Jan. 6, 1953 R. DREIER 2,624,219

BOTTLE OPENER WITH SKIRT DEFORMING MEANS

Filed July 31, 1948

Fig. 1.

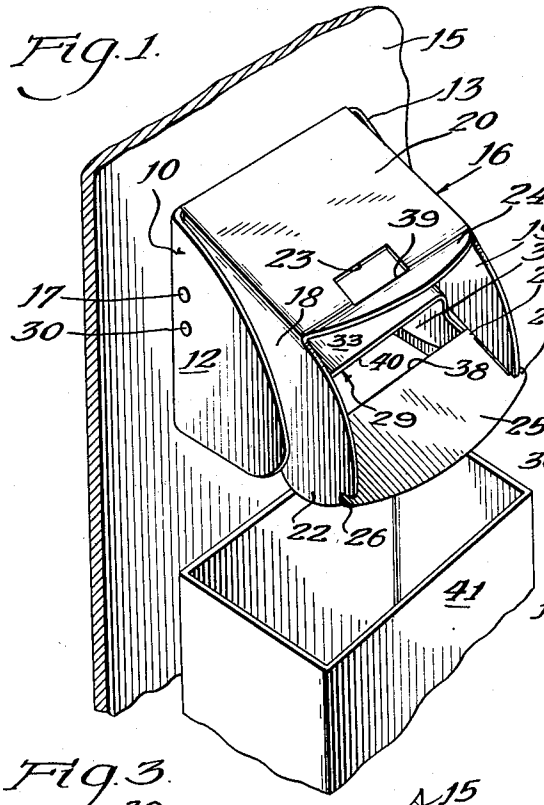


Fig. 2.

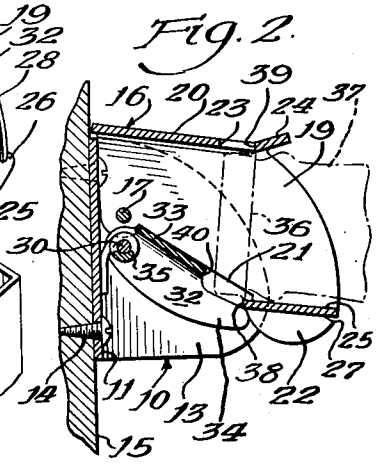


Fig. 3.

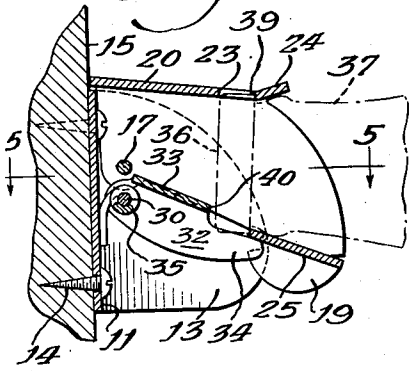


Fig. 4.

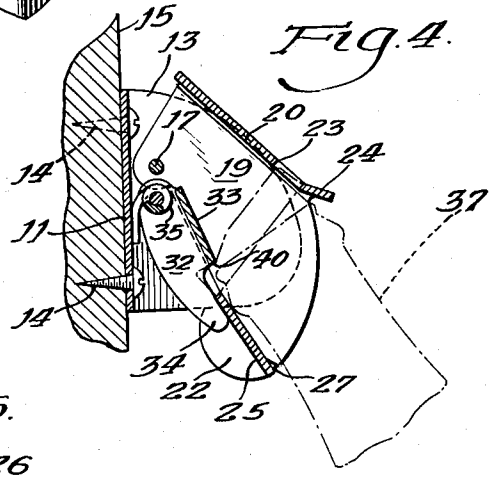
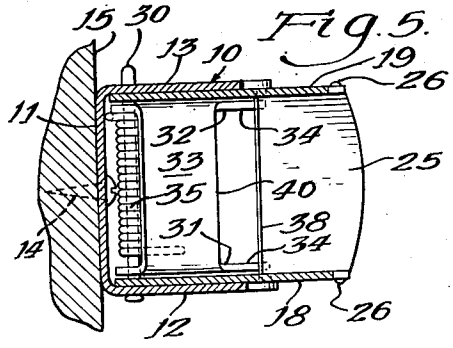


Fig. 5.



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BOTTLE OPENER WITH SKIRT DEFORMING MEANS

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7 Claims. (Cl. 81—3.3)

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This invention relates to bottle openers and more particularly to a bottle opener for removing from bottles, caps of the well-known crown type.

An object of the invention is to provide a simple and reliable bottle opener for removing caps of the aforesaid type from bottles by applying to said caps a deforming force.

A further object of the invention is to provide in a bottle opener of the above character means for pinching a bottle cap between opposing movable parts to thereby deform said cap and cause the removal of said cap from said bottle.

Still another object of the invention is to provide in a bottle opener of the above description an improved means for holding a bottle cap while deforming force is applied thereto for causing the removal of said cap from a bottle.

Other objects and advantages of the invention will be apparent from the following description of a preferred embodiment thereof taken in connection with the accompanying drawing, in which:

Fig. 1 is a perspective view of a bottle opener of my invention showing the same mounted above a receptacle for receiving bottle caps which may be removed from bottles by said opener;

Fig. 2 is a vertical cross-sectional view of my bottle opener showing the position of the parts thereof as the top of a capped bottle is received for removal of the cap, the neck of the bottle and the cap thereon being indicated by broken lines;

Fig. 3 is a similar view showing the position of the parts of the bottle opener and the bottle cap therein immediately prior to the operation of the opener to remove the cap from the bottle;

Fig. 4 is a like view showing the position of the parts of the opener upon operation thereof to remove said cap from the bottle; and

Fig. 5 is a horizontal cross-sectional view taken substantially on the line 5—5 in Fig. 3.

As thus illustrated, the bottle opener of my invention comprises a frame 10 having a back wall 11 with two parallel ears 12 and 13 extending outwardly therefrom. Said frame may be conveniently mounted, as by screws 14, to any surface 15 such as the outer surface of a bottled beverage vending machine or the like.

A bottle cap receiving member, shown generally at 16, is pivotally mounted upon the frame between the two ears 12 and 13 as by a pivot pin 17 which extends between and is supported by the ears 12 and 13. Said bottle cap receiving member comprises two sides 18 and 19, disposed parallel to the ears 12 and 13, and a top web 20 extending

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between the tops of said sides. The sides 18 and 19 are pivoted on the pivot pin 17, and each has a straight lower edge 21 (Fig. 2) which extends diagonally outwardly from a point adjacent the pin 17 to a lobe 22 formed on the lowermost portion of each of the sides 18 and 19. The top web 20 has an opening 23 therein adjacent its outer edge, said outer edge being flared upwardly to provide a lip 24.

A locking member 25 is pivotally mounted between the lobes 22 of the sides 18 and 19 of the bottle cap receiving member as by protrusions 26 which extend outwardly from the opposite side edges of the locking member adjacent the outermost edge thereof and are received by notches 27 provided in the lobes 22. Said locking member is further pivotally retained between the lobes 22 as by additional protrusions 28, which extend outwardly from the opposite side edges of the locking member 25 adjacent its inner edge and are engaged by the lobes 22 adjacent the junction of the lower edges 21 of the sides 18 and 19 with said lobes (Fig. 1). It will thus be understood that although the locking member 25 is secured between the lobes 22 of the sides 18 and 19 of the bottle cap receiving member 16, said locking member is nevertheless free to pivot slightly in the notches 27 in the lobes.

A deforming member, shown generally at 29, is pivotally mounted between the sides 18 and 19 of the bottle cap receiving member 16 upon a pivot pin 30 which is supported by said sides 12 and 13 slightly below the pivot pin 17. Said deforming member comprises two sides 31 and 32, which pivotally receive the pin 30, and a web 33 extending between the sides. Said sides 31 and 32 each have a finger 34 formed thereon extending outwardly to a position beneath and in sliding contact with the under surface of the locking member 25. A coil compression spring 35, having one of its ends resting against the back side 11 of the frame 10 and its other end against the underside of the web 33 of the deforming member 29, is disposed about the pin 30. It will thus be seen that the force of the spring 35 presses the fingers 34, on the sides 31 and 32 of the deforming member 29, upwardly against the underside of the locking member 25. This force on the locking member in turn holds the bottle cap receiving member in the position shown in Figs. 1, 2, 3 and 5, with the back edges of the sides 18 and 19 thereof disposed against or adjacent the back 11 of the frame 10.

In operating my bottle opener to remove a cap 36 from a bottle 37, the neck of the bottle

with the cap thereon is first inserted into the space between the lip 24 and the locking member 25. As the bottle cap and neck of the bottle are pressed into this space the lower edge of the bottle cap will pivot the locking member 25 downwardly slightly (Fig. 2). As soon as the bottle cap has been moved inwardly sufficiently to clear the inner edge or surface 38 of the locking member 25, said locking member will snap upwardly and back into its normal position, with the edge or surface 38 thereof in engagement with the lower edge of the cap. At the same time the upper edge of said cap will enter the opening 23 in the web 20 of the bottle cap receiving member and the edge of the cap on the upper side of the same will thus be engaged by the front side or surface 39 of the opening 23. (See Fig. 3.) In this condition it will be observed that the cap 36 on the bottle 37 will be locked in the bottle opener. Using said bottle itself as a lever, said bottle is then pressed downwardly and in so doing the bottle cap receiving member 16 and the deforming member 29 are pivoted, respectively, about the pins 17 and 30. Inasmuch as the pivot pin 17 is disposed above the pin 30, it will be understood that in the pivotation of the bottle cap receiving member and the deforming member, the outer edge or surface 40 of the latter and the edge or surface 38 of the locking member will be moved toward each other. This movement brings the surface 40 of the deforming member into forced contact with the top surface of the bottle cap to crush or deform the same in a pinching action. (See Fig. 4.) Deformation of the cap breaks the seal between the cap and the bottle, whereupon the bottle may be withdrawn from the bottle opener, the cap being retained by said opener. Upon the removal of the bottle, the parts of the opener are immediately returned to their normal positions by the action of the spring 35. This return movement releases the crushed cap which thereupon falls downwardly through the space between the edge 38 of the locking member 25 and the edge 40 of the deforming member and into a receptacle 41, if such is disposed beneath the opener, as illustrated in Fig. 1.

It will be seen that inasmuch as the crushing force applied to the cap 36 is taken up by the edges or surfaces 38, 39 and 40, none of the force is received by or transmitted to the neck or top of the bottle. It will, therefore, be appreciated that this is one of the important advantages of the invention and that the breakage of bottles opened by my device is thereby reduced to a minimum.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appending claims should be construed as broadly as permissible in view of the prior art.

I claim:

1. A bottle opener comprising: a frame; a bottle cap receiving member pivotally supported by said frame; a plurality of surfaces on said receiving member engageable with an edge of a bottle cap on opposite sides thereof while said cap is in sealing position on a bottle; and a deforming member pivotally supported by said frame, said receiving member and said deforming member being pivotable to pinch said cap between said deforming member and said surfaces to deform said cap and cause its removal from said bottle, said receiving member and said deforming member being pivotable about separate axes.

2. A bottle opener comprising; a frame; a bottle cap receiving member engageable with an edge of a bottle cap on one side of the latter while said cap is in sealing position on a bottle; a locking member pivotally mounted on said receiving member and engageable with the edge of said bottle cap on another side thereof; and a deforming member pivotally supported by said frame, said receiving member and said deforming member being pivotable to pinch said cap between said locking member and said deforming member to deform said cap and cause its removal from said bottle.

3. A bottle opener comprising: a frame; a bottle cap receiving member engageable with an edge of a bottle cap on one side of the latter while said cap is in sealing position on a bottle; a locking member pivotally mounted on said receiving member and engageable with the edge of said bottle cap on another side thereof; and a deforming member pivotally supported by said frame, said receiving member and said deforming member being pivotable to pinch said cap between said locking member and said deforming member to deform said cap and cause its removal from said bottle, said receiving member and said deforming member being pivotable about separate axes.

4. A bottle opener comprising: a frame; a bottle cap engaging member movably supported by said frame and having a surface engageable with an edge of a bottle cap while said cap is in sealing position on a bottle, said bottle cap engaging member being movable in an arcuate path with respect to said frame; and a deforming member mounted on said frame opposite said surface of said bottle cap engaging member and movable with respect to said frame in a second arcuate path converging with and having a radius less than that of said first mentioned arcuate path, said bottle cap engaging member and said deforming member being simultaneously movable through said converging arcuate paths to pinch said cap therebetween and deform the same, thereby facilitating removal of said cap from said bottle.

5. A bottle opener comprising: a frame; a bottle cap receiving member suppported by said frame and movable with respect thereto through an arcuate path; a plurality of surfaces on said receiving member engageable with an edge of a bottle cap on opposite sides thereof while said cap is in sealing position on said bottle; and a deforming member mounted on said frame opposite said surfaces and movable with respect to said frame through a second arcuate path converging with and having a radius less than that of said first mentioned arcuate path, said bottle cap receiving member and said deforming member being simultaneously movable through said converging arcuate paths to pinch said cap therebetween and deform the same, thereby facilitating removal of said cap from said bottle.

6. In a bottle opener: a frame; a bottle cap receiving member on said frame engageable with a bottle cap on one side of the latter while said cap is in sealing position on a bottle; a locking member movably mounted on said receiving member and engageable with the edge of said cap on another side thereof while said cap is engaged by said receiving member, said receiving member and said locking member being movable as a unit through a single path with respect

to said frame; and a deforming member on said frame engaging said locking member and movable with respect to said locking member and said frame through a path converging with said first mentioned path to force said bottle cap against said locking member and thereby facilitate the removal of said cap from said bottle.

7. A bottle opener comprising: a frame; a bottle cap engaging member pivotally supported by said frame and movable with respect thereto about a first axis; a surface on said engaging member engageable with an edge of a bottle cap while said cap is in sealing position on said bottle; a deforming member pivotally supported on said frame about a second axis and in sliding engagement with said bottle cap engaging member, said deforming member and said bottle cap engaging member being simultaneously pivotable about their respective axes to pinch said cap therebetween for facilitating the removal of said cap from said bottle; and spring means operatively associated with said deforming member for retaining the same in engagement with said bottle cap engaging member.

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