No. 708,264. Patented Sept. 2, 1902.

W. H. SHERMAN.

BOTTLE STOPPER.

(Application filed July 3, 1901.)

(No Model.)

Fig. 1.

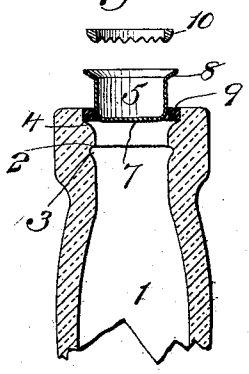


Fig. 2.

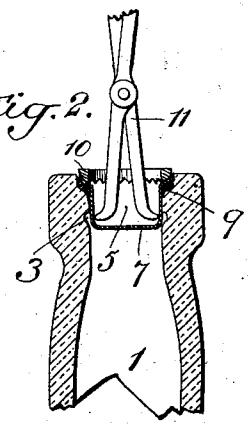


Fig. 3.

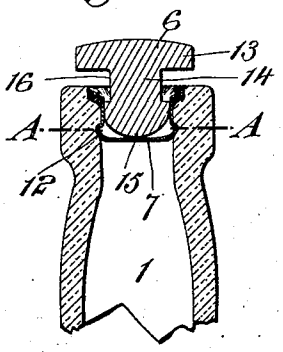


Fig. 4.

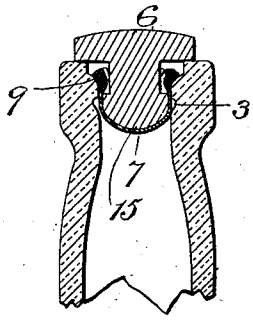


Fig. 5.

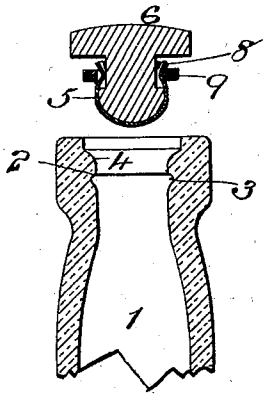


Fig. 6.

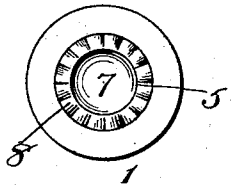


Fig. 7.

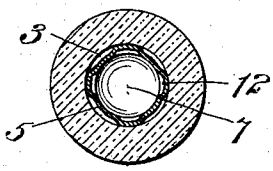


Fig. 8.

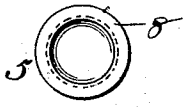


Fig. 9.

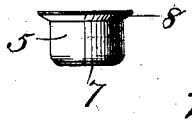
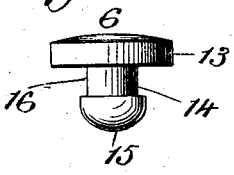


Fig. 10.



Witnesses:-
George Barry Jr.
Henry Thieme.

Inventor-
William H. Sherman
by attorneys Brown & Seward

UNITED STATES PATENT OFFICE.

WILLIAM H. SHERMAN, OF NEW YORK, N. Y.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 708,264, dated September 2, 1902.

Application filed July 3, 1901. Serial No. 66,977. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. SHERMAN, a citizen of the United States, and a resident of the borough of Manhattan, in the city and State of New York, have invented a new and useful Improvement in Bottle-Stoppers, of which the following is a specification.

My invention relates to an improvement in bottle-stoppers, and has for its object to provide a stopper which can be readily locked in position in the neck of the bottle and which may be unlocked therefrom in a very simple and effective manner when it is desired to remove the stopper.

A further object is to provide a stopper comprising a soft-metal cup having its sides projected into engagement with a shoulder in the interior of the neck of the bottle, and a releasing-plug arranged to enter the said cup and engage its bottom, so that when the releasing-plug is forced inwardly it would withdraw the outwardly-projected portions of the said cup from engagement with the shoulder for permitting the removal of the stopper.

A still further object is to provide a two-part stopper in which the part which is utilized for releasing the other part will be caused to permanently engage the other part when the other part is released for insuring the removal of the two parts of the stopper together from the bottle.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents in central vertical section the upper portion of the neck of a bottle, the rubber gasket, the cup portion of the stopper about to be forced into position in the neck of the bottle, and the corrugated die which may be used for forcing the cup into position and then corrugating the flaring rim of the cup portion of the stopper. Fig. 2 is a similar view showing the cup held in its position within the neck of the bottle by the corrugating-die and also showing means for expanding a portion of the side walls of the cup into engagement with an annular shoulder on the interior of the bottle-neck. Fig. 3 is a similar view showing the die and expanding means removed and showing the releasing-plug in its normal position within the cup when the cup is locked to the neck of the bottle. Fig. 4 is a similar view showing the releasing-cup forced inwardly for drawing the sides of the cup out of engagement with the shoulder in the neck of the bottle. Fig. 5 is a view showing the stopper removed from the bottle and clearly showing the fact that the cup is locked to the plug, because of the engagement of the corrugated rim of the cup with the circumferential groove in the plug. Fig. 6 is a top plan view of the neck of the bottle and the cup portion of the stopper in its locked position therein. Fig. 7 is a horizontal section taken in the plane of the line A A of Fig. 3, showing the side walls of the cup expanded at four points into locking engagement with the neck of the bottle. Fig. 8 is a top plan view of the cup portion of the stopper. Fig. 9 is a side view of the same, and Fig. 10 is a side view of the releasing-plug portion of the stopper.

The neck of the bottle is denoted by 1, and it is provided with an annular shoulder 2 on its interior adjacent to the mouth of the bottle, which shoulder in the present instance is formed by providing a shallow annular groove 3 in the inner wall of the neck of the bottle, the one side of the groove forming the shoulder, while the other side of the groove is preferably more tapering to permit the withdrawing of the cup portion of the stopper from engagement with the shoulder, as will hereinafter more clearly appear. An annular seat 4 is formed in the mouth of the neck of the bottle, which seat is preferably tapered inwardly toward the shoulder 2, as shown.

The bottle-stopper comprises a soft-metal cup 5 and a releasing-plug 6. This soft-metal cup 5 is provided with a substantially flat bottom 7 and an outwardly-flaring rim 8. The side walls of the cup 5 have an easy sliding fit in the interior of the neck of the bottle. A yielding gasket 9, preferably of rubber, is interposed between the flaring rim 8 of the cup and the seat 4 in the mouth of the neck of the bottle. This cup is forced into position within the bottle by means of a corrugating-die 10, which may be attached to any suitable machine, (not shown herein,) which die not only forces the cup into its position, but also corrugates the flaring rim 8, so as to insure the engagement of the cup and the re-

leasing-plug when the cup is unlocked from within the neck of the bottle. The cup may be locked within the neck of the bottle by expanding its walls into the annular groove 3, thus causing the expanded portions to engage the shoulder 2 and prevent the unintentional removal of the cup from the bottle. In the accompanying drawings I have represented a pair of expanders 11 for forming projections 12 from the side walls of the cup near its bottom. However, the cup may be expanded into the groove entirely within the same or it may be expanded into the said groove at portions only, as may be found desirable. The releasing-plug is provided with a suitable head 13 and a shank 14, having a rounded end 15. A shallow circumferential groove 16 is formed on the shank between its end and the head 13.

The shank 14 of the stopper is preferably of sufficient diameter to snugly engage the inner side walls of the cup 5, so that the releasing-plug may be held normally within the said cup with its head spaced from the top of the bottle ready for use when it is desired to release the cup from the bottle.

When it is desired to release the cup from the bottle, the releasing-plug 6 is forced inwardly, thus drawing the bottom of the soft-metal cup around the rounded end 15 of the plug and withdrawing the projection or projections 12 from within the grooves 3, where they engage the shoulder 2. This inward movement of the cup and plug also straightens the corrugated flaring rim of the cup, thereby drawing portions of the corrugated rim into the circumferential groove 16 in the plug, so that when the stopper is removed either by the internal pressure within the bottle or by external means the cup and the plug will be removed together.

It will be seen that a stopper constructed and arranged as above described may be readily removed from the bottle at any time without the use of tools of any character, the stopper at the same time forming an effectual protector for the liquid within the bottle. It will further be seen that the cup portion of the stopper cannot be used again, because of its mutilated form, due to its engagement with the plug. The user may thus be sure that the bottle has not been tampered with since it left the original bottler if the cup portion of the stopper is in engagement with the shoulder within the neck of the bottle.

It is evident that slight changes might be resorted to in the material, construction, form, and arrangement of the several parts without departing from the spirit and scope of my invention. Hence I do not wish to limit myself strictly to the structure herein set forth; but

What I claim is—

1. A bottle-stopper comprising a soft-metal cup fitted to be locked in the neck of the bottle, a releasing-plug and means for drawing the cup into locking engagement with the plug as the plug is forced inwardly to release the cup from the bottle, substantially as set forth.

2. A bottle-stopper comprising a soft-metal cup having its walls struck outwardly to engage the neck of a bottle, a releasing-plug having a circumferential groove therein and means for drawing the cup into locking engagement with the plug as the plug is forced inwardly to release the cup from the bottle, substantially as set forth.

3. A bottle-stopper comprising a soft-metal cup having its walls struck outwardly to engage the neck of a bottle and having an outwardly-flaring rim and a releasing-plug having a circumferential groove, the said cup and releasing-plug being fitted to be locked together when the cup is released from the bottle by the said plug, substantially as set forth.

4. In combination, a bottle having an annular shoulder in the interior of its neck and a tapering seat in the mouth of the neck, a soft-metal cup having one or more projections engaging the said shoulder and an outwardly-flared rim and a releasing-plug arranged to draw the one or more projections out of engagement with the shoulder and the flaring rim into engagement with the plug when the plug is driven to the limit of its inward movement within the neck of the bottle, substantially as set forth.

5. A bottle-stopper comprising a soft-metal cup locked in the neck of the bottle and having a corrugated rim and releasing-plug arranged to draw the corrugated rim into locking engagement with the plug when the plug is inserted into the cup and driven to the limit of its inward movement within the neck of the bottle, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 1st day of July, 1901.

WILLIAM H. SHERMAN

Witnesses:
FREDK. HAYNES,
GEORGE BARRY, Jr.