April 27, 1948. M. C. RANSEEN 2,440,485

CAP-LIFTING BOTTLE OPENER

Filed March 11, 1944 2 Sheets-Sheet 1

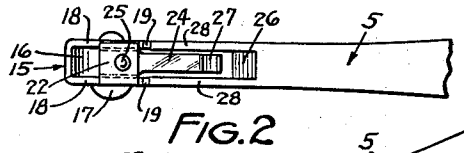


FIG. 2

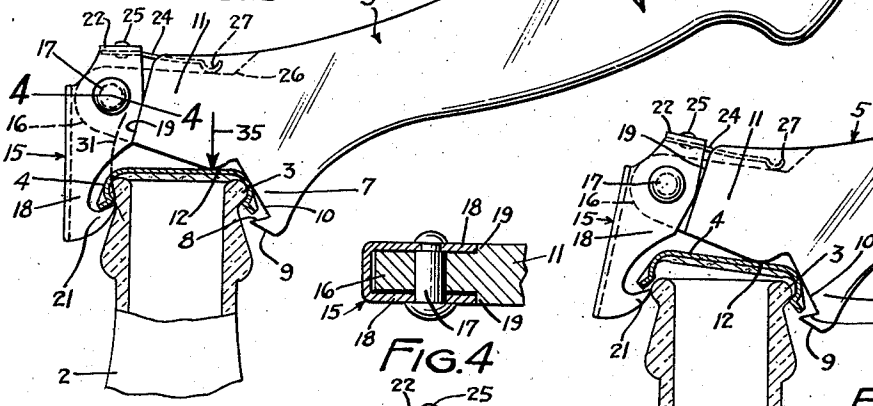


FIG. 1

FIG. 4

FIG. 3

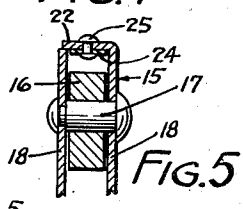


FIG. 5

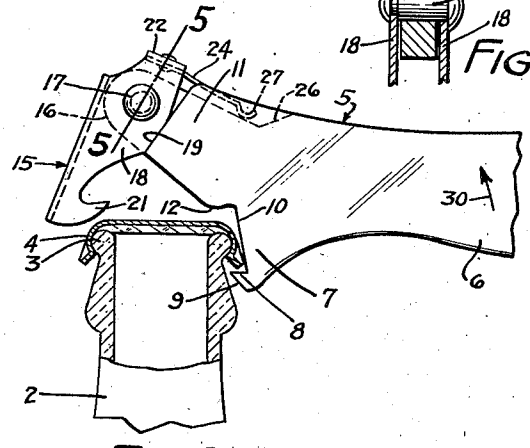


FIG. 6

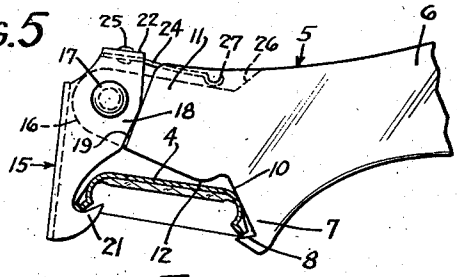


FIG. 8

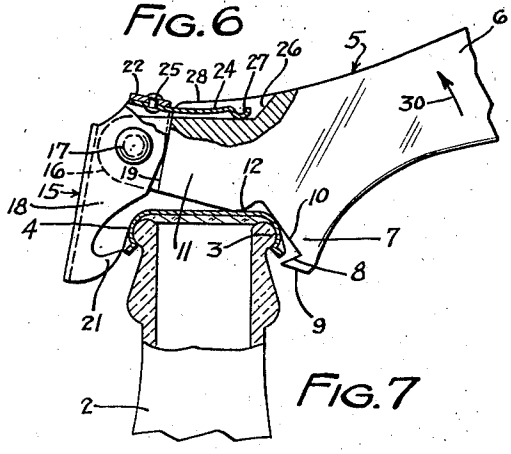


FIG. 7

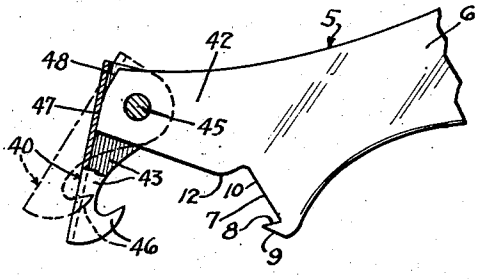


FIG. 9

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CAP-LIFTING BOTTLE OPENER

Filed March 11, 1944 2 Sheets-Sheet 2

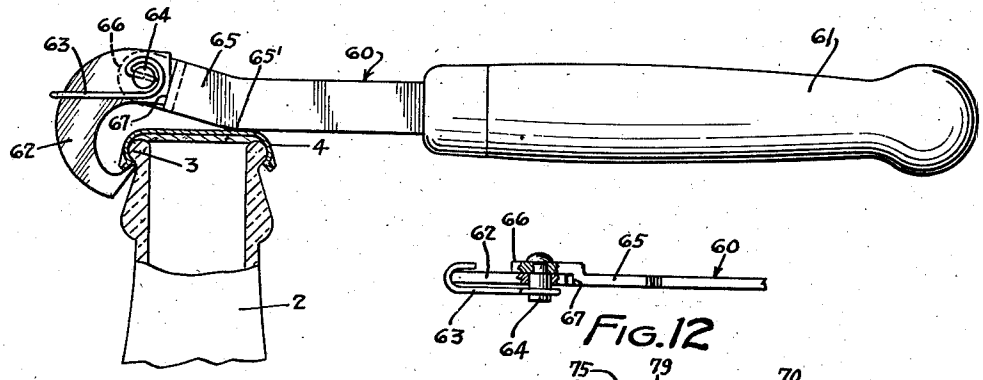


FIG. 11

FIG. 12

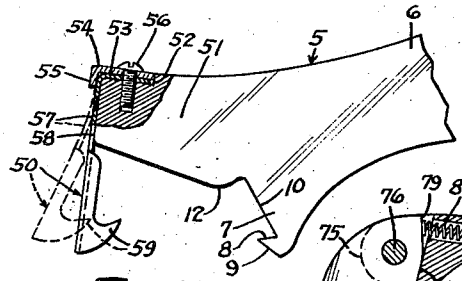


FIG. 10

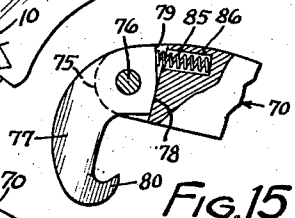


FIG. 15

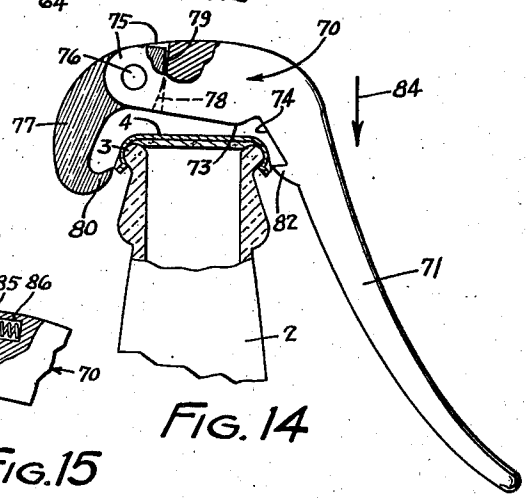


FIG. 14

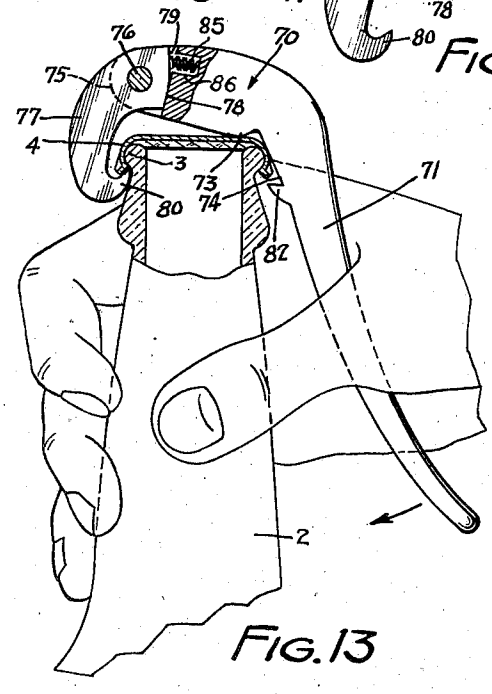


FIG. 13

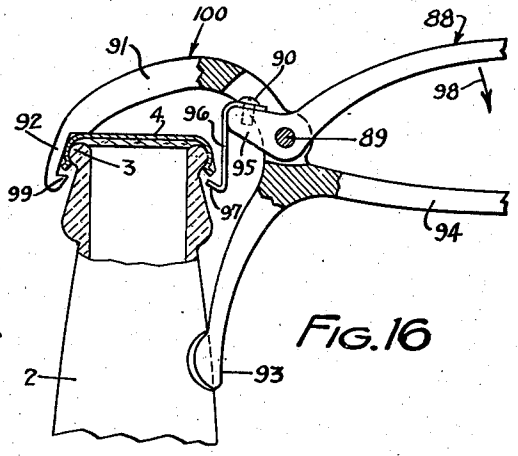


FIG. 16

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Patented Apr. 27, 1948

2,440,485

UNITED STATES PATENT OFFICE

2,440,485

CAP-LIFTING BOTTLE OPENER

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Application March 11, 1944, Serial No. 525,996

1 Claim. (Cl. 81—3.46)

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This invention relates to new and useful improvements in bottle openers of the general type commonly used for removing crown closure caps from bottles and other containers utilizing such closures.

Numerous attempts have heretofore been made to provide a bottle opener which could be operated without danger of chipping or otherwise damaging the bottle top, and which would not be likely to jam between the cap flange and the neck of the bottle, nor slip out of engagement with the cap flange during the cap-removal operation. The simplest form of conventional cap remover comprises a lever or handle portion having a rigid, integral hook at one end which engages under the flange of the cap while a portion of the lever fulcrums upon the top of the cap. Such devices are inefficient because when they are manipulated to remove a cap, the nib of the hook tends to follow the contour of the bead of the mouth of the bottle, and, in so doing, causes the fulcrum point of the lever to relatively move on the cap whereby the hook may chip or damage the bead of the bottle mouth. During the operation of such a cap remover, not only must the pressure exerted on the operating handle or lever of the cap remover overcome the clamping action of the cap flange with the bead of the bottle mouth, but it must also overcome the friction between the cap and the fulcrum point of the lever or handle, caused by the relative movement of the fulcrum on the top surface of the cap.

The present invention pertains more particularly to bottle openers of the type comprising a body portion provided with a suitable lever or handle at one end and having a hook element mounted for relative movement at the opposite end thereof adapted to engage an edge of a bottle closure cap. The present invention, however, distinguishes from such known bottle openers in that means is provided in conjunction with the hook element for constantly urging the hook in a direction towards the flange of the cap, and, at the same time, permitting the hook to follow the contour of the bottle neck, during the operation of releasing or removing the cap from the bottle top. Because of this, my improved bottle opener may be operated more efficiently than devices of the character now in common use, and with the assurance the opener will not break or chip the bead on the bottle mouth, when the cap is released therefrom.

An object of the present invention, therefore, is to provide a bottle opener including a lever adapted to fulcrum upon the top of the cap and

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having a hook element secured thereto and adapted to engage beneath the flange of the cap whereby during the operation of removing the cap from the bottle top, the hook element may follow the contour of the bottle without affecting the relative position of the fulcrum point of the lever with the top of the cap, and without danger of the hook chipping or breaking the bottle top.

A further object of the invention is to provide a bottle cap removing device including a lever having a hook element which is normally urged in a direction toward the cap, but is free to follow the cap flange, independently of the lever, when the flange flares outwardly as the cap is unseated from sealing engagement with the top of the bottle.

A further object is to provide a cap removing device including a lever provided with a hook element having a limited pivotal movement thereon whereby when the lever is initially positioned on the cap, the nib of the hook will assume a position beneath the cap flange whereby it will positively engage the cap flange when the lever is manipulated to release or remove the cap from the bottle.

A further object is to provide a bottle opener comprising a lever having an abutment adapted to engage one side of the cap for properly positioning the lever on the cap, and said lever having a hook depending therefrom and spaced a predetermined distance from the abutment, whereby when the abutment engages the cap flange, the hook will be in position to engage the edge of the cap at a point substantially diametrically opposite from the abutment, whereby when pressure is exerted on the lever, the hook will engage the bottom edge of the cap flange and lift the cap from the bottle top.

A further object is to provide a cap removing device comprising an abutment and a resilient hook adapted to engage opposite sides of the cap, respectively, whereby when the device is positioned on the cap to remove it from the bottle top, it may be temporarily retained thereon in clamping engagement with the cap without breaking the seal between the cap and bottle top.

A further object is to provide a cap removing device comprising an integral abutment and also having a complemental hook element disposed in predetermined spaced relation thereto, whereby when the cap has been released from the bottle top, it may be retained between the abutment and hook element.

A further object is to provide a cap removing

device comprising a hook adapted to engage the bottom edge of a cap, and also having a fulcrum point adapted to engage the top of the closure cap adjacent one side thereof, and means being provided in conjunction with the fulcrum point for causing the fulcrum point to gradually move outwardly towards the edge of the cap, after the hook element has engaged the edge of the cap, following the application of pressure to the lever to remove the cap, thereby expediting the operation of releasing or removing the cap from the bottle top.

A further object is to provide a cap remover comprising an operating handle provided with a resilient hook element adapted to engage the bottom edge of the cap flange, and whereby during the operation of removing a cap from a bottle, the nib of the hook may freely follow the contour of the bottle against the resiliency of the hook element without danger of damaging the bottle top.

The important object of the present invention, therefore, is to provide a cap remover in which all of the objectionable features now present in such devices have been eliminated, whereby a very efficient and practical device of this general type is provided.

Other objects of the invention will appear from the following description and the accompanying drawings and will be pointed out in the annexed claim.

In the accompanying drawings there has been disclosed a structure designed to carry out the various objects of the invention, but it is to be understood that the invention is not confined to the exact features shown, as various changes may be made within the scope of the claim which follows.

In the drawings:

Figure 1 is a side view of my improved device, showing it in position to unseat a bottle cap;

Figure 2 is a top view of Figure 1, partially broken away;

Figure 3 is a view similar to Figure 1 but showing the device operated to unseat the cap;

Figure 4 is an enlarged detail sectional view on the line 4—4 of Figure 1;

Figure 5 is an enlarged detail sectional view on the line 5—5 of Figure 6;

Figure 6 is a view showing the initial step in applying the device to a bottle cap;

Figure 7 is a view similar to Figure 6, but showing the device tilted forwardly and the hook about to engage the botom edge of the cap;

Figure 8 is a view showing how the cap may be retained in the device after having been removed from the bottle;

Figure 9 is a view showing the hook of slightly different construction;

Figure 10 is a side elevation of a device having a hook element formed of spring metal;

Figure 11 is a side elevation of a device having a spring-actuated pivoted hook;

Figure 12 is a top view of Figure 11, partially broken away;

Figure 13 is a side elevation of a cap removing device embodying a slightly different design;

Figure 14 is a view showing how the device of Figure 13 may be quickly applied to a bottle cap;

Figure 15 is a fragmentary view showing a hook element similar to the one illustrated in Figure 14, but wherein the hook element is provided with a spring for constantly urging it in one direction; and

Figure 16 is a view showing a cap remover comprising a member adapted to engage the neck of the bottle below the cap in the operation of unseating the cap.

In the selected embodiment of the invention herein disclosed, there is illustrated in Figure 1, for purpose of disclosure, the top of a bottle, generally designated by the numeral 2, and provided with the usual annular bead 3 adapted to receive the conventional fluted bottle cap 4, such as are commonly used on beverage bottles, and the like.

The novel cap remover illustrated in Figures 1 to 8, inclusive, is shown comprising a lever, generally designated by the numeral 5, having a grip portion 6 whereby the lever may be conveniently grasped in the operation of unseating a cap from a bottle. A downwardly extending integral abutment 7 is provided on the lever member 5 adapted to engage one side of the cap 4. A ledge 8 may be provided beneath the abutment 7 to facilitate properly positioning the device on the bottle cap, as shown in Figure 6.

The lever 5 has a forwardly extending body portion 11 adapted to be positioned over the top of the bottle cap, as shown in Figure 1. The bottom edge of the body portion 11 is shown provided with a rounded fulcrum portion or projection 12 adapted to engage the top of the bottle cap 4 to provide a fulcrum for the lever 5, when the device is manipulated to remove the cap.

A depending hook element, generally designated by the numeral 15, is pivotally mounted upon the reduced end portion 16 of the body portion 11 by means of a pivot pin 17. The hook element 15 may be of channel cross-section, as shown in Figure 4, whereby the opposed flanges 18 may embrace the reduced end portion 16 of the body portion 11. By reducing the end portion 16, as shown in Figures 2 and 4, shoulders 19 are provided against which the flanges 18 of the hook 15 may engage, and whereby the pivotal movement of the hook 15 is limited, as will subsequently be described.

The pivot pin 17, as shown in Figures 4 and 5, provides a spacer for the flanges 18 whereby the space between the flanges may be made a trifle greater than the thickness of the reduced end portion 16, thereby to prevent any binding action between the flanges 18 and the side walls of the end portion 16. The aperture through the end portion 16 is also of such size as to allow free pivotal movement of the pivot pin 17 therein. The hook element extends downwardly from the end portion 16 and the lower portions of the flanges 18 are cut away to provide nib portions 21, as shown, adapted to engage beneath the flange of the cap at points substantially diametrically opposite from the abutment 7, when the device is positioned on the bottle cap, as shown in Figure 1.

Means is preferably provided for constantly urging the nibs 21 of the hook member 15 in a direction towards the abutment 7, to assure that the nibs 21 will properly engage the flange of the cap, each time the device is positioned upon a cap to remove it from the bottle. As best shown in Figure 5, one of the flanges 18 may have a bent-over portion 22 spanning the two flanges over the top of the end portion 16. One end of a suitable spring element 24 is shown secured to the portion 22 of the hook by suitable means such as a rivet 25. The other end 27 of the spring element 24 engages the upper surface of the lever 5, and is preferably seated in a channel 26 provided in the lever, as clearly shown in

Figures 1, 2 and 7. The spring element 24 serves to constantly urge the nibs 21 of the hook in a direction towards the abutment 7, as hereinbefore stated. The side walls 28 defining the channel 26 protect the spring 24 from damage when the device is not in use, as will be understood by reference to Figure 1.

To remove a cap from a bottle with the novel device herein disclosed, the ledge 8 is first engaged with the bottom edge of the cap flange, as shown in Figure 6. The operating handle 5 is then swung upwardly as indicated by the arrow 30, from the position shown in Figure 6 to that shown in Figure 7, whereby the nibs 21 of the hook 15 engage the opposite side of the cap, whereby the hook is cammed outwardly against the tension of the spring 24, as the nibs follow the contour of the cap.

When the nibs subsequently reach the bottom edge of the cap, they snap into operative engagement therewith, as shown in Figure 1. It is to be understood that the spacing between the ledge 8 and nibs 21 of the hook, when the latter is in its normal position as shown in Figure 6, is constant as a result of the flange 18 engaging the shoulders 19 against the tension of the spring 24.

When the nibs of the hook 15 have subsequently been moved into operative engagement with the cap flange, as shown in Figure 1, a downward pressure is exterted on the handle 6 whereby the body portion 11 of the device will fulcrum on the top of the cap at the point indicated by the arrow 35. Such fulcruming action of the device on the cap will cause the nibs 21 to engage the bottom edge of the cap flange with a "lifting" action, and thereby release the cap from the bottle top as shown in Figure 3. When the cap has been completely released from the bead 3 of the bottle, it may be bodily removed from the bottle by the device as a result of the spring 24, which will cause the hook 15 to cooperate with the ledge 8 to grip the released cap, as shown in Figure 8.

From the foregoing it will be noted that the ledge 8 serves as a guide to facilitate quickly placing the device in proper position on the cap, and also as a means for engaging one side of the cap when the latter has been removed from the bottle. The shoulders 19 on the forward portion of the body of the device retain the nibs 21 at a pre-determined distance from the abutment 7, whereby the nibs will properly engage the cap flange when the device is tilted forwardly, as above described. The spring 24 serves a dual function in that it causes the hook to quickly snap into operative engagement with the bottom edge of the cap, when the device is tilted forwardly to a pre-determined position, and, in addition, it causes the hook and ledge 8 to grip the cap with sufficient tension to retain the device in operative position on the unreleased cap, as shown in Figure 1, if desired.

The location of the fulcrum point 12 on the body 11 of the device is important, as it provides a moving fulcrum point for the lever when the lever is swung downwardly from the position shown in Figure 1 to that shown in Figure 3. This results because of the rolling action of the fulcrum point 12 upon the top of the cap, which tends to urge the hook member more tightly into engagement with the flange of the cap and also facilitates the operation of removing the cap. During the rocking movement of the body 11 on the fulcrum 12, the nibs 21 will follow the contour of the bead 3 because of the pivotal connection of the hook 15 with the body 11, regardless of the rolling action of the body 11 on the fulcrum point 12.

This action is contrary to the action of conventional cap removers which may be designed to fulcrum on top of the cap, but wherein the hook member is secured to the body of the device in fixed relation. In such conventional cap removers, the nibs engaging beneath the flange of the cap, and assuming the operating handle fulcrums at substantially the point indicated by the arrow 35 in Figure 1, will tend to follow an arc such as indicated by the broken line 31 in Figure 1. This arc it will be noted cuts through the bead of the botle top, and as the nibs 21 must follow the contour of the bead, it will be seen that the portion of the operating handle which fulcrums on the bottle cap, instead of rolling in a direction towards the right, when viewed as shown in Figure 1, is frictionally moved in the opposite direction or towards the left, because of the nibs following the contour of the bottle bead. This is an objectionable feature in conventional cap removers because it exerts severe strains on the bead and may result in chipping or breaking the bead, and thereby render the bottle unfit for further use.

In the structure herein disclosed, the rounded fulcrum portion 12 of the body which engages the top of the cap is free to roll in a direction towards the right without friction, when the handle is forced downwardly to remove the cap because of the pivotal connection of the hook 15 with the body 11, which permits the nibs of the hook to readily follow the contour of the bottle neck without causing undue friction between the body and cap at the point 35 where the body fulcrums on the cap.

Another important feature of the invention resides in the provision of means for assisting the "rolling" action of the fulcrum point 12 on the body 11 in a direction towards the right of the arrow 35, as the device is manipulated to remove a cap, whereby the lifting action of the hook 15 against the under side of the cap flange is expedited. As shown in Figure 1, the wall 10 of of the abutment 7, which engages against the cap 4, is inclined with respect to the vertical axis of the bottle so as to provide a camming surface.

Referring to Figure 1, it will be noted that as the handle 6 is moved downwardly, the inclined wall 10 of the abutment 7 engages the upper edge and side of the cap 4, and thereby causes the body 11 of the device to move in a direction towards the right of the arrow 35, when viewed as shown in Figure 1, which movement is substantially equal to the normal rolling action of the fulcrum point 12 on the cap 4. Thus the camming action of the abutment wall 10 against the side of the cap hastens the normal rolling action of the fulcrum point 12 in a direction directly opposite to the outward movement of the nibs 21, which expedites the lifting action of the hook 15 as the lever 5 is swung downwardly in the operation of removing the cap.

The device illustrated in Figures 1 to 8, inclusive, is shown provided with a pivoted hook having a spring constantly urging it in a direction towards the abutment 7. This is a desirable feature in that the device may function as hereinbefore described, with the bottle held in any position. However, it is to be noted that when the device is applied to a bottle supported in an upright position, the spring 24 may be dispensed with, if desired, whereby the hook will be pendantly supported from its pivot 17 for

free swinging movement within fixed limits. In such a device the hook will assume its relative positions with respect to the abutment 7 by means of gravity, due to the position of the pivot pin 17, as will be apparent by reference to the drawings.

Obviously, the device may be applied to a bottle cap in other ways than is above described. For example, the nibs 21 of the hook 15 may first be engaged beneath the flange of the bottle cap while holding the device over the cap. The fulcrum point 12 and the abutment 7 may then be moved into engagement with the top and side of the cap, respectively, as shown in Figure 1, after which a simple downward movement of the lever will remove the cap, as hereinbefore described.

The device may also be applied to the bottle cap by moving it into engagement with the cap in such a manner that the nibs 21 of the hook 15 and the cam surface 10 of the abutment 7 simultaneously engage opposite side edges of the cap 4, whereby the cap, which is relatively larger in diameter than the normal spacing between the nibs 21 and the abutment 7, will cam the nibs outwardly against the tension of the spring 24, until they subsequently snap into operative engagement with the bottom edge of the cap, the abutment wall 10 simultaneously engaging the cap at its opposite side as shown in Figure 1. The device may then be operated in the manner shown and described with reference to Figures 1 to 8, inclusive.

The device illustrated in Figure 9 is shown provided with a hook member 40 mounted for free pivotal movement on a pivot pin 45 provided in the terminal portion 42 of the lever member 5. The hook 40 is shown provided with spaced flanges 43 whose lower portions are cut away to provide nib portions 46, as shown. The end of the terminal portion 42 is formed to provide angularly disposed surfaces 47 and 48 which provide limit stops for the pivotal or swinging movement of the hook member 40, as will be understood. Thus the hook 40 has a limited pivotal movement with relation to the abutment 7, which as hereinbefore stated, is an important feature of the invention. The device illustrated in Figure 9 is operated in a manner very similar to the structure shown in Figure 1, and further explanation thereof is therefore deemed unnecessary.

The cap removing device shown in Figure 10 utilizes a resilient hook member 50 which may be secured to the terminal portion 51 of the lever member 5 in fixed relation thereto. The upper end of the terminal portion 51 is recessed at 52 to receive the bent-over end portion 53 of the hook 50 and a retaining piece 54. A fastening screw 56 traverses the retaining piece 54 and end 53 of the hook 50 and is threaded into the terminal portion 51 of the handle, whereby the hook is firmly secured in place as will be understood. The hook 50 has a blade portion 57 which is normally retained against the end wall 58 of the terminal portion 51 by the spring tension in the blade portion 57 of the hook. The bent-over side walls of the hook 50 provide stiffening means therefor, and may be cut away to provide nib portions 59.

As above stated, the resilience of the blade 57 normally maintains the hook 50 against the end wall 58 of the terminal portion 51, whereby the nibs 59 are normally maintained at a predetermined distance from the abutment 7. The device may be applied to a bottle cap in a manner similar to that described with reference to Figures 1 to 8. The resiliency of the blade member 57 constantly urges the nibs 59 in a direction toward the abutment during the operation of removing a cap from a bottle, but allows the nibs to move in a direction away from the fulcrum point 12 and the abutment 7, as indicated in dotted lines, as the nibs follow the contour of the bottle neck.

The retaining piece 54 preferably has a depending lip or flange 55 which engages against the blade 57 adjacent the bent-over portion 53, thereby preventing fracture of the hook member at the bend line, when the blade 57 is flexed as the nibs 59 move outwardly in following the contour of the bottle during the operation of removing the cap.

Figures 11 and 12 illustrate a cap removing device comprising a lever portion 60 having a handle 61. A hook 62 is pivoted to the forward end of the lever portion 60 by a pivot pin 64, and a spring element 63 constantly urges the hook in a counter-clockwise direction, when viewed as shown in Figure 11. The tension in the spring element 63 is such as to normally retain the hook 62 in the position shown in Figure 11 relative to the handle 61, whereby the hook 62 may be initially engaged beneath the cap flange as shown. The lever portion 60 may then be moved downwardly into engagement with the top surface of the cap without disturbing the relationship between the hook and the lever portion 60 .

The lever portion 60 may be formed with a slightly upwardly inclined portion 65 to provide a fulcrum 65'. The end portion 66 of the upwardly inclined lever portion 65 is laterally offset to form a shoulder 67 which provides a limit stop for the swinging movement of the hook 62 on the pivot pin 64, as will be clearly understood by reference to Figure 11. The offset end portion 66 is apertured to receive the reduced end portion of the shouldered pivot pin 64, which is headed over as shown to secure the pivot pin to the end portion 66.

The hook 62 is held against lateral movement on the pin 64 by the spring 63, which is shown having one end passing through an aperture in the pin 64 and its opposite end looped around the edge of the hook 62, whereby the tension of the spring imparts a counterclockwise force to the hook about the axis of the pivot pin 64. It will also be noted by reference to Figure 12, that the hook 62 is located in the median plane of the lever portion 60, thereby to centralize in the handle 61, the force exerted against the cap in the operation of releasing or removing it from the bottle top.

The device shown in Figures 11 and 12 fulcrums freely upon the top surface of the cap, and the nib of the hook 62 is adapted to move in a direction away from the fulcrum point 65' during the operation of removing the cap, whereby friction between the fulcrum 65' and the top of the cap is entirely eliminated, thus providing a cap removing device of high efficiency and which is very simple and easy to operate.

Figures 13 and 14 illustrate a cap removing device comprising a body portion 70 provided with a downwardly extending handle 71 normally spaced outwardly from the neck of the bottle as shown in Figure 14, whereby the handle may be operated to unseat a bottle cap by gripping the neck of the bottle and the handle 71 and applying a squeezing action thereto, as illustrated in Figure 13. The body portion 70 extends diamet-

rically over the top of the bottle cap 4, and is provided with a rounded fulcrum portion 73 adapted to engage the top of the cap and fulcrum thereon, when the handle 71 is actuated to release the cap.

At the junction between the body portion 70 and handle 71, there is provided a downwardly inclined abutment surface 74, similar to the corresponding abutment surface shown in the previous figures. The surface 74 is adapted to engage the side of the cap adjacent the fulcrum point 73, when the device is in cap removing position on the bottle, as shown in Figure 13.

The forward end of the body portion 70 is forked to provide spaced lugs 75 which are apertured to receive a pivot pin 76 on which a suitable hook 77 is pivotally mounted. The hook 77, which may be formed of flat stock material, is positioned between the spaced lugs 75. The spacing between the lugs 75 is slightly greater than the thickness of the hook 77, thereby to eliminate friction between the hook and lugs. The end of the hook 77 adjacent the pivot 76 is formed so as to provide flat surfaces 78 and 79 adapted to engage the bottom wall of the fork provided by the lugs 75, thereby to limit the rotative movement of the hook about the pivot pin 76, as will be understood by reference to Figures 13 and 14.

The hook 77 is shown provided with a nib 80 adapted to engage beneath the flange of the cap 4, as shown in Figure 13, substantially diametrically opposite from where the abutment surface 74 engages the bottle cap, whereby when the handle is moved in a direction toward the bottle, the cap will be released from the bottle top.

A ledge 82 is provided beneath the abutment or cam surface 74, adapted to engage the flange of the cap as shown and described with reference to the previous figures, and whereby the cap may be retained in the device between the hook 77 and the abutment surface 74 of the handle 71, when the cap has been completely removed from the bottle top.

Figure 14 illustrates one method of applying the device to the cap, wherein the device is moved downwardly in the direction of the arrow 84 until the fulcrum 73 engages the top of the bottle cap and the abutment the side of the cap. During such downward movement of the device relative to the cap, the nib 80 of the hook will engage the opposite top edge of the cap, whereupon the hook will be cammed outwardly and thereby swing the hook about its pivot 76, until the nib subsequently drops into operative engagement with the bottom edge of the cap, as shown in Figure 13.

Figure 15 illustrates a modified structure of hook assembly which may be utilized with the device illustrated in Figures 13 and 14. In the structure shown in Figure 15, a compression spring 85 is loosely mounted in a bore or socket 86 provided in the bottom of the fork formed by the spaced lugs 75 of the forward end of the body portion 70. One end of the spring 85 engages the surface 79 of the hook 77, whereby the spring 85 yieldably retains the hook 77 in the position shown in Figure 15, with its edge portion 78 engaging the bottom of the fork. By the employment of the spring 85, the device may be used for removing a cap from a bottle, regardless of the position of the bottle. The spring 85 also provides means whereby the device may be retained in operative position on a bottle cap prior to removing the cap from the bottle.

In Figure 16 there is illustrated a bottle cap remover comprising a supporting member, generally designated by the numeral 100, including spaced legs 91 and 93. The leg 91 is adapted to extend over the top of the bottle cap and its end portion 92 is formed to provide an abutment which engages the top and side of the bottle cap, as shown. The other leg 93 is arranged to engage the side of the bottle neck 2, and cooperates with the leg 91 to support the member 100 in operative position upon the bottle. A suitable handle 94 is provided on the member 100.

An inwardly directed detent 99 is preferably provided on the end portion 92 of the leg 91 to facilitate supporting the member 100 upon the bottle and also whereby the removed cap may be retained in the cap remover, as well subsequently be described.

An important feature of the device shown in Figure 16 resides in the means provided on the supporting member 100 for engaging and unseating the bottle cap from the top of the bottle with a minimum of effort. To thus unseat the cap, a lever 88 is mounted for pivotal movement on a pivot pin 89 secured in the supporting member 100. The lever 88 has a forwardly extending portion 95 to the terminal of which a resilient hook 96 is secured by such means as a screw or rivet 90. The hook depends from the terminal of the portion 95 of the lever 88, and has a nib 97 at its lower end adapted to engage the bottom edge of the bottle cap, as clearly illustrated in Figure 16. The hook 96, which may be made of flat spring steel is so shaped that its nib 97 will normally be positioned beneath the cap edge, as shown.

Thus, when the lever 88 is swung downwardly about the pivot 89 in the direction of the arrow 98, the hook 96 may engage the cap flange and its nib 97 will engage and follow the contour of the bottle due to the resiliency of the hook 96, until it subsequently engages the cap flange, whereupon the cap may readily be lifted from its seat by applying a squeezing action to the lever 88 and handle 94. During such action, the end portion 92 of the leg 91 engages the top and side of the cap whereby the reactive force of the lever 88 is applied to the top and side of the bottle cap by the leg 91, and also to the side of the bottle by the leg 93 of the supporting member 100.

It will thus be noted that in the cap removing device shown in Figure 16, the nib 97 of the hook 96 may engage and follow the contour of the bottle without disturbing the relative position of the fulcrum point 89 of the lever 88 with relation to the cap, and also that the relationship between the fulcrum point 89 and the abutment 92 remains constant, even though the hook 96 may be flexed as a result of its nib 97 engaging and following the contour of the bottle top.

The inwardly projecting detent 99, provided on the end portion 92 of the lever 91, provides a dual function in that it facilitates supporting the bottle opener in operative position on the bottle top, and it also makes it possible to retain the released cap in the bottle opener in a manner similar to the structure illustrated in Figure 8, the detent 99 cooperating with the hook 96 to grasp the cap therebetween.

It will be apparent to those skilled in the art that I have accomplished at least the principal objects of my invention, and it will also be apparent to those skilled in the art that the em-

bodiments herein described may be variously changed and modified without departing from the spirit of the invention, and that the invention is capable of uses and has advantages not herein specifically described; hence it will be appreciated that the herein disclosed embodiments are illustrative only, and that my invention is not limited thereto.

I claim as my invention:

A bottle opener comprising a body having one edge provided with a projection constituting a fulcrum and adapted to seat upon a bottle cap adjacent to one side thereof, a hook pivoted to the end of said body remote from the fulcrum and depending from said end of the body and having an upturned nib adapted to engage under the edge of the bottle cap, the opposite end of said body being formed with an abutment adapted to engage the side of the cap adjacent to said fulcrum, when the opener is applied to the cap, an operating handle extending downwardly from said abutment and body and positioned adjacent to the neck of the bottle whereby the operator may conveniently grasp the neck of the bottle and said handle with one hand and operate the opener to release the cap by a squeezing action, and means constantly urging the hook into cap engaging position whereby the opener may be quickly applied to the bottle cap by simply moving it straight downwardly into engagement with the top of the cap, such manipulation of the opener causing the nib of the hook and said abutment to automatically assume their operative positions with respect to the cap.

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