Sept. 25, 1934. J. M. SCHILLING 1,974,836

CROWN CAP PULLER

Filed Feb. 18, 1932

Fig. 1.

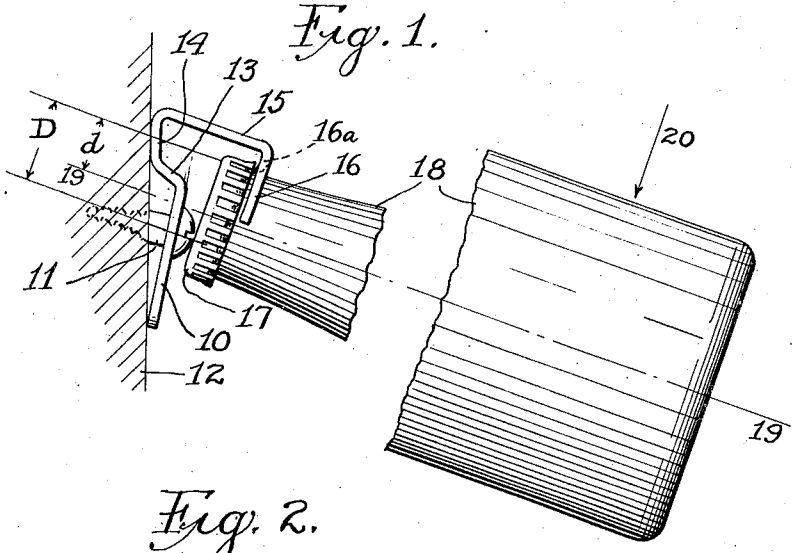


Fig. 2.

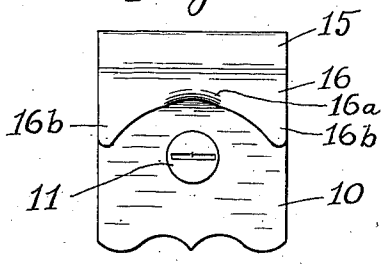


Fig. 3.

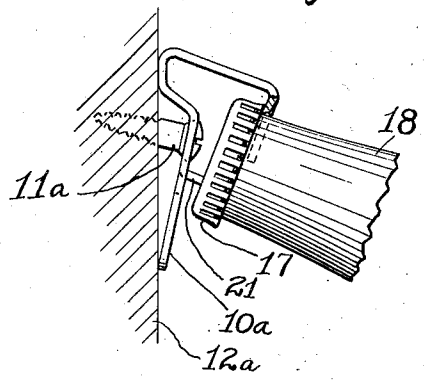
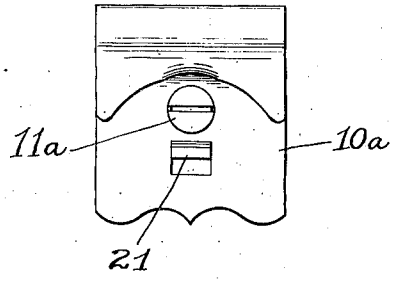


Fig. 4.



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CROWN CAP PULLER

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2 Claims. (Cl. 65—46)

My invention relates to an improved construction of cap puller for bottles having crown caps of the kind commonly used in connection with bottled beverages. My device is preferably constructed of a single piece of sheet metal formed to give it substantial support on an object to which it is attached, and at the same time to effectively engage one edge and the outer end of a bottle cap when the cap is being removed from the bottle by means of the device. Furthermore, my device is constructed so that it may be secured to a desired support by a single fastener, for example a screw, and the device has extending from its body portion, a projection for engaging the outer end of the bottle cap at a point remote from the edge of the cap being removed from the bottle by the device, the distance between the cap removing portion of the device and said projection, being preferably substantially greater than half the diameter of the cap, to the end that the pressure exerted upon the bottle in removing its cap, may be reduced to a minimum. The projection on the device for engaging the outer end surface of the cap, may consist of an integral projection formed from the material of the device, or it may consist of a rounded head of the fastening device, as preferred, and where the latter construction is used, the device is of extreme simplicity and correspondingly cheap to manufacture.

My invention will best be understood by reference to the accompanying drawing, illustrating a preferred embodiment thereof, in which

Fig. 1 shows my device in side elevation with a capped bottle in place in the device, to remove the bottle cap,

Fig. 2 is a right hand end view of the device illustrated in Fig. 1,

Fig. 3 shows in a view similar to Fig. 1, a modified form of device, the device in this view being shown partially in section to illustrate its engagement with the edge portion of a bottle cap being removed, and

Fig. 4 shows in a view similar to Fig. 2, the modified device illustrated in Fig. 3.

Similar numerals refer to similar parts throughout the several views.

As shown in Figs. 1 and 2, my device preferably consists of a flat bar of metal forming a body portion 10, provided with an aperture for receiving a screw 11 by which the device may be secured to any desired support 12. Above the screw 11, the metal bar is bent towards the support 12 as indicated at 13, and at the back end of the angular portion 13, the bar is bent at 14 into the plane of the support 12 to which the device is attached. From the upper part of the portion 14, the bar is bent forwardly and downwardly to extend over the angular portion 13, as illustrated at 15, and a sufficient distance in front of the body portion of the device, to extend over the cap to be removed from the bottle. From the forward edge of the portion 15, the bar is bent downwardly as indicated at 16 and in a plane to engage the edge portion of a cap 17 to be removed from a bottle 18. The portions 15 and 16 of the decapping device are preferably substantially at right angles to each other, and the portion 16 is preferably in a plane inclined somewhat towards the body portion 10 of the device, so that the bottle from which the cap is being removed, will incline downwardly away from the device, to facilitate effectively handling the bottle during a decapping operation. The resultant position of the bottle being decapped, prevents the liquid in the bottle from squirting with the compressed gas in the bottle, between the cap and the mouth of the bottle when the cap is partly removed, since the bottle is inclined downwardly away from the decapping device sufficiently to prevent the liquid in the bottle from reaching the cap.

As shown in Fig. 2, the cap engaging portion 16 of the decapper, is provided with a curved lower edge, the central portion 16*a* of which is of a radius to substantially fit around the upper surface of the neck of the bottle 18 from which the cap 17 is to be removed. On either side of the central portion 16*a*, the edges of the portion 16 extend downwardly on opposite sides of the neck of the bottle, as indicated at 16*b*, 16*b*, to guide the bottle neck to central position in the decapping device, when the cap is placed in the position shown in Fig. 1. The guiding edge members 16*b*, 16*b* are preferably provided with inner curved edges as shown in Fig. 2, of different curvature than the cap removing portion 16*a*, the width of the portion 16*a*, limiting the engagement between the portion 16 and a cap being removed, to the upper portion of the edge of the cap. The extensions 16*b*, 16*b* thus guide the bottle neck to central position in the decapping device, so that the cap will rest at its lower portion on the head of the screw 11, and be in engagement at its upper edge with the cap removing portion 16*a*, without engagement between the cap and the curved edges of the extensions 16*b*, 16*b*, whereby said extensions cannot interfere with the proper operation of the device. To further insure this, the lower edge of the

portion 16*a* is preferably indented or bent slightly towards the body portion 10 of the device as indicated. The lower edge of the portion 16*a*, if desired, may be beveled to effect positive engagement between it and the edge of a cap being removed.

Bottle decappers heretofore employed, as far as I am aware, have generally not been provided with projections to engage the mid-portion of the outer surface of the caps being removed, and where such projections have been used, their engagement with the outer surfaces of the caps, has been substantially in the axis of the bottle, illustrated in Fig. 1 by the broken line 19, 19. With such latter constructions, the distance *d* between the line of pressure exerted upon the edge of the cap in removing it, and the point of outside support of the cap to effect the decapping operation, is comparatively small, the reactive pressure on the central portion of the cap is correspondingly large, and the tendency of its reactive pressure on the cap is to unduly oppose the removal of the cap from the bottle, when the bottle is moved in the direction indicated by the arrow 20 in decapping it. While I appreciate that indenting the outer surface of the cap by a suitable projection, tends to loosen the crimped edge of the cap to a certain extent, I much reduce the reactive effect on the cap tending to prevent its removal, by making the distance D between the point of application of the decapping pressure to the cap 17, and the point of external support of the cap, relatively great, this distance being greater than half the diameter of the cap, and preferably as large as possible with the indenting of the cap inside of and adjacent the side wall of the neck of the bottle remote from the portion 16*a* of the decapping device. This results in producing little reactive pressure tending to prevent the decapping operation, and the cap is much more readily removed and with less pressure on the bottle than with previous constructions.

The modified construction of my device shown in Figs. 3 and 4 is similar to that shown in Figs. 1 and 2, the principal difference being that a projection 21 is formed integrally with the body portion 10*a* of the device, to support the outer end surface of the cap 17 during a decapping operation, the device in this case being secured to the support 12*a* by a screw 11*a* of any desired kind.

While I have described my device as bent from a bar of suitable metal, it will be understood that it may be made of any metal or alloy that will impart sufficient strength to the device, and that the device may be made in any other manner desired, for example by casting the device, the important consideration being that the device shall be of an inverted U-shape with unequal downwardly extending sides, the longer side comprising the body portion of the device, and the shorter side comprising the cap removing portion of the device, a single fastening device, for example a single screw, being used preferably to mount the device on its support and to engage and indent a bottle cap as described, during its removal. While I show a single mounting device for securing the device to its support, it will be understood that additional fastening devices may be employed, if desired.

While I refer to certain portions of my device as being upper portions, and other portions thereof as being lower portions, it will be understood that these terms are illustrative and used for convenience of description only, since my device is equally adapted for support and operation in any other desired position, depending on the preference of the user.

While I have shown my invention in the particular embodiment above described, it will be understood that I do not limit myself to this exact construction as I may employ equivalents known to the art at the time of the filing of this application without departing from the scope of the appended claims.

What I claim is:

1. A device of the class described, comprising a strip of sheet metal having substantially parallel edges and four spaced bends extending transversely across said strip and dividing said strip into five portions, the lower first one of said portions being substantially flat and extending upwardly and outwardly obliquely to a vertical supporting surface and having an aperture therethrough for a supporting screw, the next and second one of said portions extending from the upper edge of said first portion towards said supporting surface and holding said first portion in said oblique position, the next and third one of said portions being substantially flat and extending upwardly from the upper edge of said second portion and parallel with and to rest against said supporting surface, the next and fourth one of said portions extending outwardly from the upper edge of said third portion, and the last and fifth one of said portions extending downwardly from the outer edge of said fourth portion and in a plane substantially parallel with the plane of said first portion, the lower edge of said fifth portion being concave symmetrically about the mid-line of said strip and consisting of a central arc and two outer edge surfaces, said central arc having a radius substantially equal to the inner radius of a cap flange in place on a bottle and having a length substantially less than the diameter of said cap flange, said outer edge surfaces diverging outwardly and downwardly from said central arc to clear said bottle cap flange, the angles of said bends and the distance of said central arc from the upper edge of said fifth portion with a bottle cap in removing engagement with said central arc alining the lower portion of the cap with said screw aperture, and the length of said fourth portion spacing said first portion and said fifth portion to receive between them the bottle cap to be removed with the flange edge of said cap substantially parallel with said fifth portion and with said cap adjacent said first portion.

2. A device of the class described, comprising a strip of sheet metal having substantially parallel edges and four spaced bends extending transversely across said strip and dividing said strip into five portions, the lower first one of said portions being substantially flat and extending upwardly and outwardly obliquely to a vertical supporting surface and having an aperture therethrough for a supporting screw, the next and second one of said portions extending from the upper edge of said first portion towards said supporting surface and holding said first portion in said oblique position, the next and third one of said portions being substantially flat and extending upwardly from the upper edge of said second portion and parallel with and to rest against said supporting surface, the next and fourth one of said portions extending outwardly from the upper edge of said third portion, and the last and fifth one of said portions extending

downwardly from the outer edge of said fourth portion and in a plane substantially parallel with the plane of said first portion, the lower edge of said fifth portion being concave symmetrically about the mid-line of said strip and consisting of a central arc and two outer edge surfaces, said central arc having a radius substantially equal to the inner radius of a cap flange in place on a bottle and having a length substantially less than the diameter of said cap flange, said outer edge surfaces diverging outwardly and downwardly from said central arc to clear said bottle cap flange, the angles of said bends and the distance of said central arc from the upper edge of said fifth portion with a bottle cap in removing engagement with said central arc alining the lower portion of the cap with said screw aperture, and the length of said fourth portion spacing said first portion and said fifth portion to receive between them the bottle cap to be removed with the flange edge of said cap substantially parallel with said fifth portion and with said cap adjacent said first portion, said central arc being offset from the plane of said fifth portion towards said third portion.

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