

Oct. 15, 1940.

G. H. HUTAFF, JR

2,218,040

BOTTLE CAP

Filed Feb. 3, 1938

2 Sheets-Sheet 1

Fig. 1.

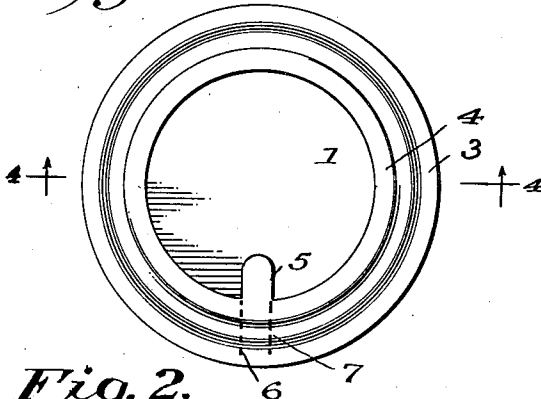


Fig. 2.

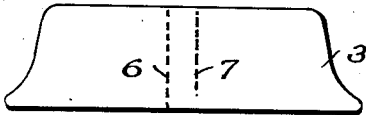


Fig. 3.

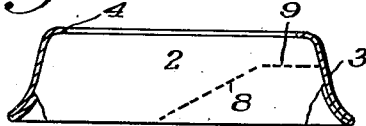


Fig. 4.

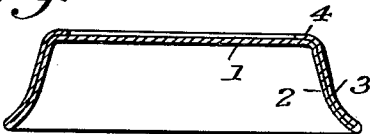


Fig. 5.

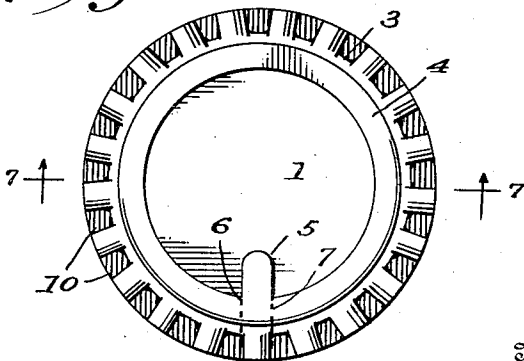


Fig. 6.

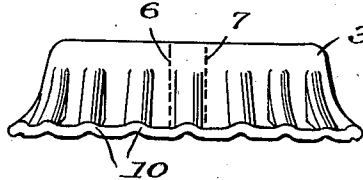


Fig. 7.

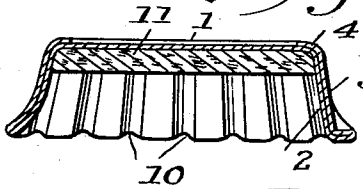


Fig. 8.

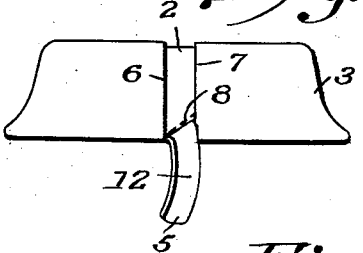


Fig. 9.

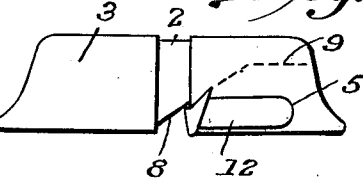
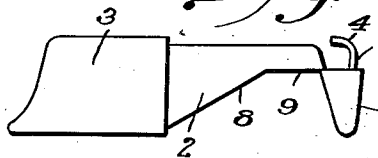


Fig. 10.



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Fig. 11.

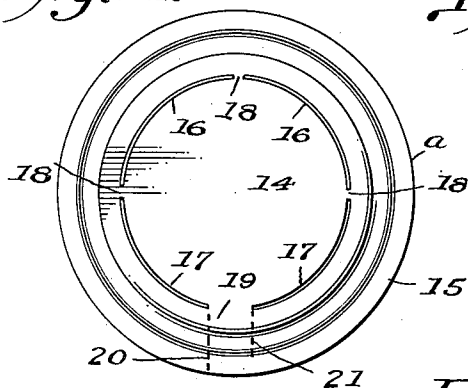


Fig. 16.

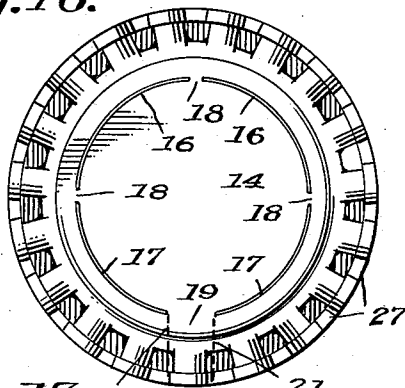


Fig. 12.

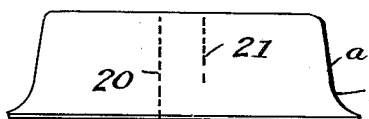


Fig. 17.

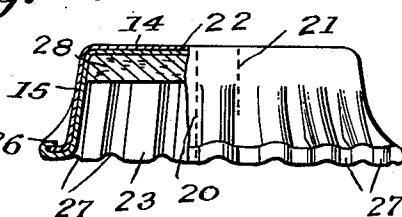


Fig. 13.

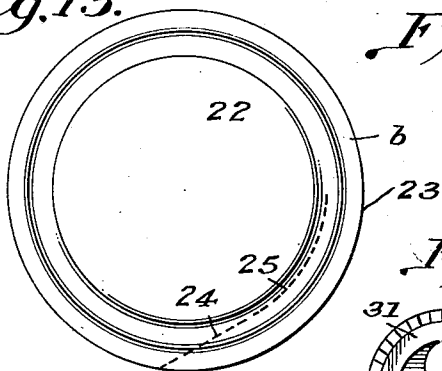


Fig. 18.

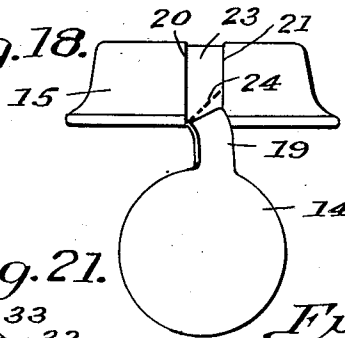


Fig. 14.

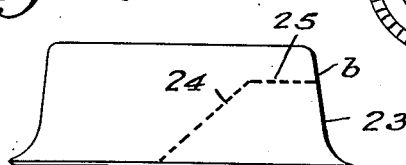


Fig. 21.

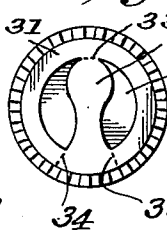


Fig. 19.

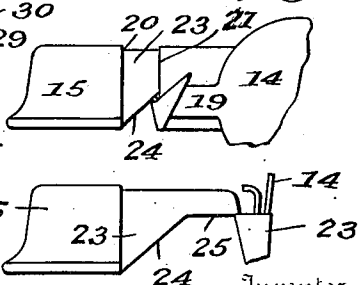


Fig. 15.

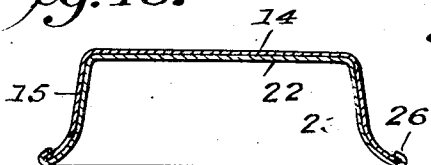


Fig. 20.

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UNITED STATES PATENT OFFICE

2,218,040

BOTTLE CAP

George H. Hutaff, Jr., Wilmington, N. C.

Application February 3, 1938, Serial No. 188,547

4 Claims. (Cl. 215-46)

My invention relates to new and useful improvements in bottle caps and more particularly to a bottle cap of the so-called "crimped" type adapted to be placed over the mouth of a bottle or other receptacle and engaged with a bead normally formed on said bottle mouth, the primary object of the present invention residing in the provision of a cap of the character described which may be applied to the bottle mouth by the usual form of capping mechanism but which may be removed without the use of the ordinary bottle cap remover.

A further object of the invention consists in providing a cap of the character described formed so that a portion of the flange, which engages the bead on the bottle mouth, may be torn away for a sufficient distance to permit the cap to be readily removed.

Another object of the present invention resides in providing the cap with a double-walled flange, each wall being provided with a weakened line or lines of indentations or perforations whereby the portion of the flange may be torn away in such a manner that the cap may be removed from the bottle mouth without the use of a bottle cap remover.

A still further object of the invention consists in providing a cap of the character described with a double-walled flange and a finger-engaging portion which overlies or forms a part of the top of the cap, this finger-engaging portion being adapted to be bent from its normal horizontal plane to provide a ready finger grip whereby a portion of each wall of the flange may be torn away to permit the cap to be easily removed from the bottle mouth.

With the above and other objects in view, which will appear as the description proceeds, my invention consists in the novel details of construction, and arrangement of parts, described in the following specification and illustrated in the accompanying drawings, and while I have illustrated and described the preferred embodiments of the invention, as they now appear to me, it will be understood that such changes may be made as will fall within the scope of the appended claims.

In the drawings—

Fig. 1 shows a top plan prior to crimping the flange.

Fig. 2 shows a side elevation before the flange is crimped.

Fig. 3 is a side view showing the inner wall in elevation, with parts broken away, and the outer wall in section.

Fig. 4 is a transverse vertical section on the line 4-4 of Fig. 1 looking in the direction of the arrows.

Fig. 5 is a view similar to Fig. 1 showing the flange crimped.

Fig. 6 shows a side elevation after the flange has been crimped.

Fig. 7 is a transverse vertical section on the line 7-7 of Fig. 5 through the completed cap after the flange is crimped.

Figs. 8, 9 and 10 are diagrammatic side elevations showing steps in the tearing of the flange.

Fig. 11 is a top plan of the outer member of a slightly modified form of cap.

Fig. 12 is a side elevation of the outer member of the cap shown in Fig. 11.

Fig. 13 is a top plan of the inner member of the slightly modified form of cap.

Fig. 14 is a side elevation of the inner member of the slightly modified form of cap.

Fig. 15 is a transverse vertical section through the modified form of cap with the inner and outer members assembled.

Fig. 16 is a top plan of the completed modified form of cap with the flanges of the members crimped.

Fig. 17 is a side elevation, parts being broken away, of the completed cap shown in Fig. 16.

Figs. 18, 19 and 20 are diagrammatic side elevations showing steps in the tearing of the flanges of the cap shown in Fig. 16 to release the cap from the bottle mouth; and

Fig. 21 is a top plan of a still further modified form of the invention.

In Figs. 1 to 10 inclusive of the drawings I have shown a cap including a double-walled flange and a finger-engaging portion of integral formation whereas in Figs. 11 to 21 inclusive I have shown slightly modified forms of caps in which inner and outer members are provided to form a cap with a double-walled flange and a finger-engaging portion. In each form of the invention a finger-engaging portion normally extends horizontally over the top of the cap and is adapted to be bent into proper position to form a secure grip for the fingers and a lever to tear away a portion of each wall of the flange to release the cap from the bottle mouth.

In the construction shown in Figs. 1 to 10 inclusive of the drawings, the cap is formed of a single piece of material shaped to provide the top portion 1, the inner wall 2 of the flange and the outer wall 3 of the flange, the upper edge of the outer wall of the flange being bent horizontally as shown at 4 to extend over the top 1 at

its marginal edge. Extending inwardly from this edge portion 4 is a tongue or projection 5 which normally extends horizontally over the top 1. Extending from and forming a continuation of the side edges of this tongue or projection 5 are the weakened lines 6 and 7 formed by indentations or perforations and, as shown, these lines extend through the inturned portion 4 and vertically of the outer wall 3 of the flange, the lower end of the line 7 terminating slightly above the bottom edge of the flange, as shown more particularly in Fig. 2 of the drawings, whereas the line 6 extends to the bottom edge. The inner wall 2 of the flange is provided with the weakened line 8 extending diagonally upward from the bottom edge of the flange, as shown more particularly in Figs. 3, 8 and 9 of the drawings, and at its upper end this line merges with the horizontal weakened line 9, it being understood that both of these lines 8 and 9 are formed by perforations or indentations. As shown more particularly in Fig. 8 of the drawings the lower end of the diagonally extending line 8 terminates at the lower end of the line 6 for a purpose which will be presently brought out. After the cap has been formed, as shown in Figs. 1 to 4 inclusive of the drawings, then the flange will be crimped, as shown at 10 more particularly in Figs. 5, 6 and 7 of the drawings and the usual cork insert 11 will be positioned interiorly of the cap, as shown more particularly in Fig. 7.

From the above it is thought that the detailed construction of this form of my cap will be clearly understood. The cap may be formed of relatively thin material in view of the fact that the flange is formed with the two walls. The completed cap, shown in Figs. 5, 6 and 7 of the drawings, may be applied to the bottle mouth by the usual form of capping mechanism. When it is desired to remove the cap the person engages the tongue or projection 5 with the fingers and bends the same upwardly out of its normal horizontal plane. Then by pulling outwardly on this tongue or projection the overlying portion 4 and the outer wall of the flange will be torn along the lines 6 and 7. In Figs. 8, 9 and 10 of the drawings I have diagrammatically shown the steps in the tearing operation. The tongue will tear the strip 12 from the outer wall of the flange and one edge of this strip will be torn all the way to the bottom edge of the flange along the line 6 whereas the opposite edge will terminate above the bottom edge of the flange in view of the fact, as previously stated, the line of perforations or indentations 7 does not extend to the edge. This is of particular advantage in that greater strength is added to prevent the strip 12 from being entirely torn away from the cap. After being torn to the position shown in Fig. 8 then the strip 12 will be pulled to the right of that figure and the inner wall 2 of the flange will be torn along the diagonally extending weakened line 8 and later along the horizontal weakened line 9. As the strip 12 is being pulled sidewise it will assume the position shown in Fig. 9 of the drawings and as the inner wall is torn along the weakened line 8 the outer wall will be pulled away from the inner wall as shown more particularly in Fig. 10 of the drawings and this action will continue as the inner wall is torn along the horizontal weakened line 9. As the inner wall is torn away, for a portion of its circumference, the cap will be released from the usual head formed around the bottle mouth and

the cap may be removed without the use of the usual form of bottle cap remover.

The cap shown in Figs. 11 to 20 inclusive is formed of two separate and distinct members, the outer member being indicated generally at *a* and the inner member at *b*. The outer member includes the top portion 14 and depending flange 15. The top portion 14 is formed with the arcuate-shaped slits or openings 16 and 17 providing the relatively narrow connecting portions 18 and the relatively wider portion 19. The flange 15 is provided with the weakened lines 20 and 21, formed by perforations or indentations, and as shown more particularly in Figs. 11 and 16 of the drawings the upper ends of these weakened lines terminate at the slits or openings 17. The lower end of the weakened line 21 terminates above the bottom edge of the flange 15 whereas the lower end of the weakened line 20 extends to the bottom edge for a purpose which will be later brought out. The inner member *b* consists of the top portion 22 and depending flange 23, the depending flange 23 having the weakened line 24, formed by perforations or indentations, extending diagonally upwardly from the bottom edge of the flange as shown more particularly in Fig. 14 of the drawings with its upper end merging with or forming a continuation of the horizontal weakened line 25 also formed of perforations or indentations.

In Fig. 15 of the drawings I have shown the two members *a* and *b* assembled and they are connected by bending the bottom edge of the flange 23, of the member *b*, upwardly and inwardly over the bottom edge of the flange 15 of the outer member *a* as shown at 26. This provides a unitary structure and the cap is completed by crimping the flanges or walls 15 and 23, as shown at 27, more particularly in Figs. 16 and 17 of the drawings. The usual cork insert 28 is positioned in the cap, as shown more particularly in Fig. 17 of the drawings.

In this modified form of construction illustrated in Figs. 11 to 20 inclusive of the drawings, the cap may be placed upon the bottle mouth by the usual form of capping mechanism and when it is desired to remove the cap the person engages his finger in one of the slits 16 and by pulling upwardly on the top portion 14 the connecting portions 18 are broken and the top portion 14 may be bent from its normal horizontal position to form a finger grip and provide a leverage in removing the cap. An outward and downward pull on the top portion 14 tears a strip from the flange 15 between the weakened lines 20 and 21 as shown more particularly in Fig. 18 of the drawings and the tear along the line 20 will extend to the bottom edge of the flange whereas the tear along the line 21 will terminate a slight distance above the edge of the flange. When in the position shown in Fig. 18 a pull is then given to the portion 14 and the connecting strip 19 upwardly towards the right of the figure and the inner flange 23 will then be torn along the weakened line 24, as shown more particularly in Fig. 19 of the drawings and a continued pull will tear along the weakened line 25 circumferentially of the cap flange. During this tearing action along the lines 24 and 25, the flange 15 on the outer member *a* will be pulled away from the inner member, as shown more particularly in Fig. 20 of the drawings, so that the cap will be readily released from the bottle mouth.

In Fig. 21 I have shown a top plan of a still

further modified form of my invention. This modified form is similar to that shown in Figs. 11 to 20 inclusive and therefore a detailed description thereof will not be necessary other than to say that the flange of the outer member *a* is shown at 29 and the top of the inner member at 30. The outer member is provided with an inwardly directed flange portion 31 which overlies the marginal edge of the top 30 of the inner member. The opening formed by the overlying flange 31 is spanned by a tongue or projection 32 which may be broken along the weakened line 33 and engaged by the fingers whereby it may be bent from its horizontal position and tear the flange of the outer member along the lines 34 and 35, these lines 34 and 35 corresponding to the lines 20 and 21 of that form shown in Figs. 11 to 20 inclusive of the drawings. A further description of this modified form is not thought necessary for in all other respects it is similar to the form shown in Figs. 11 to 20 inclusive. The inner and outer members will be connected in the same way and the operations in removing the cap from the bottle mouth will be the same. From the above it will be seen that in each form of the invention, disclosed, I have provided novel means whereby the cap may be removed from the bottle mouth without the use of the usual form of bottle cap remover. If in removing the caps, shown in Figs. 11 to 21 inclusive, any difficulty is found in breaking the finger-engaging portion away, by the use of the finger only, a knife blade may be employed to be inserted in the slits or openings 16 or beneath the tongue or projection 32. However, as the material, forming the caps, is very thin it is thought that ordinarily it will be found that the same may be broken merely by the finger, but if it is found necessary, as stated, a knife blade or coin may be used, these articles ordinarily being carried on the person and accessible without any delay.

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

1. A cap of the character described, adapted to be applied to the mouth of a receptacle, formed

of two members one being fitted within the other, each of said members including a top portion and a flange, the bottom edges of the flanges being connected to form a unitary structure, and means forming a part of the top portion of the outer member adapted to be engaged and operated for tearing a portion of the outer flange and in a continuing movement tearing a portion of the inner flange to permit removal of the cap from the receptacles.

2. A cap of the character described, adapted to be applied to the mouth of a receptacle, formed of a single piece of material shaped to provide a top portion, a flange formed of inner and outer walls, the upper edge of the outer wall being bent inwardly over the top portion, and a tongue or projection extending inwardly from the inwardly bent portion of the outer wall, said tongue or projection forming a finger hold for removing the cap from the receptacle.

3. A cap of the character described, adapted to be applied to the mouth of a receptacle, formed of a single piece of material shaped to provide a top portion, a flange formed of inner and outer walls, each having a weakened portion, the upper edge of the outer wall being bent inwardly over the top portion, and a tongue or projection extending inwardly from the inwardly bent portion of the outer wall, said tongue or projection forming a finger hold for tearing the walls of the flange along the weakened portions to remove the cap from the receptacle.

4. A cap of the character described adapted to be applied to the mouth of a receptacle, including a top portion, a flange formed of inner and outer walls, the outer wall having weakened lines one of which extends to the bottom edge of the flange while the other terminates above the bottom edge, and a member formed integral with the outer wall and normally extending horizontally therefrom, said member forming an extension of that portion of the outer wall between the weakened lines and adapted to be engaged to tear that portion of the wall between the weakened lines to remove the cap from the receptacle.

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