F. LENZI.

NON-REFILLABLE BOTTLE.

APPLICATION FILED DEC. 10, 1908.

947,110. **Patented Jan. 18, 1910.**

Fig. 7.

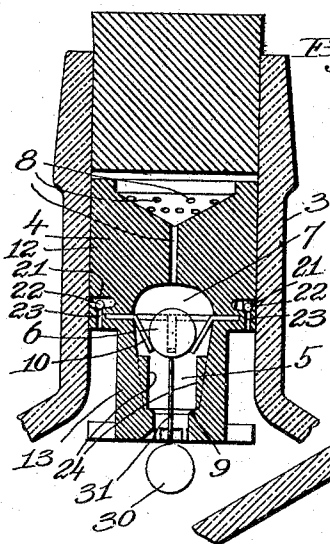


Fig. 1.

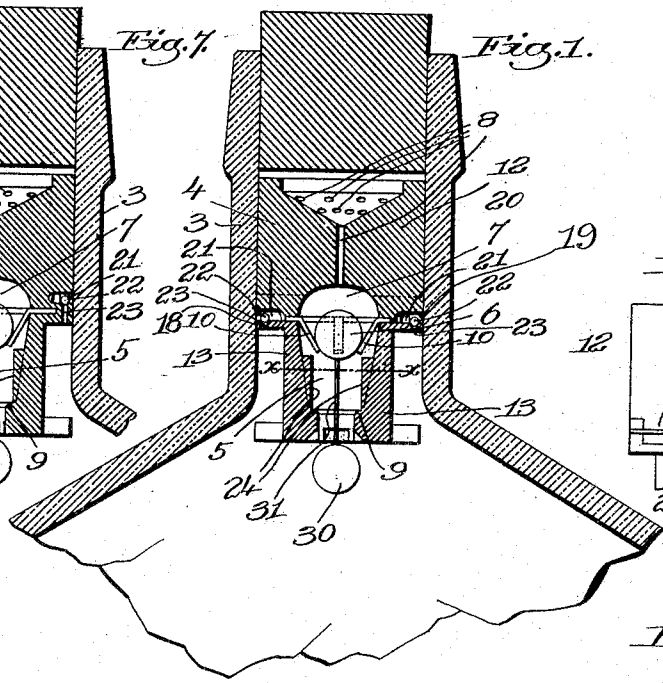


Fig. 6.

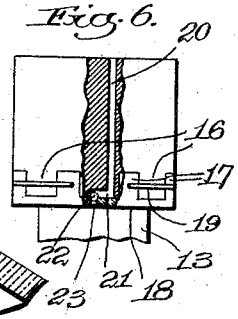


Fig. 8.

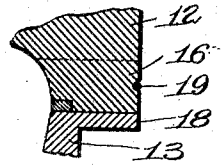


Fig. 2.

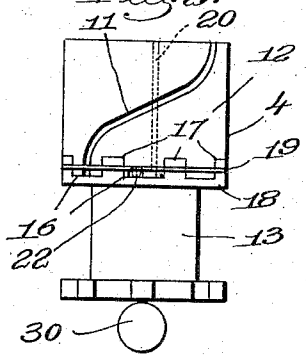


Fig. 3.

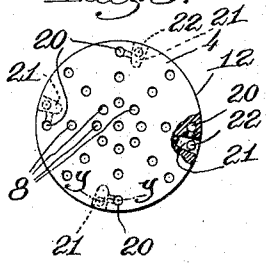


Fig. 4.

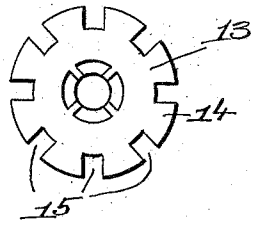
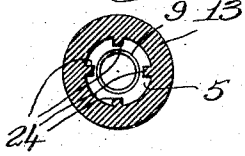


Fig. 5.



Witnesses:
Fred. S. Grumbach.
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Inventor.
Frank Lenzi,
By Cleary & Gaynor Attys.

UNITED STATES PATENT OFFICE.

FRANK LENZI, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF SIXTEEN AND TWO-THIRDS PER CENT. TO JOHN JAMES HYNES, ELEVEN AND ONE-NINTH PER CENT. TO FRANK WILLIAM WENNERS, SIXTEEN AND TWO-THIRDS PER CENT. TO BERTRAM CHESTER EDWARDS, ELEVEN AND ONE-NINTH PER CENT. TO ROSA MARIA DUFFY, AND ELEVEN AND ONE-NINTH PER CENT. TO GEORGE AUGUST WENNERS, ALL OF BOSTON, MASSACHUSETTS.

NON-REFILLABLE BOTTLE.

947,110. Specification of Letters Patent. **Patented Jan. 18, 1910.**

Application filed December 10, 1908. Serial No. 466,749.

To all whom it may concern:

Be it known that I, FRANK LENZI, a citizen of the United States, residing at Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Non-Refillable Bottles, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to non-refillable bottles and has for one of its objects to provide a bottle of this class having a valve device to prevent its being refilled with means adapted to hold the valve device inoperative so that the bottle can be filled in the first instance, which means will permit the valve to be seated after the bottle has been filled, so that after the bottle is emptied, it cannot be refilled again.

Another object of the invention is to provide a novel construction of non-refillable bottle according to which the valve is prevented from being unseated until the bottle is turned completely or very nearly bottom side up.

Other objects of the invention will be apparent from the following description, and the novel features of the invention will be pointed out in the appended claims.

In the drawings wherein I have shown the preferred embodiment of my invention, Figure 1 is a vertical section through a bottle neck having my improved device applied thereto; Fig. 2 is a side view of the plug removed from the bottle; Fig. 3 is a top plan view thereof with a portion broken out; Fig. 4 is a bottom plan view; Fig. 5 is a section on the line *x—x*, Fig. 1; Fig. 6 is a section on the line *y—y*, Fig. 3; Fig. 7 is a view similar to Fig. 1 showing a different form of the invention; Fig. 8 is an enlarged detail showing one manner of holding together the two parts of the plug. 3 designates the neck of a bottle having my improvements applied thereto.

As stated above, in the preferred embodiment of my invention, the valve device is in the form of a plug which can be inserted into the neck of the bottle, but the valve device might be built as an integral part of the bottle without departing from the invention.

The plug herein shown is designated generally by 4. It is formed with a central chamber 7, with a valve chamber 5 which communicates with the central chamber 7 and in which a valve 6 is received, and with outlet ports 8 also communicating with the central chamber 7. The valve chamber 5 is provided at its lower end with a valve seat 9 on which the valve 6 is adapted to rest thereby to prevent liquid being introduced into the bottle. The valve is normally held off from its valve seat so as to permit the bottle to be filled in the first instance, and after the bottle is filled, the valve is released from its holding means and permitted to drop onto the valve seat 9. When in this position the bottle can be emptied by tipping it up in usual manner, for when this is done, the valve will roll off from the valve seat and permit the liquid to escape, but the bottle cannot be refilled because when the valve 9 is in its dotted line position Fig. 1, it closes the inlet into the bottle.

The valve 6 may be normally held off from its seat in a variety of ways without departing from my invention. I have herein shown for this purpose yielding means in the form of a plurality of spring fingers 10 which are sustained at the upper end of the valve chamber and which are adapted to hold the valve, as shown in full lines Fig. 1. When the bottle is full the valve can be released from these holding fingers by inserting a wire or other implement through one of the outlet ports 8 and forcing the valve downwardly below the fingers 10. One of the outlet ports 8 will preferably be situated directly over the central portion of the valve chamber so that a wire inserted therethrough will be sure to engage

the valve 6. The fingers 10 are preferably formed as part of a ring or spider, which is held in place in some suitable way.

In order to provide for the escape of air while the bottle is being filled in the first instance, I have made the plug with the exterior groove 11, as shown in Fig. 2. This provides sufficient outlet for the air as the bottle is filled, and after the bottle is filled, said groove 11 will be closed by a plug or by cement, or in any other suitable way.

In the preferred embodiment of my invention I make the plug in two parts, that is, with an upper section 12 and a lower section 13, said sections forming between them the central chamber 7. The upper section 12 is of a size to fit the interior of the bottle neck and the lower section 13 is preferably smaller in diameter than the section 12. The two sections 12 and 13 may be held together in any suitable way. I have herein shown the section 12 as having fingers 16 on its lower end which are adapted to intermesh with fingers 17 formed on the enlarged upper end 18 of section 13. The exterior faces of these fingers are provided with a groove in which a wire or band 19 is received. The upper portion 18 of the section 13 is of a diameter to fit the interior of the bottle neck and when the plug is inserted in the bottle, as shown in Fig. 1, the band 19 is held in its groove by its engagement with the bottle neck.

In order to facilitate the emptying of the bottle after it has been filled, I have provided separate ports for the admission of air to the bottle. Each port comprises the passageway 20 leading into a valve chamber 21 in which is a ball valve 22, and a passage 23 leading from the valve chamber 21 into the interior of the bottle. When the bottle is in its vertical position the ball valves 22 close the ports 23 and prevent the bottle being filled through these ports. When the bottle is tipped, however, to empty it, the ball valves 22 drop into the valve chambers 21 thus permitting the air to freely enter the inlet passageways 20, 23. I propose to place the passageways 20, 23 out of alinement with each other so that it will be impossible for a person to hold any valve 22 off from its seat by inserting a wire in the passageway 20.

In order to facilitate the manufacture of the device I propose to make the division line between the sections 12 and 13 such that the valve chambers 21 are located partially in one section and partially in the other. The section 13 is shown as having ribs 24 which guide the ball valve in its movement toward and from its seat 9.

In Fig. 7 I have shown the plug as made in one integral piece instead of in two sections.

The plug may be made of glass, porcelain, metal or any other suitable material.

My invention also comprehends a device for holding the valve 6 to its seat when the bottle is tipped into a horizontal position, said device being so constructed as to permit the valve to move away from its seat when the bottle is tipped nearly into a vertical position. This device comprises a weight 30 which is attached to the ball valve by means of a cord or flexible connection 31. With this construction if the bottle is tipped into a horizontal position the weight 30 will hold the valve to its seat by means of the cord 31. If, however, the bottle is turned completely bottom side up the weight 30 will assume such a position that the valve will move away from its seat.

While I prefer to make the plug separate from the bottle and capable of being inserted into the neck thereof, yet it would be within my invention to make this plug as an integral part of the bottle.

Having fully 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 two-part plug adapted to be received in the interior of a bottle neck, the lower section of the plug being formed with a valve seat and the upper section of the plug being formed with outlet openings, of an annular frame clamped between the lower end of the upper section and the upper end of the lower section and provided with downwardly and inwardly-directed resilient fingers extending into the valve chamber, and a valve within the valve chamber adapted to be held off from its seat by said fingers.

2. In a non-refillable bottle, the combination with a two-part plug adapted to be received within the neck of a bottle, the lower section of the plug having a central valve chamber and a valve seat, and also having ports extending therethrough independent from said valve chamber, of a ball valve within the valve chamber, a frame clamped between the two sections of the plug and provided with resilient fingers extending into the valve chamber, said upper section of the plug having a plurality of outlet ports communicating with the valve chamber and also having auxiliary valve chambers that communicate with the ports through the lower section of the plug, said upper section of the plug having ports communicating with said valve chamber, and ball valves in the auxiliary valve chambers.

3. In a non-refillable bottle, the combination with a two-part plug adapted to be received in the neck of a bottle, one section having outlet ports and the other section having a valve chamber communicating with

said outlet ports, and each section having a portion on its exterior surface which overlaps a portion of the other section, said overlapping portion having an exterior groove therein, of a valve in said valve chamber, and a band received in the groove of the overlapping portions for holding the sections together.

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

FRANK LENZI.

Witnesses:
LOUIS C. SMITH,
THOMAS J. DRUMMOND.