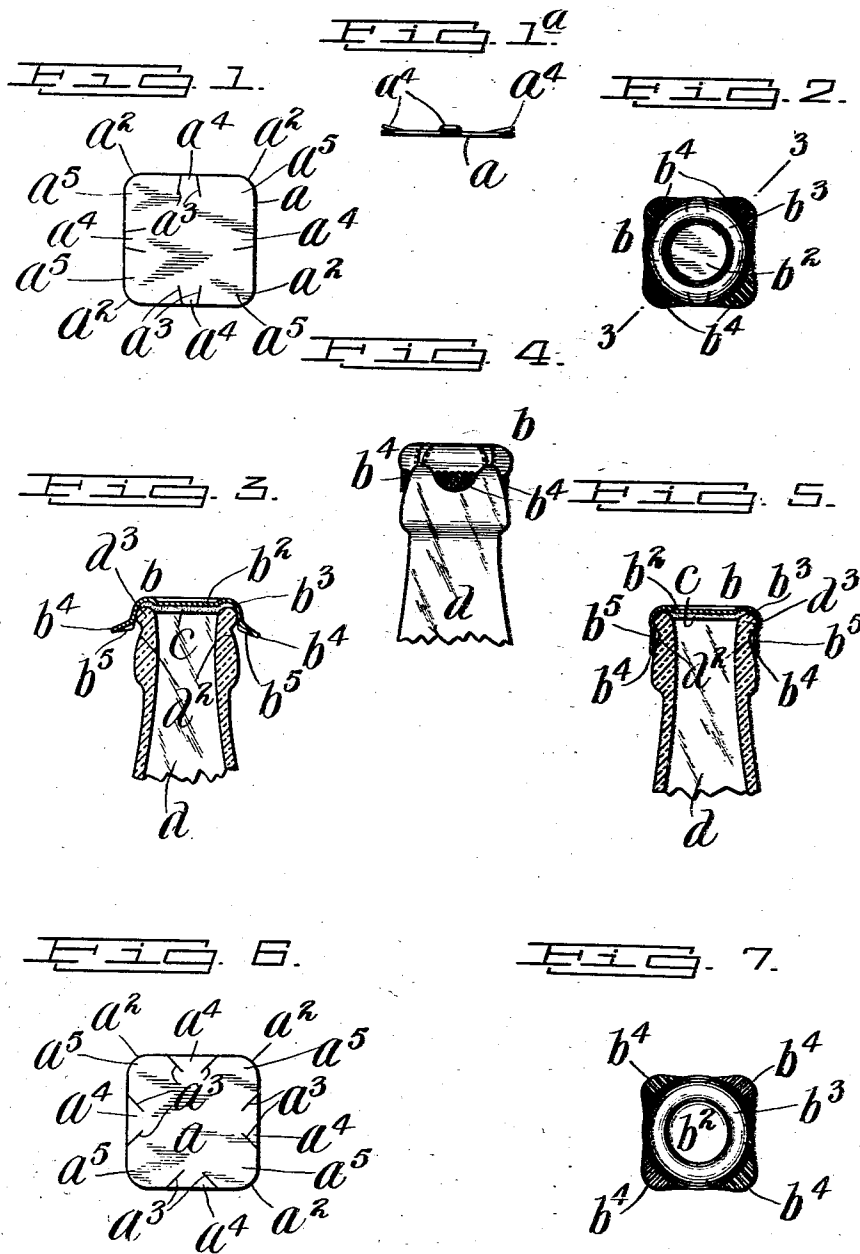


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BOTTLE CLOSURE DEVICE.
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1,100,935.

Patented June 23, 1914.



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BOTTLE-CLOSURE DEVICE.

1,100,935.

Specification of Letters Patent.

Patented June 23, 1914.

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To all whom it may concern:

Be it known that I, ROSS B. YERBY, a citizen of the United States, and residing in the borough of Brooklyn, city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Bottle-Closure Devices, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide an improved closure device for bottles, jugs, jars and similar vessels whereby a vessel of this class may be securely closed and opened whenever necessary without the use of any special tool or tools; and with this and other objects in view the invention consists in a closure device for vessels of the class specified constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:—

Figure 1 is a plan view of a metal disk which I employ and from which my improved closure device is made and which constitutes the chief feature of my invention;—Fig. 1^a an edge view thereof;—Fig. 2 a view similar to Fig. 1, but showing the closure device formed into shape and ready to be applied to a bottle or similar vessel;—Fig. 3 a sectional view of the top part of the neck of a bottle and showing my improved closure device formed as shown in Fig. 2 placed thereon and ready to be secured in position, the closure device being also shown in section and being provided with an interior packing;—Fig. 4 a side view of the top part of the neck of a bottle and showing my improved closure device secured thereto or thereon;—Fig. 5 a view similar to Fig. 3 but showing the closure device fully secured in position, as shown in Fig. 4;—Fig. 6 a view similar to Fig. 1, but showing a modification, and Fig. 7 a view similar to Fig. 2, but showing a closure device formed from the blank shown in Fig. 6.

In the practice of my invention as shown in Figs. 1 to 5 inclusive, I cut from a sheet of flexible metal the blank shown at *a* in Fig. 1, and said blank is rectangular in form

and the corners thereof are preferably slightly rounded as shown at *a*², and centrally of each side edge of the blank are formed two slits *a*³, said slits being formed in pairs, and these slits form tongues *a*⁴, and the edge portions of the blank *a* as thus formed are made up of the tongues *a*⁴, centrally of the side edges of said blank, and the corner pieces *a*⁵. In the form of construction shown, the slits *a*³ converge outwardly and the tongues *a*⁴ are correspondingly tapered outwardly, but this construction is not absolutely necessary and the slits *a*³ of each pair of slits may be parallel if desired, or may converge in either direction. After the blank has been formed in the manner described it is stamped or pressed by any suitable die, press or other machine into the shape shown in Figs. 2 and 3 to form the cap or closure device *b*. In this operation, the central portion of the cap or closure device is depressed as shown at *b*², and around this central depressed portion is formed a raised annular bead member *b*³ which opens downwardly and rests on and incloses the top of the neck of the bottle when said cap or closure device is placed thereon, and the corner portions *a*⁵ of the blank *a* are formed into projecting ears *b*⁴ which are stamped or pressed in the above described operation to form on the under side thereof inwardly directed radial projections *b*⁵. In practice I prefer to place in the closure device a packing disk *c* of any suitable material of such a size to extend outwardly to only the highest point of the mouth of the bottle, and when said closure device has been formed as above described and as shown in Figs. 2 and 3, and it is desired to close a bottle or similar vessel therewith, the said closure device is placed on the neck of the bottle or other vessel as shown in Fig. 3 and the bottle or similar vessel is placed in a suitable machine provided with a support therefor, and said machine is provided with a plunger which descends and forces the ears *b*⁴ into the position shown in Fig. 5. The neck *d* of the bottle or vessel is provided adjacent to the top thereof with an annular groove *d*², and this forms at the top of the neck an annular bead *d*³ which corresponds with the annular rib *b*³ on the closure device *b*, which annular rib forms in the bottom of said closure device an annular groove, and in the above described operation, when the ears *b*⁴ of the closure device

are forced inwardly as shown in Figs. 4 and 5 the inwardly directed projections b^5 on the inner or under sides of said ears fit in the groove d^2 . The corrugation of the ears b^4 makes these parts more unyielding than the other parts of the cap and prevents them from bending in applying the cap to a bottle. In consequence when the closure is bent around the bead d^3 the shoulders b^5 engage the under side of the bead and draw the cap downwardly upon the packing disk insuring a perfect closing of the bottle. The cap or closure device can be detached by forcing out one or more of the ears b^4 to the position shown in Fig. 3, and this operation may be performed by means of a knife blade or any other instrument.

The construction shown in Figs. 6 and 7 is approximately the same as that shown in Figs. 1 and 2, except that the separate pairs of slits a^2 converge inwardly and are placed farther apart and the corner portions a^2 of the blank are of less dimensions and the tongues a^4 are wider and the side edges thereof converge inwardly. With this construction when the closure device is fully formed as shown in Fig. 7 and secured to the neck of the bottle as shown in Figs. 4 and 5 the corner portions a^2 from which the ears b^4 are formed will overlap the side edges of the ears b^4 , or said side edges of the ears b^4 will overlap the tongues a^4 , and this is also true of the construction shown in Figs. 1 and 2, but to a less extent.

Where there are no slits in the closure plate the downward bending of the same can only be secured by a compression of the metal. The bend over the top of the bottle and around the bead d^3 cannot be effected unless the metal is corrugated when the closure is applied, and even when this is done it is practically impossible to secure a firm and uniform pressure upon the outer edge of the packing ring or disk. By making the slits in the manner described and overlapping the parts, I am enabled to turn the metal down upon the outer edge of the packing and closely around the bead, and secure a better and more uniform pressure on the edge of the packing at a less expense.

In stamping the blank a in Fig. 1 from a sheet of metal as hereinbefore described, the tongues a^4 are set outwardly to a slight extent at one side of said blank in order to permit of the stamping the blank into the form of the closure device b and the overlapping of said tongues by the corner portions a^2 or the overlapping of said corner portions by said tongues will depend on the direction in which said tongues are set out from the blank, and this is also true of the construction shown in Figs. 6 and 7.

The construction described and claimed herein is an improvement on that described and claimed in U. S. Letters Patent No.

717,491, granted to me Dec. 30, 1902, and by forming my improved closure device from a blank a which is square in form I accomplish a great saving over that method of construction in which a closure device of this class is made from a circular blank as shown in the patent referred to and in other patents in this class of devices.

By means of my improved method I am enabled to form from a standard sheet of tin plate at least 20% more closure devices than when said closure devices are formed from a circular blank and this, of course, is a 20% saving in the process of making closure devices and in the process of closing or sealing bottles or other vessels.

My invention is not limited to any particular kind or class of machine for securing the closure device on the bottle or other vessel as shown in Figs. 4 and 5, and there are some machines of this class now in use that will do this work, but any suitable machine or apparatus that will hold the bottle and force the ears b^4 downwardly into the position shown in Figs. 4 and 5 may be employed.

When the closure plate is not slitted as herein described it will ordinarily only be bent approximately from the point at which the corrugations of the closure plate begin, and in such cases a large packing disk must be employed or a disk large enough to extend downwardly over and partially cover the bead on the neck of the bottle. By slitting the closure plate from the outside inwardly the bending of the plate will begin with the highest point of the mouth of the bottle and a smaller packing disk can be employed whereby a very considerable saving in the packing material is effected.

When the slitted plate described is combined with the corrugated ears, the application of the closure device is greatly simplified, and is easily effected. The mechanism for applying such closure device is much less costly than that required for applying a corrugated device made from a circular plate.

I am aware that it has been proposed to provide the closure plate with curved slits which will extend around the most outer portion of the bead on the bottle and have such separated portions of the plate bent inwardly to form corrugations, the upper end of the inwardly bent portions forming shoulders for engaging the under side of the bead, but this construction I do not claim and desire to avoid as such a slitting of the plate greatly reduces the strength of the closure.

Having fully described my invention what I claim as new and desire to secure by Letters Patent is:—

1. A closure device for bottles and similar articles comprising a packing disk having its outer edge adapted to engage the highest

point of the mouth of the bottle, and a flexible sheet metal plate substantially square in shape, having pairs of slits or cuts extending inwardly from the edge toward the center, to form tongues between said cuts or slits, and having the corners of the plate corrugated to stiffen such portions and provide shoulders upon the under or inner side of the same to engage the underside of a bead upon the article to which it is applied, the metal of said ears being connected integrally with the center of the plate.

2. In a closure device for bottles and like articles, the combination with a packing disk having its outer edge adapted to engage the highest point of the mouth of the bottle, of a flexible sheet metal plate substantially square in shape, having pairs of

slits on each side extending from the outer edge toward the center to provide for the overlapping of the edges of the slits in bending, and having the corners corrugated to stiffen the same and form shoulders upon the under or inner side of the same to engage the under side of the bead upon the bottle, the metal of said ears being connected integrally with the center of the plate.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 19th day of September, 1913.

ROSS B. YERBY.

Witnesses:

C. MULREANY,
S. ANDREWS.