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F. A. CASSIERE ET AL

2,624,220

PRY TYPE VACUUM CAP REMOVER

Filed Dec. 16, 1946

Fig. 3.

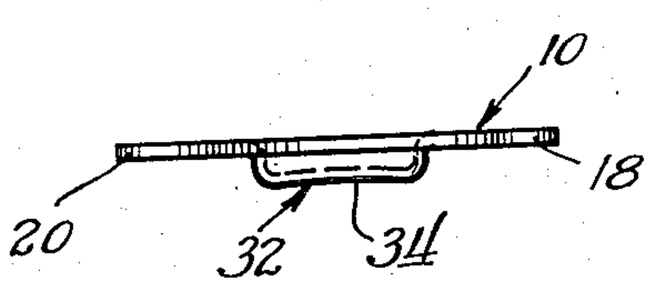


Fig. 4.

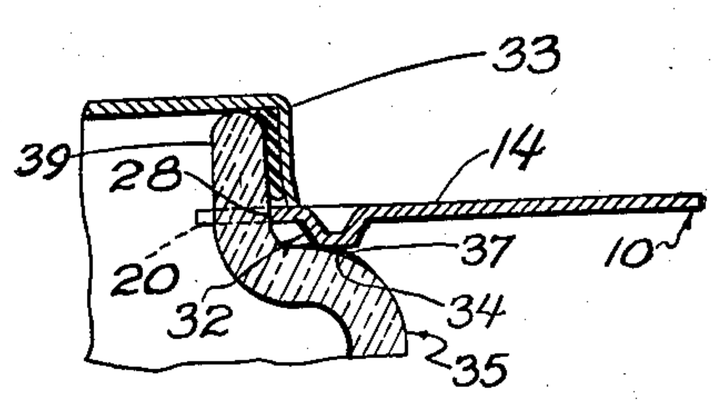
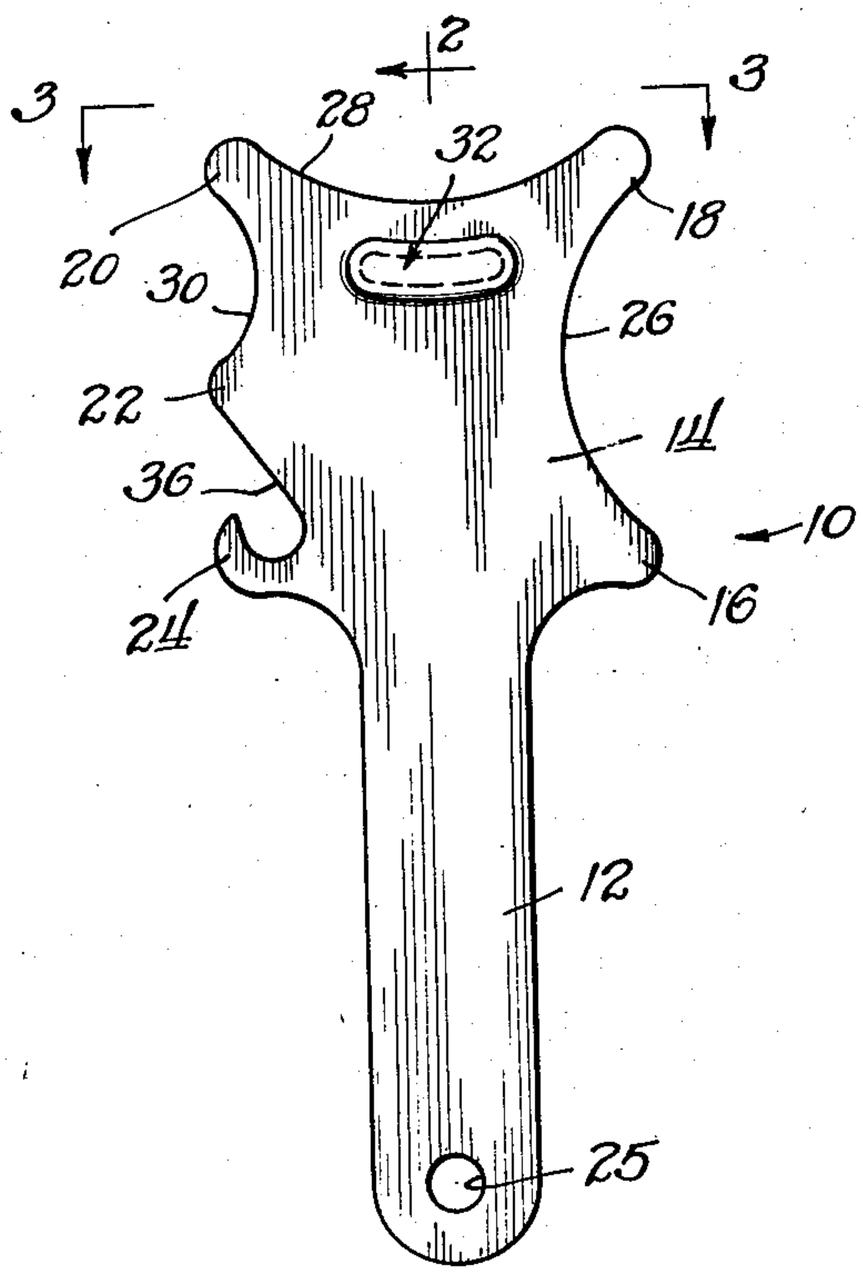
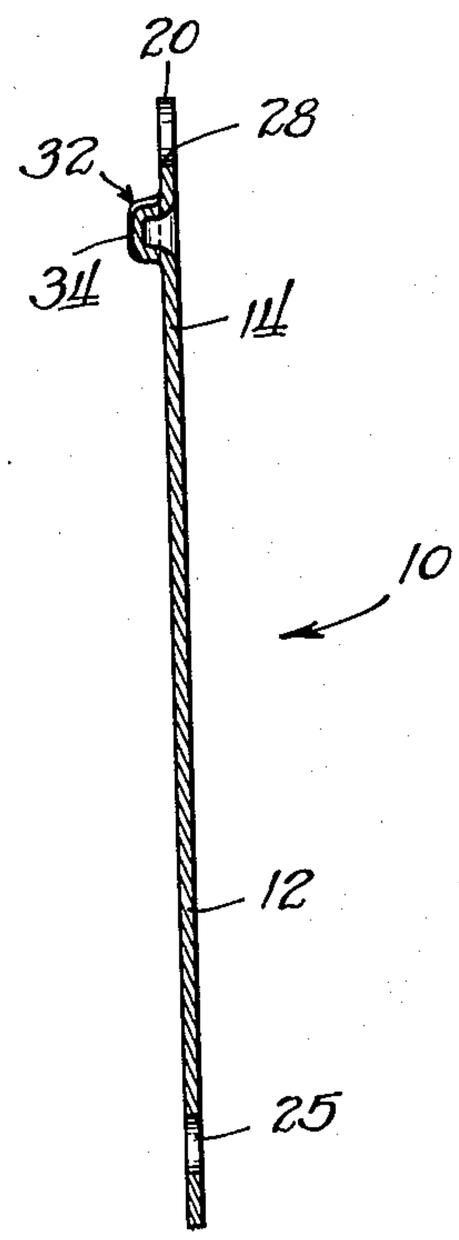


Fig. 2.

Fig. 1.





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PRY TYPE VACUUM CAP REMOVER

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2 Claims. (Cl. 81—3.46)

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Our invention relates generally to an opener for removing caps or covers from containers and more particularly to an opener for "vacuum caps."

Increasingly greater quantities of food and other products are being sold in containers which employ a cap or cover comprising generally a sheet metal cap having a down turned flange and an internal rubber-like rim which is applied over the mouth of the container and sealed following removal of air from the container. Many products such as coffee, for example, may be kept from deteriorating even after the container is once opened, provided the cap is not so deformed as to prevent its being pressed back over the mouth of the container to reseal it. It is particularly desirable, therefore, that in opening the container the cap be removed in such a fashion as to prevent undue bending or twisting of the same. It is equally desirable from the point of view of the purchaser that a minimum of time and difficulty be required in opening such a container.

It is an object of our invention to provide an opener for a vacuum cap which opener is adapted quickly to remove the cap from the container while yet leaving it in substantially its original form so that it may be reapplied to the container after a portion of the contents are removed therefrom.

Because the products which are packaged are of different sizes and consistencies not all containers have the same sized mouth and consequently vacuum caps of different sizes are encountered by a housewife when bottled food is purchased. It is an object of our invention to provide a vacuum cap opener which is adapted easily to remove various standard sizes of caps with a minimum of effort.

Cooperating with a portion of the vacuum cap remover we provide means for removing crown caps from beverage bottles, for example. The crown-cap remover of our invention is so constructed that it provides for easy removal of the cap without its destruction, so that the cap may be replaced upon the bottle, in order to prevent deterioration, spilling or loss of carbonation of the remainder of the contents.

Other uses, objects and advantages of our invention will become apparent from the following description when taken with the accompanying drawings in which:

Figure 1 is a front elevation of a vacuum cap remover of our invention;

Figure 2 is a sectional view on the line 2—2 of Figure 1;

Figure 3 is an end elevation of the opener of Figure 1 looking in the direction of the arrows 3—3 of Figure 1; and

Figure 4 is a fragmentary sectional view showing the cap remover in use.

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The opener of our invention, indicated generally by the reference numeral 10, has a handle portion 12 and an enlarged head 14. We prefer to form the opener by stamping it out of a sheet or strip of stainless steel although other forming operations and metals may be employed. The head 14 is substantially rectangular and provides at three of its corners projections 16, 18 and 20, respectively, and adjacent the fourth corner provides a projection 22. Although the projections are shown as being rounded such form is not critical. At the fourth corner of the head 14 there is provided a hook 24. This hook 24 in cooperation with the projection 22 is adapted to be employed for removing crown type caps from containers, such as bottles for beverages. An aperture 25 is formed at the end of handle 12 so that the opener may conveniently be hung on a nail or hook.

The projections 16, 18, 20 and 22 are separated from their immediately adjacent projections by curved surfaces such as surfaces 26, 28 and 30 respectively. Although the curved surfaces are preferably arcs of a circle they may be recessed in the form of other geometric figures. The purpose of such curved surfaces is to provide means for encircling the mouth of the container and thereby positioning a pair of adjacent projections under a cap at spaced points about the circumference of the cap in order that the cap may be pried off with a minimum of damage to the cap. An intermediate point along each of said surfaces may also be used against the under side of a cap or against a shoulder on the container as will be explained more fully below. Each of the curved surfaces 26, 28 and 30 has a different radius, which radii are adapted to correspond to the various standardized sizes of mouths and caps of the various containers. For example, the radius of the curved surface 30 is substantially that of a cap for a catsup bottle while the radii of curved surfaces 28 and 26 are equivalent to the radii of caps of larger containers for fruits, vegetables, coffee, etc. Merely by way of example, the radius of surface 26 may be 1", the radius of surface 28 may be 1¼" while the radius of surface 30 may be ½".

Projections 16 and 18 and projections 20 and 22 lie on lines which are generally parallel to the central axis of the handle 12 while the pair of adjacent projections 18 and 20 lie on a line which

is transverse to the axis of the handle 12. It will be readily seen that the intermediate projections 18 and 20 of the series of four projections may serve as members of different pairs of projections. It will also be noted that each of the projections may be employed either as a lever arm or as a fulcrum. For example, if the curved surface 26 is positioned beneath a cap of a container so that the projections 18 and 16 are beneath the cap, projection 18 may be rested upon a shoulder of the container and the handle 12 may be rotated upwardly in such a fashion that the projection 16 engages the under side of said cap. The lengths of the lever arms in such instance are the distance between the grip on handle 12 and the fulcrum 18 and the distance between the fulcrum 18 and projection 16, respectively. In such instance a second class lever is provided. However, when the opener 10 is similarly positioned under a cap and projection 16 is rested upon a shoulder of the container, the projection 18 may be employed to operate against the under side of the cap by rotating the handle 12 downwardly. In this instance there is a first class lever with one lever arm being the same length as in the previous example, namely, from the fulcrum (projection 16) to projection 18. The other lever arm is from the gripping point on handle 12 to the projection 16, whereas in the previous example the longer lever arm was from the gripping point on handle 12 to the projection 18.

When the curved surface 26 is positioned beneath a cap, the cap may also be pried loose if desired by employing the center portion of the curved surface as a fulcrum against the shoulder of the container and permitting both projections 16 and 18 to engage the under side of the cap by rotating the handle 12 about its central axis. Use of the opener in this fashion provides two contact points operating at spaced intervals on the cap. Alternatively, an intermediate point on the curved surface 26 may be pressed against the under side of the cap while the two projections 16 and 18 act as fulcrums against a shoulder on the container.

The curved surface 30, together with the adjacent projections 20 and 22, is employed in the same fashion as the curved surface 26 with its projections 16 and 18, but it is particularly applicable to containers having smaller caps.

Projections 18 and 20 which lie on a line transverse to the central axis of handle 12 may be employed substantially in the same manner as that illustrated for the curved surfaces 26 and 30 and their cooperating projections. However, rotation of handle 12 about its central axis is, in this instance, necessary in order to employ one of the projections as a lever arm and the other as a fulcrum. When it is desired to employ both projections 18 and 20 against the underside of a cap which is to be removed, the handle 12 is rotated downwardly. If the handle 12 is rotated upwardly the projections 18 and 20 rest on the shoulder of the container and the curved surface 28 pushes against the under side of the cap.

For cooperation with the curved surface 28 and its adjacent projections 18 and 20 we provide a struck-down fulcrum indicated generally by the reference numeral 32. The central longitudinal axis of this fulcrum lies on the arc of a circle having the same center point as the arc making up the surface 28. Fulcrum 32 is adapted to rest upon the shoulder of a new type of jar which is now on the market so that the user may employ both projections 18 and 20 against the under

side of the cap 33. Such jar 35 has a shoulder 37 adjacent the neck 39 which shoulder extends radially outwardly a substantial amount as may be seen from Figure 4. To eliminate slipping of the opener from the cap and bottle when leverage is exerted by the user, the under surface 34 of the fulcrum 32 is made to conform to the curvature of the shoulder upon which it will rest so that line contact will be provided for the fulcrum in order to prevent rotation of the opener about its central longitudinal axis with consequent slipping of the opener from the cap. As will be noted, from Figure 2, the undersurface 34 is sufficiently wide to permit the line of contact to shift as the cap is pried upwardly, so that stability results.

Most packers recommend on labels attached to their containers or on the caps themselves that a knife blade or spoon handle be employed to pry the cap loose, but none of these implements will work satisfactorily because they are not adapted to embrace the mouth of the container beneath the cap in order to provide a fulcrum and lever arm at sufficiently spaced apart points beneath the cap. Either a single fulcrum on the corner of the container's shoulder is provided, so that the knife blade or handle slips from under the cap and injures one's fingers or hand or, if a solid fulcrum point is provided in employing such implements it is then necessary to encircle the cap and make repeated efforts to pry the cap upwardly. By way of contrast, our opener provides a proper fulcrum point with a lever arm spaced therefrom a substantial distance so that it is generally necessary to make but one or two prying movements. Furthermore our opener does not damage the cap, as is generally done when a makeshift tool is employed, so that the cap may be employed again and again to seal the container.

The hook 24 at one corner of head 14 is formed by a slot being stamped into the head adjacent the corner in such a fashion that when hook 24 is engaged under the edge of the cap the straight surface 36, opposite the hook, will lie flat against the top of the cap. By such construction the opening operation will not cause destruction of the cap such as is the case where only the fulcrum point of an opener rests upon the top of the cap. The use of our opener therefore permits reapplication of the cap to said bottle to preserve its contents against deterioration. If desired, the distance between the engaging portion of the hook 24 and the projection 22, which serves as a fulcrum in removing a crown cap, may be made sufficiently long to permit the fulcrum to contact the surface of the cap at an edge diametrically across the cap from said hook.

Where reference is made in the specification and claims to "curved" surfaces interconnecting adjacent projections it will be understood that as an equivalent there may be employed a recess of any regular or irregular shape which will permit clearance so that adjacent projections may be positioned at spaced points about the circumference of the container's mouth and beneath the cap. Preferably an intermediate point or points along such surface should be available for acting either against the under side of the cap, when the projections are employed as fulcrums against the shoulder of the container, or against the shoulder of the container, when the projections are employed as lever arms against the under side of the cap.

While we have illustrated a preferred form of our invention it will be apparent that various

changes may be made therein without departing from the scope of the invention as defined by the appended claims.

We claim:

1. A cap remover for a container employing a cap having a friction grip about the mouth of the container, said cap remover comprising a handle portion having a pair of projections at one end, said projections being spaced by a recessed portion which permits the projections to be placed beneath the cap at spaced points, and a fulcrum struck down from the handle portion and formed inwardly from the edge of said recessed portion.

2. A cap remover for a container employing a cap having a friction grip about the mouth and adjacent a shoulder of the container, said cap remover comprising a handle portion having a pair of projections at one end, said projections being spaced by a recessed portion which permits the projections to be placed beneath the cap at spaced points, and an arcuate fulcrum struck down from the handle portion and formed inwardly from the edge of said recessed portion and having a surface adapted to engage the shoulder of the container at a plurality of points, the central longitudinal axis of the fulcrum lying on the arc of a circle having the same center as the shoulder of the container.

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