No. 734,545. PATENTED JULY 28, 1903.

R. A. HALL.

BOTTLE CLOSURE.

APPLICATION FILED DEC. 1, 1902.

NO MODEL.

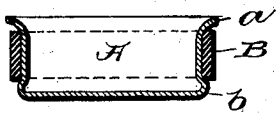


Fig. 1.

Fig. 2.

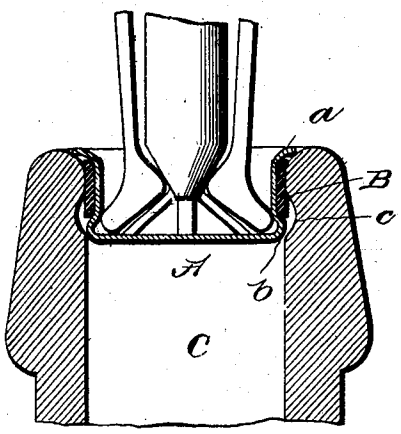


Fig. 3.

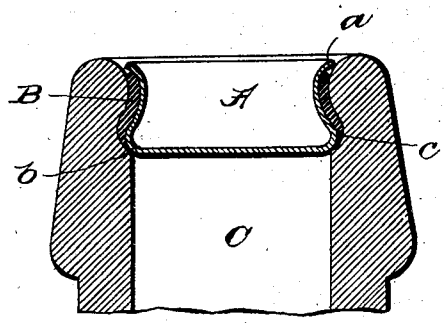


Fig. 4.

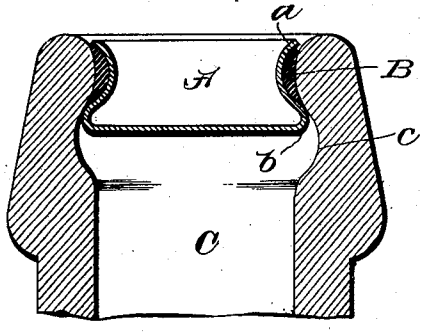
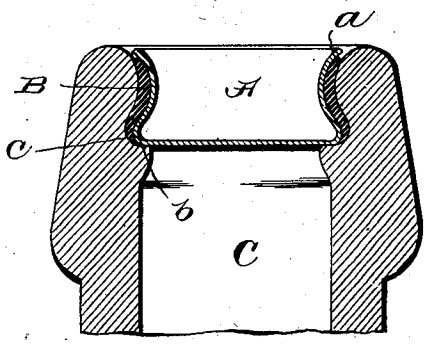


Fig. 5.



Witnesses:
T. L. Moorhouse
C. F. Middleton

Inventor
Robert Allison Hall.
by Thos. Spear Company
Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 734,545. Patented July 28, 1903.

UNITED STATES PATENT OFFICE.

ROBERT ALLISON HALL, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE CROWN CORK AND SEAL COMPANY, OF BALTIMORE, MARYLAND.

BOTTLE-CLOSURE.

SPECIFICATION forming part of Letters Patent No. 734,545, dated July 28, 1903.

Application filed December 1, 1902. Serial No. 133,466. (No model.)

To all whom it may concern:

Be it known that I, ROBERT ALLISON HALL, a citizen of the United States, residing at Baltimore, Maryland, have invented certain new and useful Improvements in Bottle-Closures, of which the following is a specification.

My invention relates to closures for bottles and other vessels, and is designed as an improvement upon that set forth in Letters Patent of the United States granted to me on the 18th day of June, 1895, and numbered 541,203.

The present invention is directed to concealing the gasket or cutting off communication between it and the contents of the bottle either wholly or substantially, and thereby avoiding the possible contamination of the contents of the bottle on the one hand or deterioration of the gasket on the other hand.

In the accompanying drawings, Figure 1 is a section of my improved closure, showing the plug or cup as it appears after being "upset" and provided with its gasket. Fig. 2 is a sectional view, on an enlarged scale, illustrating the manner of applying the closure or stopper. Fig. 3 is a similar section showing the completed closure. Figs. 4 and 5 are sectional views showing the closure applied to other styles of bottle.

Under the construction set forth in my former patent the lower edge of the gasket was compressed but little and was exposed directly and fully to the liquid contents of the bottle. When the gaskets are of rubber, as is the case usually, objection is sometimes made on the ground that they are liable to impart an unpleasant taste to the liquid and that they are likewise apt to be injuriously affected by various of the liquids sold in bottles of this character.

I have found that by somewhat modifying the device and paying proper regard to proportions of parts I can cause the metal of the cup or plug to flow out or expand beneath the lower edge of the gasket and to bear directly against the glass of the bottle, thereby practically, if not entirely, concealing and protecting the gasket. In cases where the contact of the metal with the glass is not perfect throughout the lower edge of the gasket is so far compressed that there is but a thin line or edge exposed, and the gasket and the liquid will not appreciably affect each other.

In its preferred form the closure consists of a cup-shaped stopper or plug A, of metal or alloy suited to the class of liquids with which it is to be used, having an outwardly-turned flange *a* to bear upon the edge of the bottle-mouth, and thus to limit and determine the depth or distance to which the cup or plug shall enter the same. This flange if provided for such purpose will of course be of greater diameter than the opening in the bottle-neck, but may be wholly omitted, if desired, and other means relied upon to accomplish the same end.

B indicates a gasket or packing-ring encircling the cylindrical body of the cup or plug A, preferably made of rubber, though cork, leather, or suitable compositions may be used.

At the base or bottom of the cup or plug A there is formed a swell or enlargement *b*, extending entirely around the cup and of such size as just to pass freely into the neck of the bottle C.

In the drawings I have represented the bottle as having a straight cylindrical neck-opening without inward projection of any kind, but with a seat or depression *c*, into which the gasket is expanded and pressed through expansion or spreading of the cup or plug A.

The cup or plug is formed of such depth that when its flange *a* rests upon the mouth or upper edge of the bottle the lower face of the cup shall be just about on a line with the lower edge or boundary of seat or depression *c*, as indicated in Fig. 2, in the case of bottles specially made for this closure. The bead or enlargement *b* under this construction reaches very near to said lower edge or boundary of the seat *c*, and when the cup A is expanded said bead or swell is caused to make contact with the same, as illustrated in Fig. 3.

For applying the closures to bottles or other vessels I employ a suitable expanding-tool, the general features of which are indicated in Fig. 2, where a conical-pointed stem is

shown entering between a series of radially-movable jaws or members suitably fashioned to spread the cup or plug and to cause the previously-cylindrical walls to curve outward into approximate conformity to the walls of the bottle-mouth and seat or depression *c*.

Any suitable expander may be employed. Hence further description is deemed unnecessary herein.

In expanding the cup or plug A the gasket B is firmly compressed between its exterior and the interior wall of the bottle-neck, the pressure being greatest along the bead *b*, and the gasket being consequently reduced to the thinnest possible edge along the line of contact with the bead.

Aluminium is preferred for the cups or plugs on account of its facility of manipulation and its freedom from corrosion. It is found in use that the aluminium cups or plugs flow out evenly and freely under the action of the expander and produce a close junction of the glass and metal, and as the metal is not corroded by the liquids more commonly used in this class of bottles or packages the gaskets remain protected for any length of time and the contents of the bottle are preserved from contamination.

I do not restrict myself to any particular metal for the plugs or cups, nor to any special substance for the gaskets, but propose to use those which may be found best suited to the particular purposes in view or to the intended contents of the bottles or vessels. Tin is well adapted to the purpose and various alloys may be used. In some cases the cup or plug may be made of one metal or alloy and plated with another metal.

Figs. 2 and 3 are based upon a bottle having the seat or groove *c* located and proportioned with special reference to the cup or plug A; but the same result may be attained, at least measurably well, with other bottles than this, as indicated in Fig. 4, where the plug has its lower edge carried below the gasket and against or close to the glass, but above the lower boundary of the groove or depression *c*.

When applied to a bottle with an inwardly-projecting shoulder, the metal may rest directly upon the shoulder and cut off all communication between the gasket and the contents of the bottle or vessel, as in Fig. 5.

I claim—

In combination with a bottle or vessel C having an internal seat or depression *c*, a metallic cup or plug provided with a swell or enlargement *b* near its bottom, arranged to bear directly against the wall of the bottle-throat, and a gasket B encircling said cup and serving to fill the space between it and the walls of the bottle-throat when the cup is expanded, the swell or enlargement serving to protect the contents of the vessel from contact with the gasket.

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

ROBERT ALLISON HALL.

Witnesses:
HOWARD D. ADAMS,
GILBERT B. PORTER.