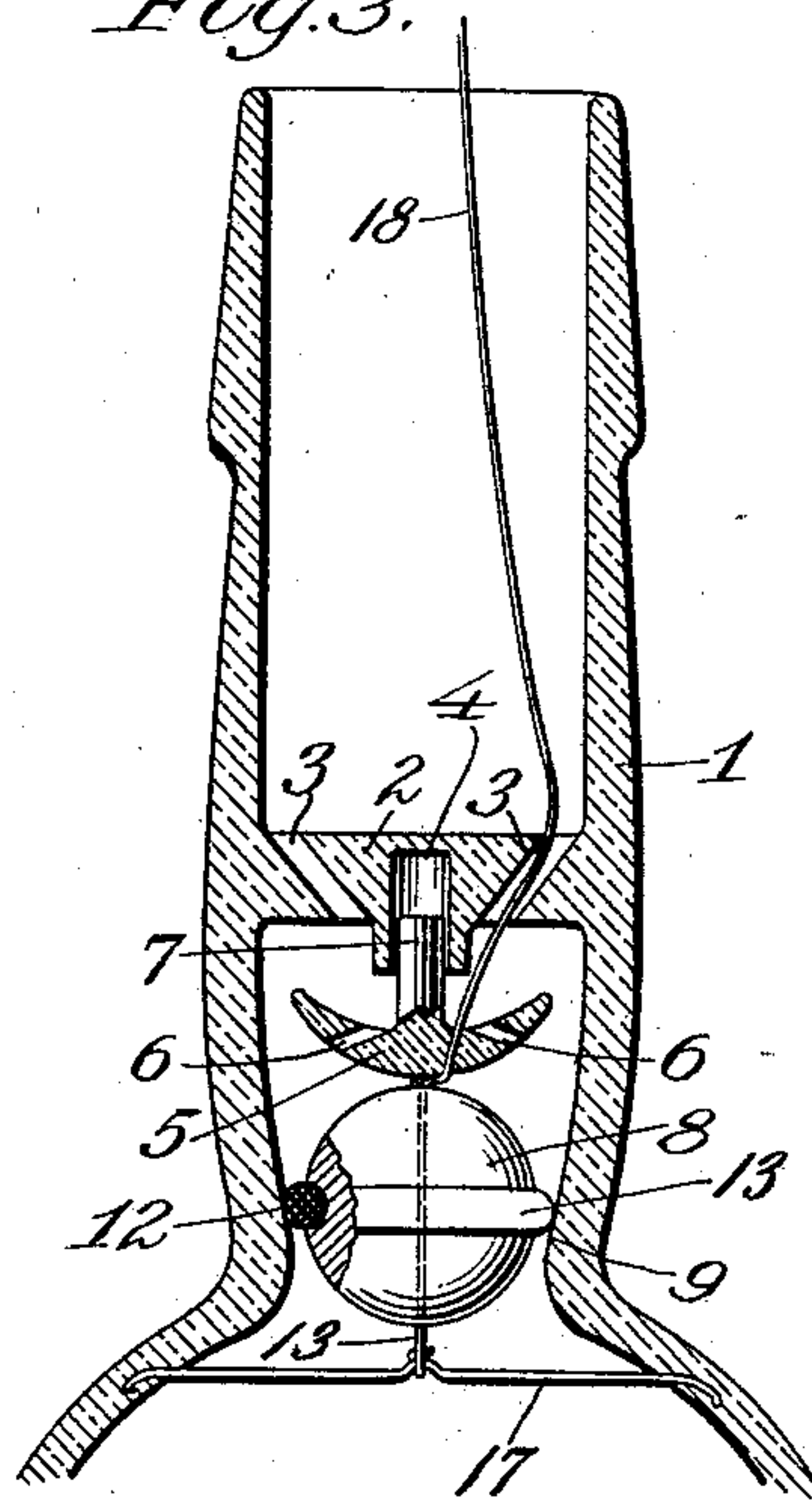
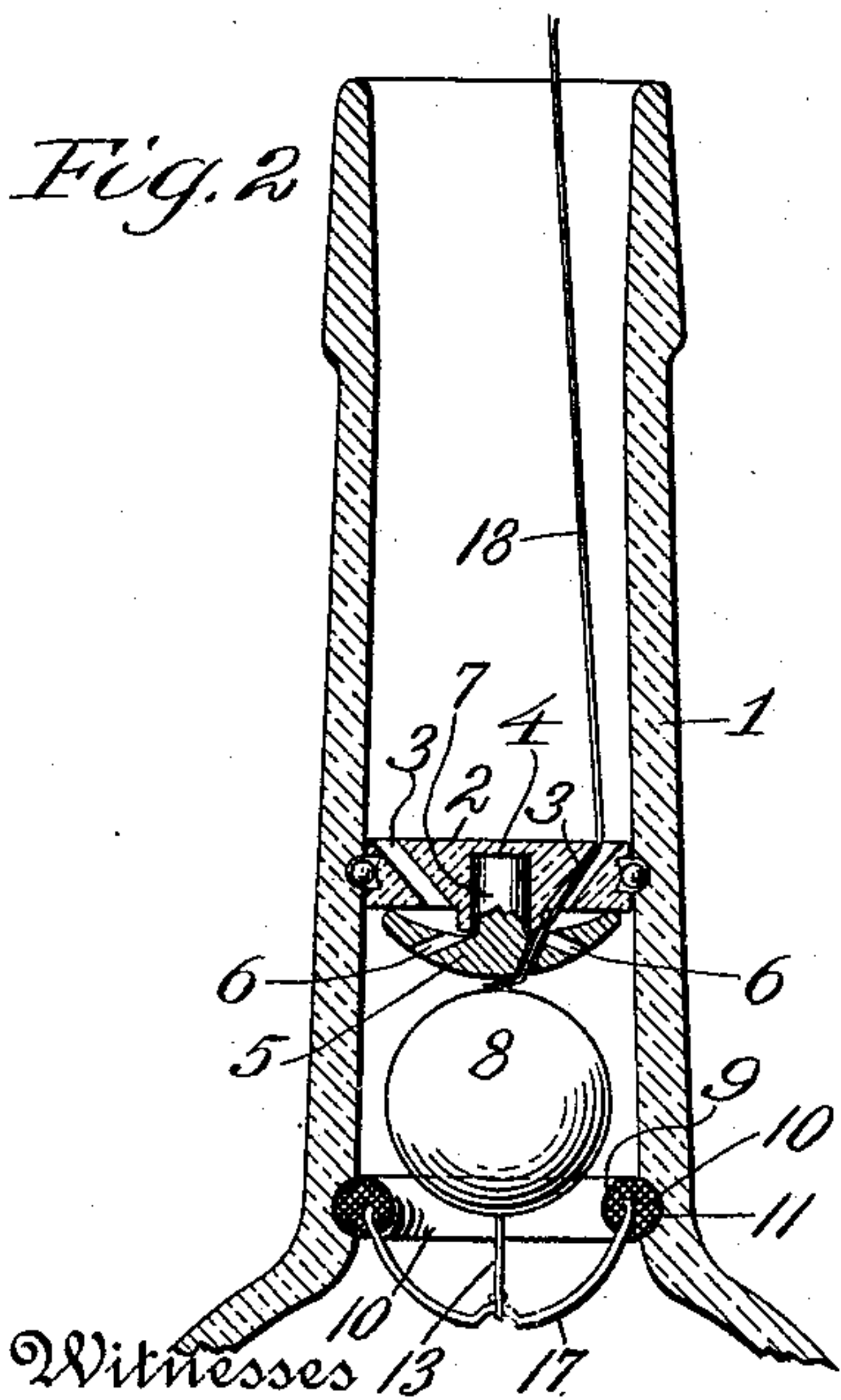


Fig. 2.



Witnesses
W. C. Curran
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Fig. 5.

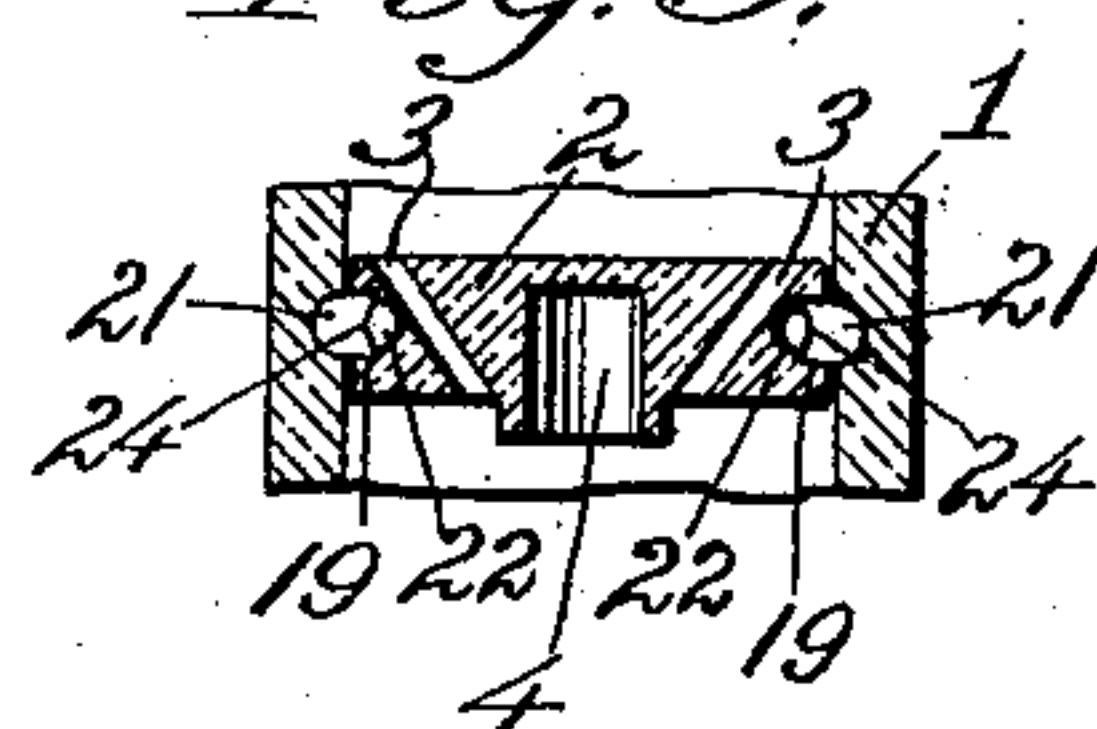


Fig. 4.

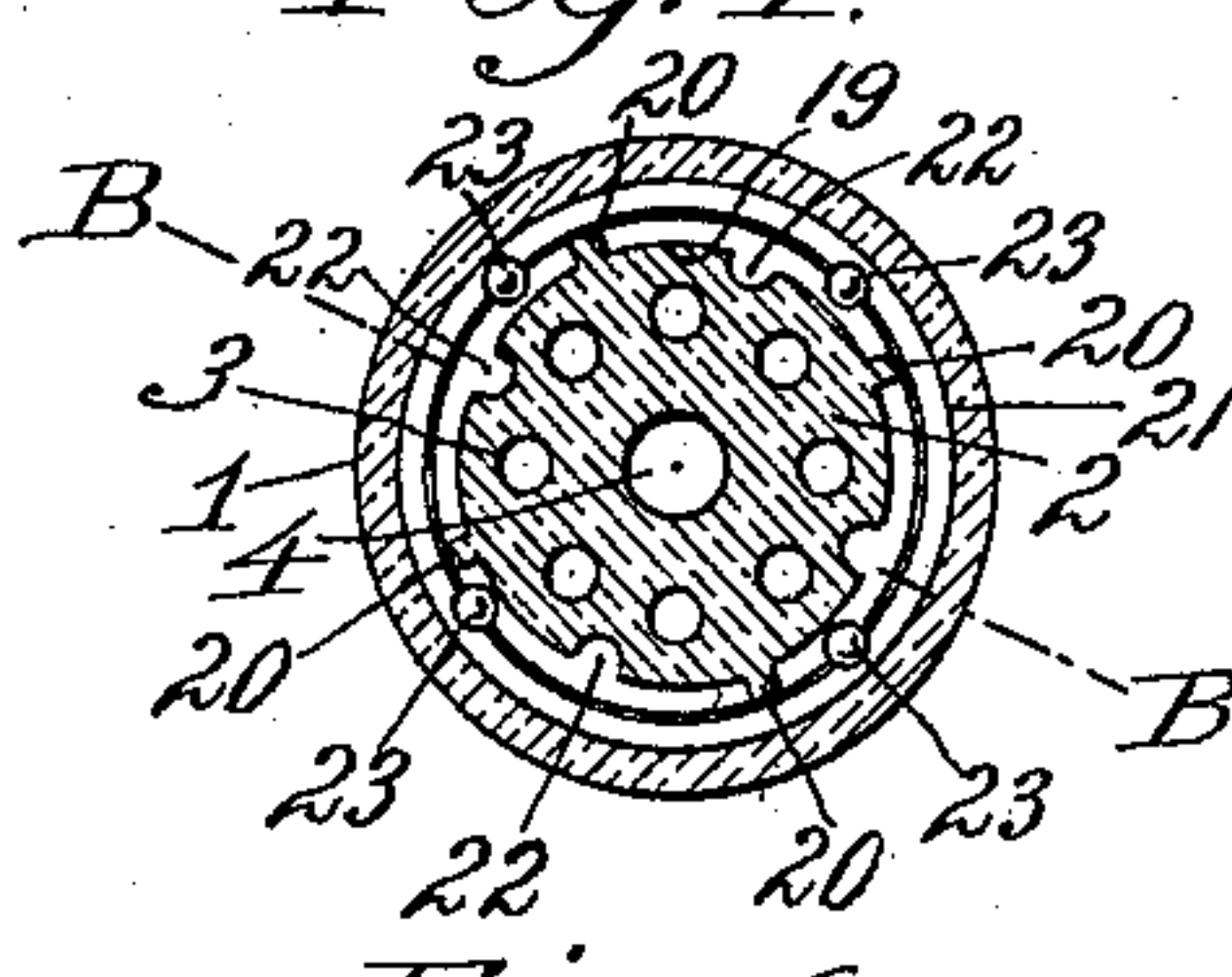


Fig. 6.

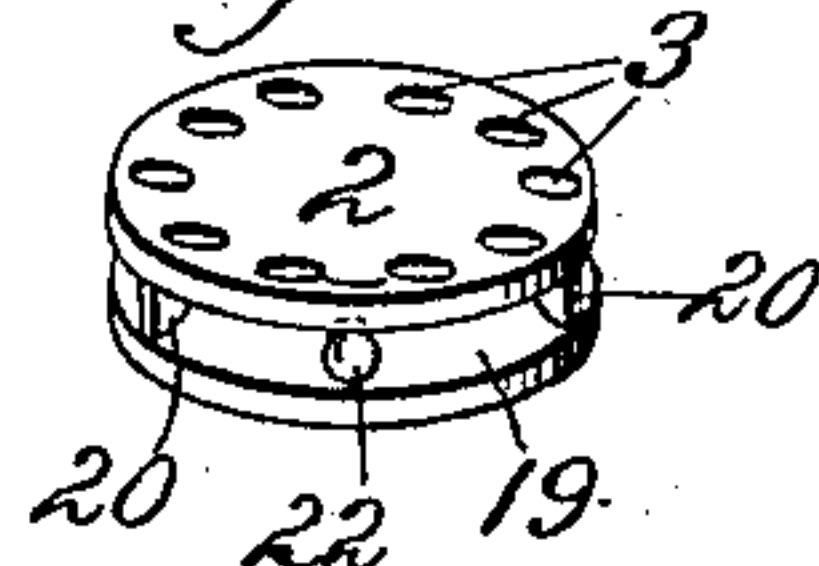
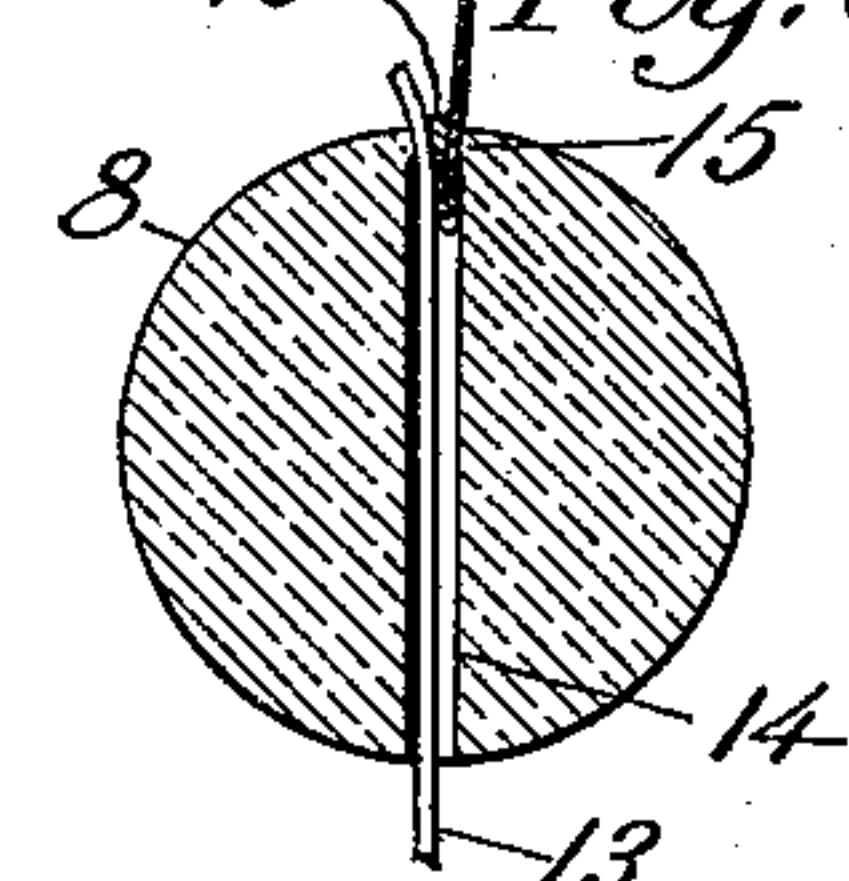


Fig. 7.



Fig. 8.



Inventor

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UNITED STATES PATENT OFFICE.

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NON-REFILLABLE BOTTLE.

No. 841,860.

Specification of Letters Patent.

Patented Jan. 22, 1907.

Application filed June 11, 1906. Serial No. 321,239.

To all whom it may concern:

Be it known that I, JOHN T. GILMER, a citizen of the United States, residing at Pensacola, in the county of Escambia and State of Florida, have invented certain new and useful Improvements in Non-Refillable Bottles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The primary object of this invention is to provide a simple, cheap, and practicable non-refillable bottle—an article long sought by dealers in liquid commodities to prevent the fraudulent refilling of their bottles with spurious preparations or the dilution or adulteration of the bottled liquids.

The invention pertains more particularly to non-refillable bottles having a ball-valve and perforated guard or strainer above the same; and it consists of an improved device of this type which will allow the contents of the bottle to be poured out in the usual way, at the same time serving as a stopper to prevent evaporation, but which will prevent refilling of the bottle after the liquid has been discharged, means being provided to open the valve to allow the bottle to be filled in the first instance, after which said means can be readily removed.

The invention also includes improved controlling devices for the ball-valve and an improved device for securing the guard fixedly in the neck of the bottle.

In the accompanying drawings, which form a part of this specification, and wherein corresponding parts in the different figures are designated by the same reference-numerals, Figure 1 is a vertical central section of the upper part of a straight-necked bottle having my invention embodied therein, showing the parts in normal position. Fig. 2 is a similar view showing the ball-valve held open to allow the bottle to be filled in the first instance. Fig. 3 is a central vertical section of the upper part of a bulging-necked bottle embodying my invention in an alternative form. Fig. 4 is a horizontal cross-section through the neck of the bottle shown in Fig. 1, taken on line A A of Fig. 1. Fig. 5 is a vertical section taken on line B B of Fig.

4. Fig. 6 is a detail perspective view of the guard or perforated disk located in the bottle-neck above the ball-valve. Fig. 7 is a detail perspective view of a movable concavo-convex disk arranged between the aforesaid guard-disk and the ball-valve. Fig. 8 is a detail vertical section through the ball.

In the bottle-neck 1 is fixedly secured a glass disk 2, having a number of inclined holes or perforations 3 therein and having a bottom socket 4. Said fixed disk 2 extends across the full width of the interior of the bottle-neck and serves as a guard for the ball-valve below, the holes or perforations 3 being inclined, preferably, so as to converge toward the center of the disk to prevent picking or tampering with the valve. Below said guard-disk 2 is a smaller concavo-convex glass disk 5, also having inclined holes or perforations 6 and formed with an upwardly-projecting stud 7, that is loosely fitted or seated in the socket 4. The convex bottom of said disk 5 rests on a glass ball or ball-valve 8, the disk 5 being movable up and down between the limits allowed by said ball 8 and by the depth of the socket 4. Said disk 5 permits the passage of liquid around or over its upturned edge, as well as through its holes or perforations 6; but by reason of its upwardly-flaring shape and the relative arrangement of its holes to those in the fixed disk 2 it is impossible to pass a wire or other device down through the two disks 2 and 5 for picking or tampering with the non-refillable closure.

The ball or ball-valve 8 normally rests on or in a valve-seat 9 in the neck of the bottle, thus closing the bottle. Said valve-seat 9 may be in a rubber ring or gasket 10, attached in the lower part of the bottle-neck, as shown in Figs. 1 and 2, where said rubber ring 10 appears seated in an annular groove 11 in the lower part of the bottle-neck. This construction is usually employed in the case of a straight-necked bottle, such as represented in said Figs. 1 and 2. On the other hand, in the case of a bulging bottle-neck, as represented in Fig. 3, the ball 8 may have a projecting rubber ring 12 secured around it, said rubber ring 12 being secured in an annular groove extending around the ball and being seated in the contracted lower neck of

the bottle, making an air-tight inclosure, while allowing the same to be opened when the ball is raised or moved up in the bulging or enlarged portion of the bottle-neck.

5 The ball 8, besides being held down by the weight of the concavo-convex disk 5, is drawn to its seat by a slender elastic or rubber string or cord 13, which is preferably of substantially such tension as to equalize the
10 weight of the ball. Hence said elastic string 13 holds the ball seated in whatever position the bottle may be held, but allows the ball to drop by its own weight, together with the weight of any liquid above it, when
15 the bottle is inverted or partially inverted, so as to permit the liquid to be poured out. This construction insures the proper seating of the ball at all times, but does not interfere with the free discharge of the liquid when the
20 bottle is turned upside down. Said rubber string 13 may be attached to the ball 8 in any suitable manner. As shown in Fig. 8, the string runs loosely through a hole 14 in the vertical center of the ball, the top of which
25 hole is contracted into a fine pin-hole 15, and the upper end of the rubber string 13 is threaded through said fine pin-hole 15 and secured therein by a minute piece of fine wire or metal clip or tang 16, inserted in said
30 pin-hole, clenching the end of the rubber string therein. The lower end of said rubber string 13 is connected to a cross-piece 17, secured below the ball across the interior of the bottle or across the bottom of the bottle-
35 neck. Said cross-piece 17 may consist of a fine piece of aluminium wire or galvanized wire or other material adapted to avoid corrosion by the liquid. In Figs. 1 and 2 said cross piece or wire 17 is shown attached to
40 the rubber ring 10, being curved under the ball 8. In Fig. 3 the cross-piece is shown secured in the bottle below the ball and may be secured in such position when the bottle is blown in process of manufacture.

45 The ball or ball-valve 8 is also attached to a thread 18, which may be threaded through the aforesaid fine pin-hole 15 and have its lower end knotted to secure it in said pin-hole. This thread 18 is threaded through a
50 pin-hole in the concavo-convex disk 5 and threaded through one of the perforations 3 in the guard-disk 2 and runs up through the neck of the bottle and out of its mouth. By means of this thread 18 the bottle valve or
55 ball 8 can be lifted to allow filling of the bottle in the first instance. After the bottle has been filled the said thread 18 is cut off, thus destroying all means for permitting the further filling of the bottle. The ball 8 now
60 serves as an air-tight closure, preventing evaporation and deterioration of the contents of the bottle, while permitting the contents to be poured out when the bottle is inverted or partially inverted, since the ball 8
65 will fall from its seat by its own weight and

the weight of the liquid above it, moving the concavo-convex disk 5 with it. At the same time it is impossible to refill the bottle in whatever position it may be held, because as soon as the bottle is held either upright or in
70 a more or less inclined position, such as to relieve the pressure of the liquid from below the ball, the ball falls back and is immediately drawn to its seat and prevents ingress of liquid into the bottle.

75 In case of an attempt to force the liquid into the bottle while inverted or partially inverted the force of the liquid would likewise seat the ball and prevent the passage of the liquid, this effect being promoted by the
80 upwardly-flaring or cup-shaped form of the concavo-convex disk 5, which serves as an effective abutment for the force of the liquid and bears against the ball, holding it positively seated. Furthermore, it is impossible
85 to pick or tamper with the valve by means of a wire or other contrivance by reason of the shape and arrangement of the concavo-convex disk 5 and the relative arrangement of the inclined holes 3 in the guard-disk 2
90 and the holes 6 in the movable disk 5.

My invention contemplates placing the devices above described in the bottle-neck either by inserting said devices in the neck
95 of the bottle after the bottle has been made or by incorporating said devices in the bottle-neck during the process of manufacture.

For inserting and securing the device in the bottle-neck the guard-disk 2 is formed with an annular peripheral groove 19, which
100 groove is divided by partitions 20 into preferably four sections or quadrants. The bottle-neck is interiorly formed with a confronting groove 21. The groove 19 in the disk 2 has a number of sockets or recesses 22, one or
105 more of such sockets being provided for each quadrant or section of such groove. In the said sockets 22 glass beads or balls 23 are placed before the disk 2 is inserted in the bottle-neck. The disk 2 is then inserted into
110 the bottle-neck until the grooves 19 and 21 register, whereupon the glass beads 23 pass out from their sockets 22 and engage in the confronting grooves 19 and 21, thus securely locking the disk 2 in place. The grooves 19
115 and 21 are of such depth as to loosely inclose the glass beads or balls 23 therein to allow free running of the said glass beads or balls and prevent binding thereof. Both of said grooves 19 and 21 may be approximately
120 semicircular; but the groove 19 in the disk 2 is preferably of angular shape, as shown in Fig. 5, the bottom of the said groove 19 being slightly ridged medially, as indicated at 24, to prevent any tendency of the beads or
125 balls 23 from returning into the sockets 22 after the disk 2 is secured in place. Said sockets 22 are of just such depth to allow the balls to seat therein in order to prevent contact with the interior of the bottle-neck
130

when the disk is being inserted in place. With this contrivance the parts of the closing device are inserted in the neck of the bottle, as represented in Figs. 1 and 2, in the following manner: The several parts are first assembled together outside the bottle, the ball being seated on its rubber ring 10, forming the valve-seat, and the elastic string or cord 13 being attached to the ball and to the cross-wire 17, which is fastened to said gasket or rubber ring 10, and the thread 18 being also attached to said ball 8 and being threaded through the concavo-convex disk 5 and through one of the perforations in the guard-disk 2. The parts now being assembled, the rubber ring 10, together with the cross-piece 17 carried thereby and with the ball 8, attached by the rubber string 13 to said cross-piece, is inserted down into the bottle-neck until the rubber ring 10 seats itself in the groove 11. The concavo-convex disk through which the thread 18 is threaded follows after the ball, and finally the guard-disk 2, having the glass beads 23 held in its sockets 22, is inserted in the bottle-neck until the grooves 19 and 21 register, whereupon by turning the bottle on its side and revolving it once or twice the glass beads 23 readily drop out and engage in the grooves 19 and 21, thus securely locking the disk in place. After the disk 2 has been locked in this manner it is impossible to remove the device, for even if one of the beads 23 should be gotten back into its recess or socket 22 it would be impossible to get all the beads 23 back into their sockets.

In this application I make no specific claim to the hereinbefore-described locking device *per se*, whereby the guard-disk 2 is fixedly secured in the bottle-neck, since the same constitutes the subject-matter of a divisional application for patent filed by me on September 27, 1906, serially numbered 336,489.

In the case of incorporating the non-refillable closing device in the bottle-neck during the manufacture of the bottle the several parts are assembled together in proper relation in the manner already described and are placed in the bottle-mold, the bottle-neck being blown integrally with the glass disk 2 and the cross-piece 17 being also blown in the sides of the bottle. Another method would be to insert the several parts in the bottle-neck after they had been properly assembled and then by means of a blowpipe melt the disk 2, so that it becomes integral with the bottle-neck.

It is understood, of course, that the invention is applicable not only to bottles, but to kindred vessels, such as jugs and demijohns, and the following claims will be construed accordingly. In the case of short-necked bottles, jugs, or demijohns the closing device may be contracted by cutting off the

upper half of the ball-valve—namely, using a hemispherical instead of a spherical valve.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. A non-refillable bottle having a bottle-neck provided with a valve-seat therein, a ball seated on said valve-seat and closing the same, a concavo-convex disk of smaller diameter than the interior diameter of the bottle-neck having its convex side resting on said ball and having an upwardly-projecting stud, and a fixed guard-disk secured in the bottle-neck above said concavo-convex disk and having a bottom socket in which said stud is loosely fitted, said fixed disk having inclined holes or perforations therein for passage of liquid, said concavo-convex disk being movable up and down between the limits allowed by the ball and the depth of said socket, substantially as described.

2. In a non-refillable bottle, the combination of a bottle-neck having a valve movable up and down, a stationary perforated guard-disk above the valve, the perforations of which are downwardly inclined from the peripheral portion toward the center of said disk, and a concavo-convex disk of smaller diameter than the interior of the bottle-neck arranged between said guard-disk and valve and having its convex under side seated on said valve.

3. In a non-refillable bottle, the combination of a bottle-neck having a valve therein operating to allow egress and prevent ingress of liquid, a guard-disk above said valve having liquid passages or perforations therein slanting downwardly toward the center of said disk, and a subjacent disk of smaller diameter than the interior diameter of the bottle-neck and having a concaved upper side.

4. In a non-refillable bottle, the combination of a bottle-neck having a valve therein operating to allow egress and prevent ingress of liquid, a guard-disk above said valve having radially-arranged liquid-passages therein similarly inclined with respect to the center of said disk, and a subjacent disk whose upper side is curved or inclined with respect to its center in the same general direction as the slant of said passages, there being also means for passage of the liquid past said subjacent disk.

5. In a non-refillable bottle, the combination of a bottle-neck having a valve therein, a stationary perforated guard-disk above said valve, the perforations of which are of pronounced slant or incline, and an intermediate movable disk bearing on said valve and having perforations therein slanting oppositely to those in the upper disk.

6. In a non-refillable bottle, the combination of a bottle-neck having a valve therein, a stationary perforated guard-disk above said valve, the perforations of which slant

downwardly from the peripheral portion toward the center of said disk, an intermediate movable disk bearing on said valve and having a concave upper surface, said movable
5 disk being of smaller diameter than the interior of the bottle-neck, and means for guiding said movable disk.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN T. GILMER.

Witnesses:

OSGOOD H. DOWELL,
E. R. WITMAN.