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W. F. PUFFERT & B. ECKHOFF.

NON-REFILLABLE BOTTLE.

APPLICATION FILED AUG. 3, 1903.

NO MODEL.

Fig. 1.

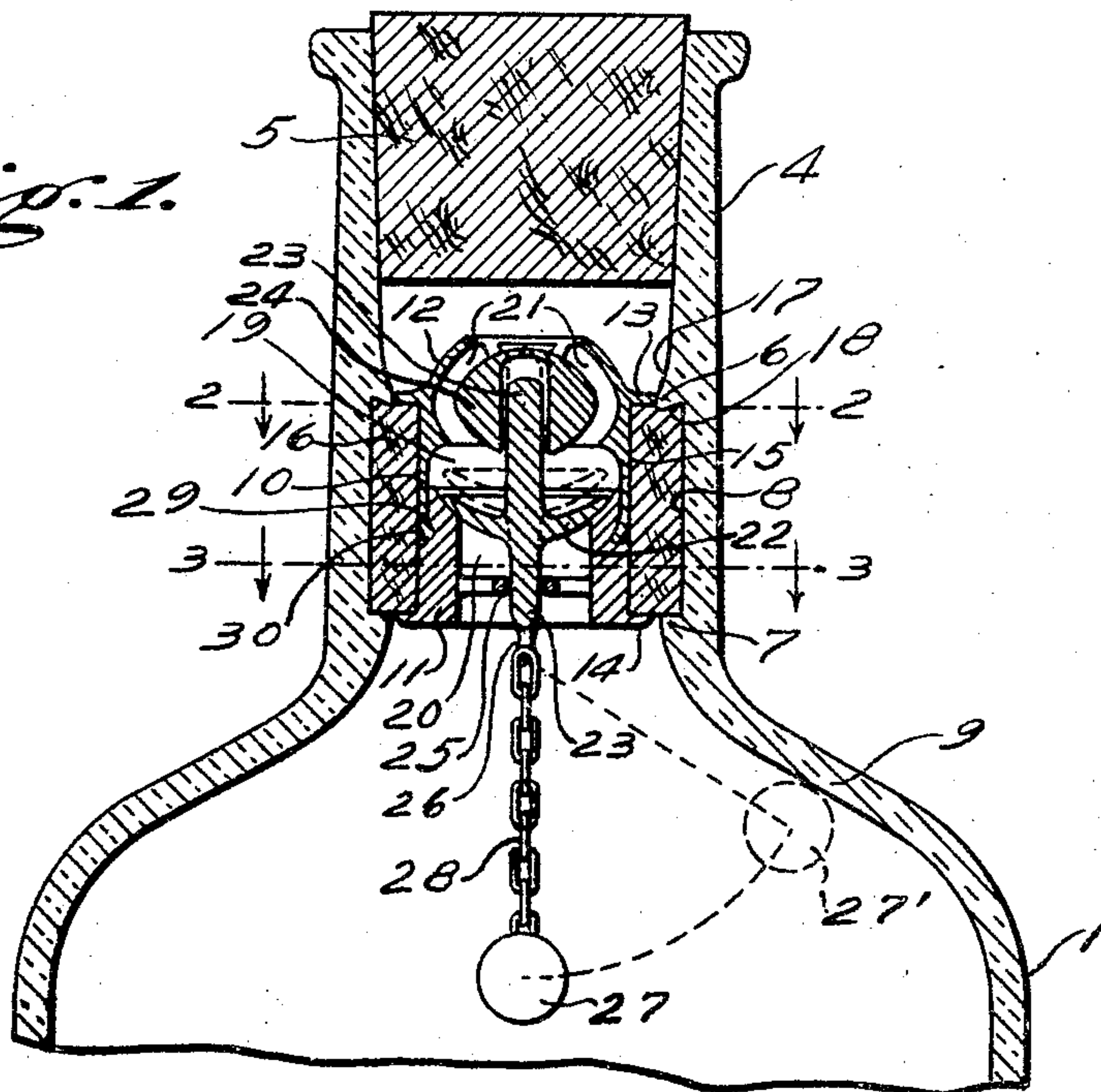


Fig. 2.

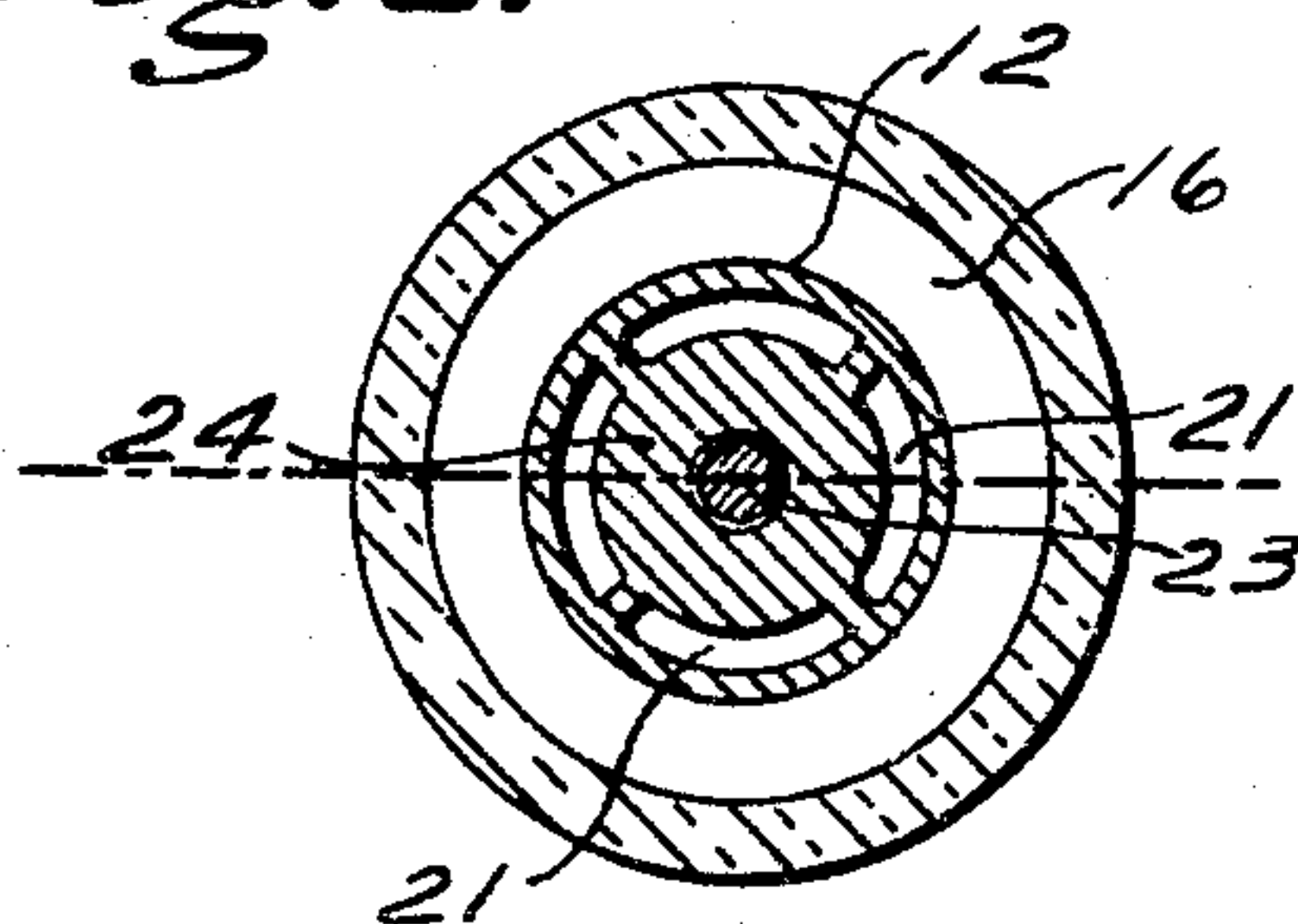
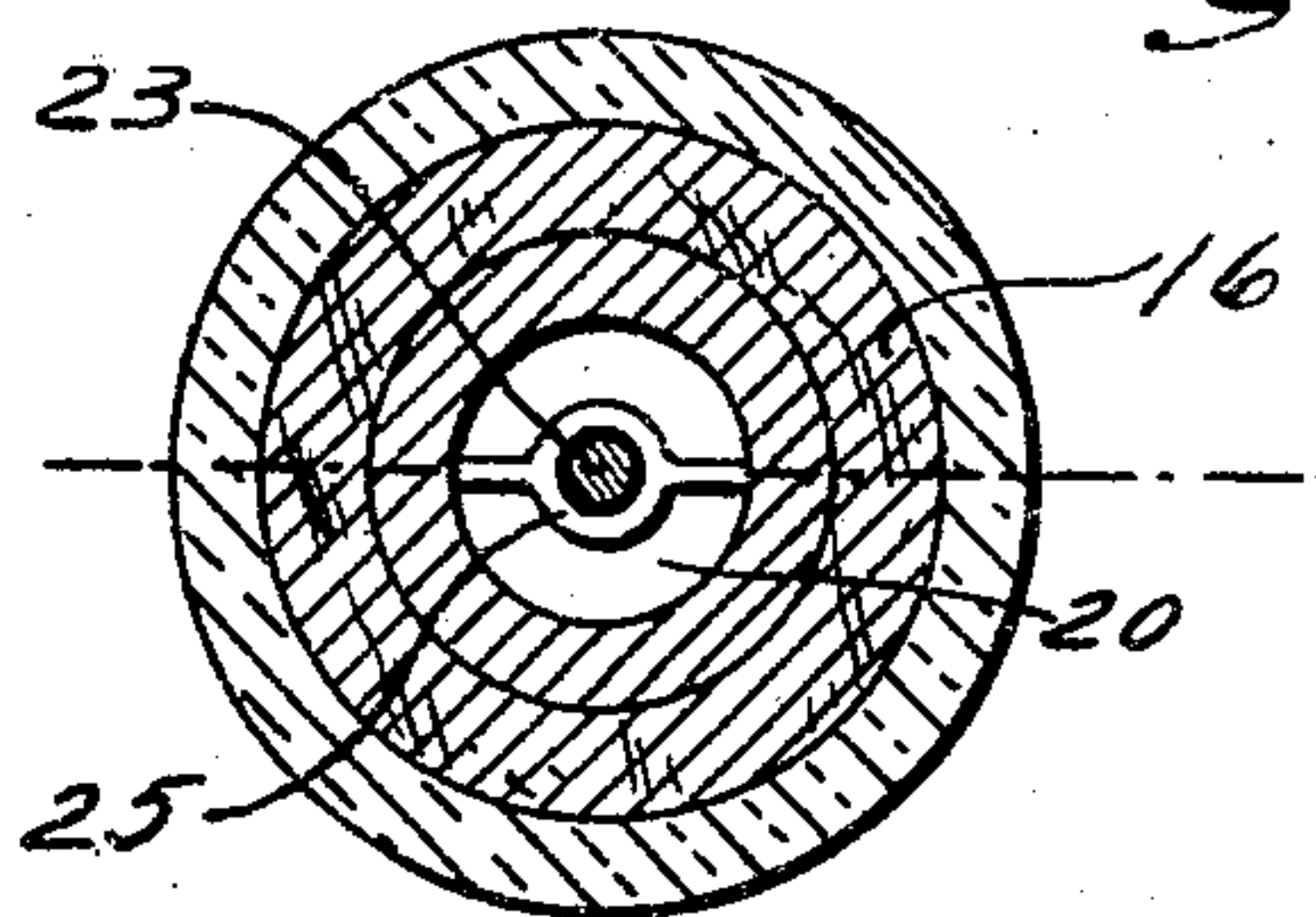


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM F. PUFFERT AND BARTHEL ECKHOFF, OF BOONE, IOWA.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No 765,790, dated July 26, 1904.

Application filed August 3, 1903. Serial No. 168,031. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM F. PUFFERT and BARTHEL ECKHOFF, citizens of the United States of America, and residents of Boone, in the county of Boone and State of Iowa, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

Our invention relates to devices for preventing the refilling of bottles. Its main objects are to provide simple means for securing such devices within the neck of a bottle and for preventing their removal after same have been inserted into the neck of a bottle; to provide simple means for causing the closing of the valve in a device of this class when the bottle is inclined at a considerable angle from its vertical position; to provide a suitable structure which while permitting the ready outward flow of liquid and the inward flow of air will instantly tend to close when the liquid flows in an inward direction, and to provide means for securing a valve within the neck of a bottle without the use of cement. We accomplish these objects by the device shown in the accompanying drawings, in which—

Figure 1 is a longitudinal section of a bottle constructed according to our invention. Fig. 2 is a transverse section of the same on the line 2 2 of Fig. 1. Fig. 3 is a transverse section of the same on the line 3 3 of Fig. 1.

In the construction shown the bottle 1 is provided with a contracted neck 4, which is of sufficient length to provide room for the usual cork 5 above the device for preventing the refilling of the bottle. The neck of the bottle below the cork 5 is provided with two opposed annular shoulders 6 and 7, forming between same an annular recess 8. The shoulder 6 is preferably made wedge-shaped, as shown, so that the valve-shell may be readily inserted and retained, as will be hereinafter described. The neck of the bottle is also preferably made of considerably less diameter than the body of the bottle, so as to provide a shoulder of considerable extent at 9.

In the form shown the shell 10 of our non-refillable device is preferably constructed of two main parts comprising a valve-seat 11 and

hood 12, each of which may for the sake of simplifying its construction be formed of several parts. The shell 10 is provided with two annular shoulders 13 and 14, forming an annular groove 15, within which is seated an annular gasket 16, of rubber or other resilient material. The gasket 16 is sufficiently compressible so that same may be forced into the neck of the bottle and below the shoulder 6. For this purpose the upper surface 17 of the shoulder 6 is outwardly converging, so as to cause the gradual compression of the gasket 16 when same is being inserted, and the lower surface 18 of the shoulder 6 is disposed transversely of the length of the neck, so as to prevent the withdrawal of the shell 10, together with its gasket 16, after same has been forced to a position below said shoulder 6. The shell 10 has extending entirely through same a longitudinal passage comprising a valve-chamber 19, communicating with the interior of the bottle through the passage 20 and with the exterior of the bottle through the passages 21.

A valve 22 is movably mounted within the valve-chamber 19 and is provided with a lower convex surface fitting a correspondingly concave surface in the valve-seat 11 at the upper end of the passage 20. The upper surface of the valve 22 is preferably concave, as shown, and the passages 21 are curved inwardly, as shown, so that any liquid which passes inwardly through the passage 21 will be directed against and toward the center of the valve 22, thus tending to force the closing of said valve. Movement of the valve 22 is guided by the valve-stem 23, which extends both above and below the valve and is seated in suitable guides 24 and 25. The valve 22 is limited in its movement toward its open position, as indicated by dotted lines in Fig. 1, through the engagement of the upper end of the stem 23 with the end of the socket in the guide 24.

The lower end of the stem 23 is preferably provided with an eye 26, from which a counterweight 27 is suspended by the chain 28. The counterweight 27 is adapted to slide downwardly on the shoulder 9, as indicated by dotted lines in Fig. 1, when the bottle is in

an approximately horizontal position, and thus tends to close the valve when the bottle is in such horizontal position.

The parts 11 and 12 of the shell 10 are preferably made telescoping each other at 29, and the lower edge of the part 12 is spun over into the recess 30 in the part 11, thus forming an inexpensive but efficient connection between such parts.

The operation of the device shown will be understood from the foregoing description; but particular attention is called to the fact that when the valve is in its open position, as indicated by dotted lines in Fig. 1, the passages through the shell 10 are of such form as to permit the ready flow of liquid outwardly and to simultaneously permit the inward flow of air. The shoulder which extends over the outer edges of the valve 22, together with the peculiar formation of the passages 21, tends to cause liquid flowing inwardly through such passages to strike near the center of the upwardly-concave surface of the valve, and thereby force said valve into its closed position. Furthermore, after the bottle has been inverted, so as to cause the opening of the valve 22, if the bottle is now gradually righted the counterweight 27, sliding down on the shoulder 9, will tend to close the valve 22 sooner than would be the case if the closing of the valve depended solely upon the weight of the valve itself.

It will be seen that numerous details of the construction shown may be altered without departing from the spirit of our invention. We therefore do not limit ourselves to such details except as hereinafter limited in the claims.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. A device of the class described, comprising a bottle having a neck; a shell fitting the interior of said neck and secured therein and having in its interior a valve-chamber; a passage connecting said valve-chamber with the interior of the bottle; a valve seated within said valve-chamber and adapted to control the

flow of liquid through said passage; a second passage in said shell extending from said valve-chamber outwardly of the bottle and being suitably formed to cause a liquid flowing inwardly through same to be directed toward the middle of said valve in suitable manner to tend to close the valve, substantially as described.

2. A device of the class described, comprising a bottle having a neck; a shell fitting the interior of said neck and secured therein and having in its interior a valve-chamber; a passage connecting said valve-chamber with the interior of the bottle; a valve seated within said valve-chamber and adapted to control the flow of liquid through said passage, said valve having its upper surface concave; a second passage in said shell extending from said valve outwardly of the bottle and being suitably formed to cause a liquid flowing inwardly through same to be directed toward and against the concave upper surface of said valve, substantially as described.

3. A device of the class described, comprising a bottle having a neck; a shell fitting the interior of said neck and secured therein and having in its interior a valve-chamber; a passage connecting said valve-chamber with the interior of said bottle; a second passage connecting said valve-chamber with the exterior of said bottle; a valve seated within said valve-chamber and adapted to control the flow of liquid through said passages; said shell being formed of two parts, one of said parts having an annular groove in its outer periphery, and the other part having a flange fitting around said first part and crimped into said groove for securing said parts together, substantially as described.

Signed at Chicago this 25th day of July, 1903.

WILLIAM F. PUFFERT.
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Witnesses:

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