No. 817,033. PATENTED APR. 3, 1906.

J. C. ANDERSON.

BOTTLE.

APPLICATION FILED OCT. 14, 1905.

Fig. 1.

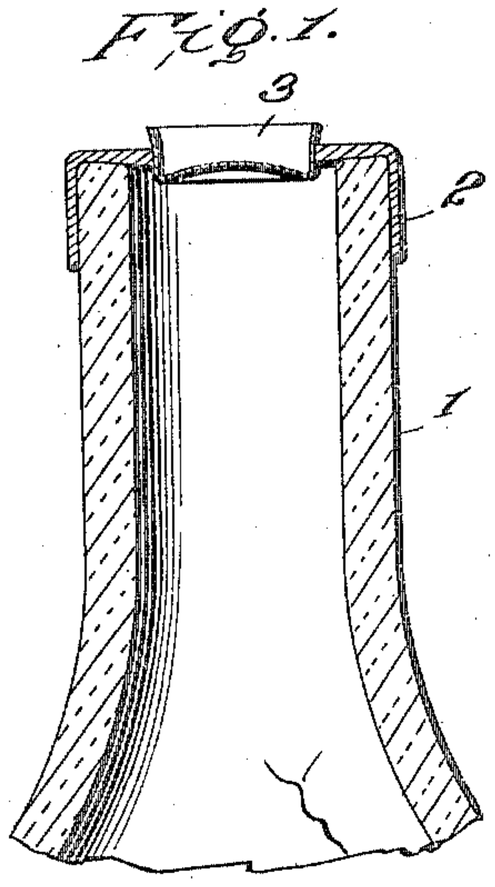


Fig. 2.

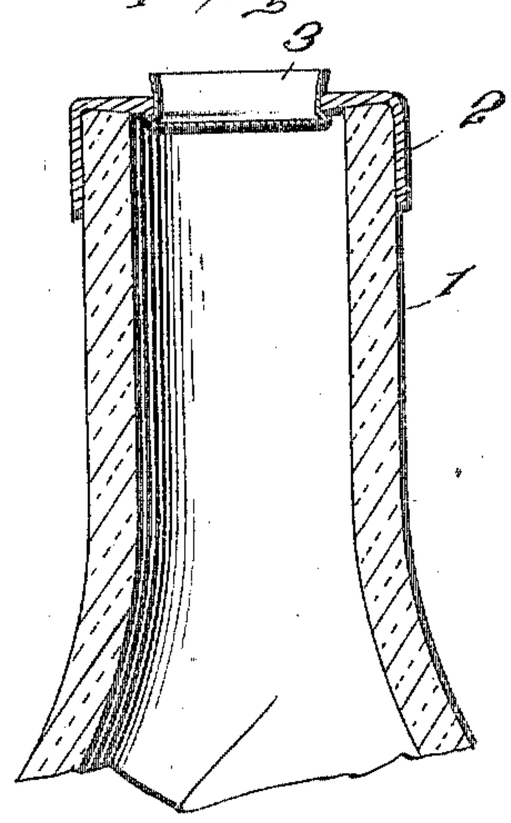


Fig. 3.

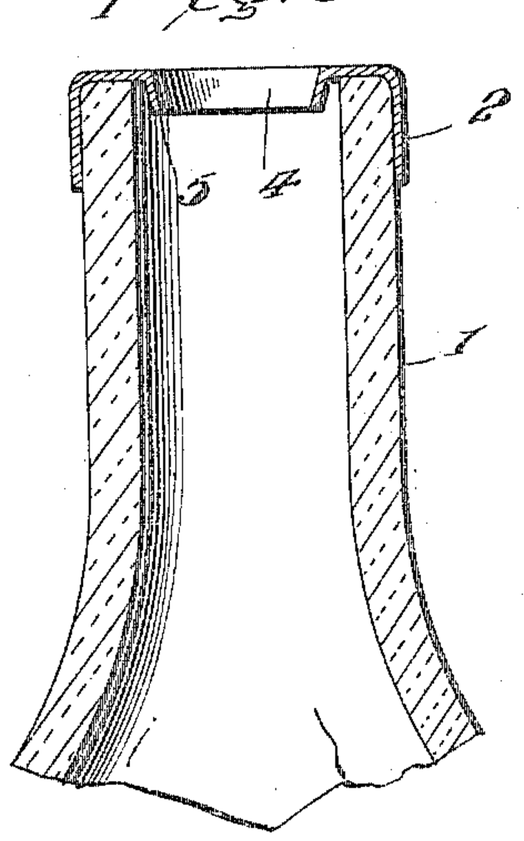
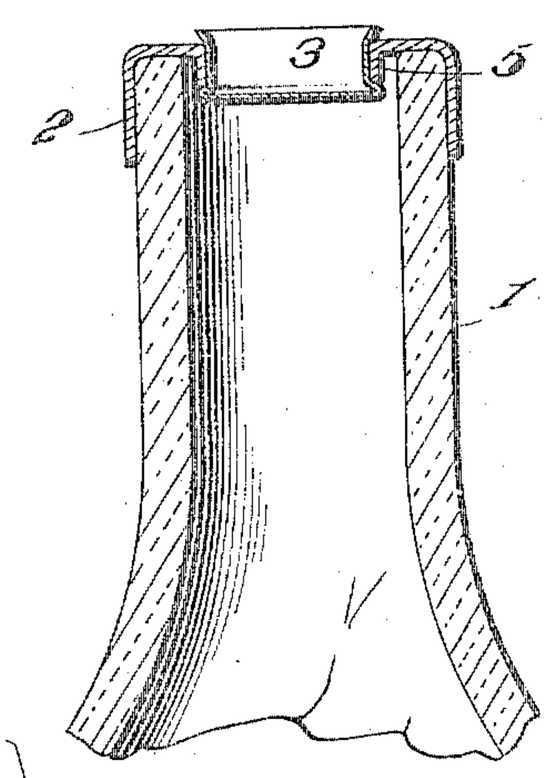


Fig. 4.



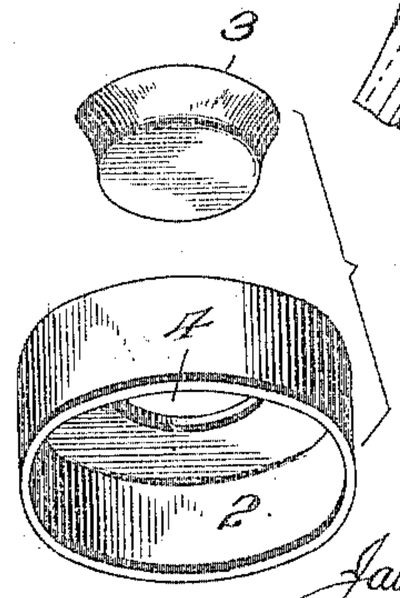


Fig. 5.

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BOTTLE.

No. 817,033. Specification of Letters Patent. Patented April 3, 1906.

Application filed October 14, 1905. Serial No. 282,826.

To all whom it may concern:

Be it known that I, JAMES C. ANDERSON, a citizen of the United States, residing at Highland Park, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in 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.

My invention relates to certain new and useful improvements in bottles, and particularly to that class in which a metallic closure device is employed and secured in position by expansion of the lower portion of the same.

In the particular class of bottles referred to the closure device, consisting of a cup-shaped closure composed of expansible metal and having its bottom of convex form, is secured in position by forcing the convex bottom downward, thus expanding the lower extremity of the wall of such closure against the wall of the neck of the bottle and against an interposed ring or gasket of rubber or other similar packing. In the employment of such a closure device and to accomplish the proper and efficient sealing of the bottle it becomes necessary to expand the lower portion of the wall of the cup-shaped closure directly toward and against the neck of the bottle with considerable pressure, and as a result of this operation it frequently occurs that the neck of the bottle is ruptured or broken, and it is also necessary in order to secure a tight joint that a rubber ring or packing should be employed, which not only involves the necessity for properly adjusting or locating said packing in proper position, but of necessity adds very materially to the cost.

My invention has for its object to not only dispense with the employment of any packing whatsoever, but to also avoid the possibility of any rupture of the neck of the bottle as a result of the force employed in expanding the lower portion of the sealing device.

With these ends in view my invention consists in providing the upper extremity of the neck of the bottle with a hat-shaped metallic cap having a central passage therein for the reception of a cup-shaped metallic closure device, the central passage in the hat-shaped cap being of less diameter than the interior of the neck of the bottle, so that when the cup-shaped closure device is expanded the pressure will be directly against the circumferential edge of the metallic cap, thus relieving the neck of the bottle from all pressure and liability of rupture and effecting a tight joint between the metallic cap and the metallic closure device by the contact between said parts and also by reason of the forcing of the lower extremity of the wall of the cup-shaped closure beneath that portion of the hat-shaped cap which extends within the inner boundary of the neck of the bottle, all as will be hereinafter more fully set forth.

In order that those skilled in the art to which my invention appertains may know how to make and use my improved bottle and to fully appreciate all of its advantages, I will proceed to describe the construction of the same, referring by numerals to the accompanying drawings, in which—

Figure 1 represents a central vertical section of the neck portion of the bottle with my invention applied thereto and showing the closure device inserted within the central passage-way of the metallic cap and in position to be expanded to secure the same in place and to effect a tight joint. Fig. 2 is a similar view showing the cup-shaped closure device expanded into position to produce effective closure of the bottle. Fig. 3 is a similar view showing a modification in the form of the metallic cap secured to the upper extremity of the bottle. Fig. 4 is a similar view showing this modified construction of the metallic cap and with the cup-shaped closure device secured in position. Fig. 5 is a perspective view of the metallic cap and cup-shaped sealing device shown at Figs. 1 and 2.

Similar reference-numerals indicate like parts in the several figures of the drawings.

1 represents the neck of the bottle, 2 the hat-shaped cap secured to the upper extremity of the neck of the bottle, and 3 a cup-shaped sealing device.

The cap 2 is composed of steel or similar metal and of hat-shaped form, as clearly shown, with a central passage-way 4 therein for the reception of the cup-shaped closure device 3 and for the passage of the contents of the bottle when said closure device is removed. The passage-way 4 of the cap is so proportioned with reference to the interior diameter of the neck of the bottle as to constitute a circumferential projection, against and beneath which the cup-shaped closure 3 is expanded, as clearly shown at Figs. 1 and 4, and whereby the neck proper of the bottle is relieved from all pressure and any liability

of rupture. In forming the cap 2, such as shown at Figs. 1 and 2, in a drop-press or with other suitable tools the metal is stretched from the center toward the circumference in order that the edge surrounding the passage-way 4 shall be thicker than the other portion to provide a cross-section of such extent as to secure a suitable extent of contact with the closure device to secure a tight sealing-joint.

The cup-shaped sealing device 3 is composed of aluminium or other suitable expansible metal of the form clearly shown and preferably with a convex bottom and enlarged upper terminal in order that the depression of the convex bottom by a suitable tool will cause the lower extremity of the wall of the closure to expand against the surrounding portion of the cap 2 and beneath the lower surface of the same, as clearly illustrated in Fig. 2. The upper flared extremity of the cup-shaped closure enables the same to be removed by any suitable tool adapted for that purpose.

The metallic cap 2 is welded to the outer surface of the extremity of the bottle-neck in the manner fully described in a pending application, Serial No. 252,512, filed by me March 28, 1905, and allowed the 22d day of June, 1905, for improvement in bottles, and serves not only the purpose for receiving the expansive pressure of the closure device, as hereinbefore explained, but also constitutes a neat finish and protection against breakage of the extremity of the neck of the bottle.

In lieu of forming the cap 2 with the thickened inner circumference, as shown in Figs. 1 and 2, that portion surrounding the passage-way 4 may be turned downward and obliquely, as shown at 5 in Fig. 3, which not only increases the contact-surface with the closure device, but when forced outwardly as the closure device 3 is expanded and as shown in Fig. 4 the tendency to resume its normal oblique position makes more effective the sealing-joint between it and the closure device.

From the construction shown and described it will be readily seen that my improved bottle may be reused by the employment only of new closure devices of exceedingly limited cost and that, as heretofore stated, the presence of the permanently-fixed cap 2 preserves the extremity of the neck of the bottle against fracture or other deterioation, and hence the bottle may be refilled and closed at a cost much below that involved in the use of ordinary corks or other closure devices. The cap 2 being welded to the outer surface of the neck of the bottle produces a liquid and air tight joint at such locality, and when the closure device is secured in place, as described, it renders impossible the escape of any of the contents of the bottle between the cap and closure device or between the cap and the neck of the bottle.

Many variations may be made in the mere details of construction without departing from the spirit of my invention, and while I have described and prefer the cap secured in position by welding the same with the exterior surface of the neck of the bottle I wish it to be understood that my invention comprehends any other method of securely attaching the cap to the neck of the bottle, the gist of my invention residing in the broad idea of a hat-shaped cap secured in place upon the upper extremity of the neck of the bottle and adapted to receive a closure device and to constitute an anvil against which said closure device may be expanded and to constitute a means for protecting the neck of the bottle against the outward pressure exerted by the expansion of the closure device.

While my invention is especially designed for use in connection with ordinary bottles, it will be understood that the principle involved may be applied with advantage to other containing vessels, such as fruit-jars and the like, or wherever it is desirable in the use of an expansible closure device to protect the comparatively fragile body of the vessel against the expansive force of the closure device. It will also be understood that while I have found that by making the bottom of the closure device convex it may be readily expanded by forcing said convex portion downward with any suitable tool, yet this cup-shaped closure device may be of other form than that shown and readily expanded by a properly-constructed expanding-tool.

Having described the construction and advantages of my improved bottle, what I claim as new, and desire to secure by Letters Patent, is—

1. A bottle having the extremity of its neck protected by and provided with a hard-metal cap with a central passage-way therethrough and extending within the inner boundary of the neck of the bottle, in combination with a closure device composed of expansible metal and expanded against the circumferential wall of the cap and beneath the lower edge of the same, substantially as and for the purpose set forth.

2. A bottle having a hard-metal cap with a central passage-way therein, welded to the extremity of the neck of the bottle and with the horizontal portion extending within the inner wall of the bottle-neck, in combination with a cup-shaped closure device composed of expansible metal extending below the interior wall of the cap and adapted to be expanded against said wall and beneath its lower extremity, whereby tight joints are produced between the neck of the bottle and the cap, and between said cap and the closure device, substantially as hereinbefore set forth.

3. In a bottle such as described and provided with a metal cap having a central pas-

sage-way therethrough, an expansible metal closure device having its outer end extended in a flare above the plane of the cap, and adapted to be removed by a suitable tool interposed between said flared portion of the closure device and the cap, substantially as hereinbefore set forth.

4. In a bottle such as described, a hard-metal cap secured to the extremity of the neck and formed with a central passage-way, the horizontal surfaces of the cap diverging toward the central passage-way, in combination with an expansible metal closure device located within the passage-way of the cap and secured in place, substantially as and for the purpose set forth.

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

JAMES C. ANDERSON.

Witnesses:
ROBERT J. FISHER,
D. G. STUART.