

Aug. 5, 1969

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3,459,075

OPENING DEVICE FOR POP-TOP CAN

Filed Oct. 23, 1967

2 Sheets-Sheet 1

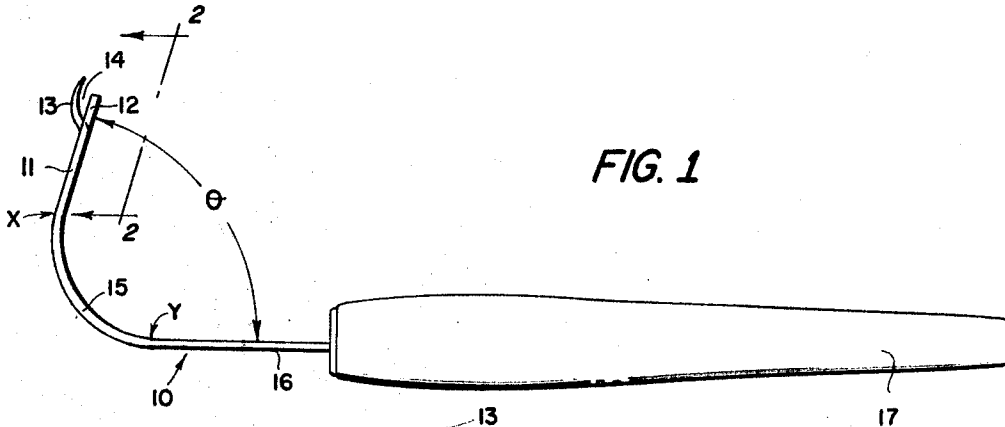


FIG. 1

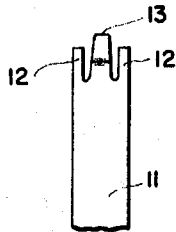


FIG. 2

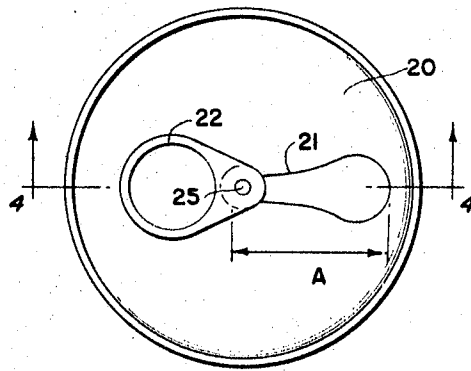


FIG. 3

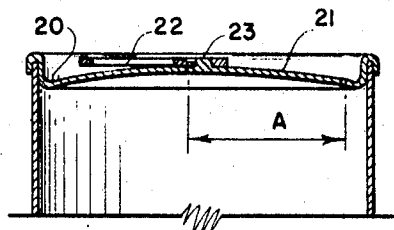


FIG. 4

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2 Sheets-Sheet 2

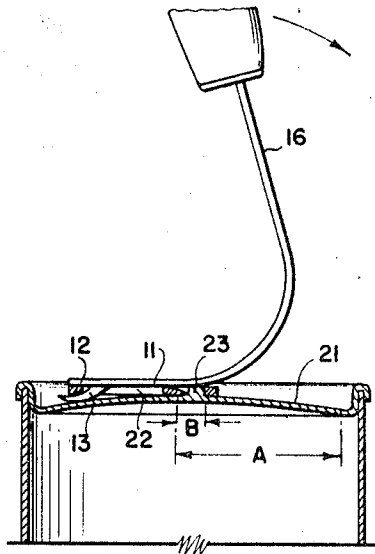


FIG. 5A

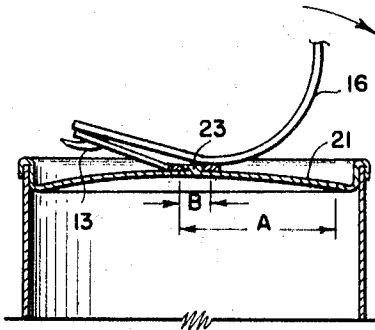


FIG. 5B

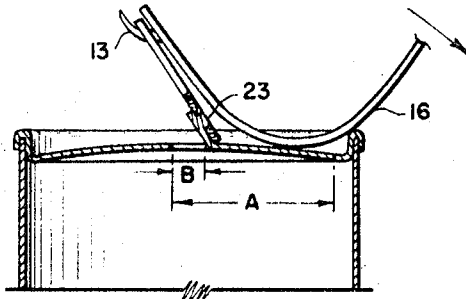


FIG. 5C

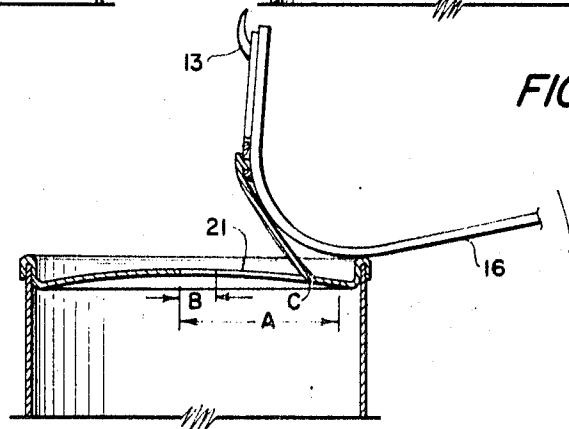


FIG. 5D

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OPENING DEVICE FOR POP-TOP CAN

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10 Claims

ABSTRACT OF THE DISCLOSURE

An opening device for a pop-top can including an extended lower arm portion with specially arranged prongs at the free end thereof for grasping the ring of the can, and accurately defined elbow and upper arm portions arranged to rest against the top and the lip of the can to permit the seal and ring of the can to be removed upwardly by the said lower arm portion.

BACKGROUND

Field of the invention

This invention relates to openers, and in particular it relates to an opener for a pop-top drink can.

Description of the prior art

A significant advance in the packaging industry is the metal drink can having the self-opening "pop-top" wherein a portion of the top of the can can be removed for pouring liquid simply by grasping and pulling a ring to remove a sealed portion of the top.

However, notwithstanding the fact that this type of can represents a significant improvement over conventional cans, the fact remains that at times it is quite inconvenient to remove the top in the manner suggested. More than a nominal force is required to move the sealed portion of the top. At times, this force renders the operation of removing the top quite inconvenient. For example, this operation may be inconvenient when it is necessary to remove a large number of tops in a short space of time. Also, the force required to move the sealed portion of the top may be too great for some people such as women and children.

Opening devices have been known heretofore for a seemingly infinite number of specific applications. Many have used the basic lever principle for effecting the opening operation. However, it is believed that no devices are presently known which are concerned with or which can be used to remove the top of a pop-top drink can.

SUMMARY OF THE INVENTION

Thus, it is a basic purpose of this invention to provide an opening device which is intended to simplify the operation of opening a pop-top can.

According to the present invention there is provided an opening device having a lower arm portion, an upper arm portion and a curved elbow portion connecting the lower end upper arm portions. Three prongs are located at the free end of the lower arm portion, a central prong spaced from the plane of the lower arm portion in a direction away from the upper arm portion and a pair of side prongs located in the same plane as the lower arm portion. The elbow connecting the two arm portions is formed as a gradual curve and the two arms form an angle of approximately 70 degrees. A handle is attached to the upper arm portion at a point thereof approximately 1" to 2" from the elbow portion.

The elements of the opener device are specifically arranged so that the prongs grasp the ring while the elbow and upper arm portions rest against the top of the can and the lip of the can to permit a lever type action so

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that the lower arm portion can remove the ring and the sealed portion of the top attached to the ring.

Thus, it is an object of this invention to provide a device for opening a pop-top can or the like.

It is another object of this invention to provide an opening device including a lower arm portion having two side prongs and a central prong located at the free end thereof, a gradually curved elbow portion and an upper arm portion, the arrangement of the elements being such as to permit removal of a ring and sealed portion from the top of a pop-top can.

Other objects and the attendant advantages of the present invention will become apparent from the detailed description to follow together with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

There follows a detailed description of a preferred embodiment of the invention to be read together with the accompanying drawings. However, it is to be understood that the description and illustration of the preferred embodiment is provided only for purposes of illustration and that the invention is capable of numerous modifications and variations apparent to those skilled in the art without departing from the spirit and scope of the invention as defined in the claims.

In the following drawings like numerals are employed throughout the drawings to designate like parts.

FIGURE 1 is a side elevation view of an opening device according to the present invention.

FIGURE 2 is an elevation view taken along line 2—2 of FIGURE 1.

FIGURE 3 is a top of a pop-top can of the type for which the present invention is intended.

FIGURE 4 is a sectional view taken along line 4—4 of FIGURE 3.

FIGURES 5A—5D are schematic views illustrating four steps in opening a pop-top can with the opening device of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGURES 1 and 2 there is shown a pop-top can opener 10 having a lower arm portion 11. The free end of this lower arm portion includes two side prongs 12 lying generally in the plane of the lower arm portion 11 and a central prong 13 spaced away from the plane of the lower arm portion 11 by a gap 14.

A curved elbow portion 15 connects the lower arm portion 11 with an upper arm portion 16. A handle 17 is attached to the upper end of upper arm portion 16.

FIGURES 3 and 4 illustrate the type of pop-top can for which the present invention is intended. This type of can has a top 20 including a sealed opening area 21 attached to a ring 22 by a sealed connecting pin 23. The length of removable portion 21 is designated by the letter A in FIGURES 3 and 4.

FIGURES 5A—5D illustrate the operation of the opener device for opening a pop-top can. In these figures the numbers and letters are the same as those used in FIGURES 1—4 to designate like elements. In addition, the length of the connecting portion 23 is designated by the letter B.

As noted in FIGURE 4, the ring 22 is generally tangent to the curved upper portion of the can at the center thereof. However, at the outer end of ring 22 the ring is spaced from the can owing to the downwardly sloping curve of the latter.

In the first step, as shown in FIGURE 5A, the lower arm portion is slid into the opening of the ring so that prong 13 is positioned between the ring and the top of the can while the two side prongs 12 overlie the top, outer end of the ring.

Having thus grasped the ring, the remaining steps are carried out by turning the handle 17 clockwise (as shown in the drawings) until the sealed portion of the top is removed.

In FIGURE 5B the ring 22 has been lifted upwardly as the elbow portion 15 of the device 10 now serves as the fulcrum resting against the top of the can. FIGURE 5B illustrates the position just before the seal around the connecting portion 23 is broken.

Between FIGURES 5B and 5C the seal about connecting portion 23 has been broken. As this occurs the opening device is turned slightly counterclockwise. This opens a length of the top equivalent to the length B in FIGURE 5C. Since the portion being held up by the device now includes the connecting portion 23 as well as the ring 22, the device itself tends to slip to the right. Now the elbow portion rests at a location on the top of the can approximately half way between the center and the edge (as shown in FIGURE 5C) rather than very close to the center as shown in FIGURE 5B.

Also, it will be observed that in FIGURE 5C the upper arm portion 16 starts coming to rest on the lip of the can.

Once contact has been made between the elbow or the upper arm portion and the lip of the can, further movement tends to urge the ring upwardly as the sealed portion 21 is peeled back.

FIGURE 5D illustrates the final step of peeling back the removable seal portion 21 to remove the same by rotating the opening device clockwise about a point represented by the engagement of the upper arm portion and the lip of the can. In FIGURE 5D the portion 21 has been peeled back to a point C. The remaining portion between point C and the righthand end of length A must still be peeled upwardly so that the sealed portion 21 will be completely removed.

The dimensions of the opening device have been carefully chosen so that the intended purpose may be carried out. If these dimensions are changed substantially, then it may be impossible or most inconvenient to carry out the opening steps in the manner described above. For example, if the length of the lower arm portion is too short, then the fulcrum point will not be formed near the edge of the can to permit simplified peeling up of the sealed portion. If the shape of the free end of the lower portion is changed substantially, then it may not be possible to grasp the outermost end of the ring. Also, an improper design of the elbow or upper arm portion may also prevent easy movement of the device to grasp the ring and pull up the sealed portion 21.

In one example of my invention the various elements have the following dimensions. The length of prongs 12 is $\frac{1}{4}$ of an inch while the distance from the junction of prongs 12 and 13 (point X in FIGURE 1) and the close end of the elbow (point Y in FIGURE 1) is approximately $\frac{3}{4}$ of an inch. The distance from point X to a line representing an extension of the upper arm portion is approximately $\frac{3}{4}$ of an inch. The length of the prong 13 taken in a direction parallel to the lower arm portion is $\frac{3}{8}$ of an inch and the end of this prong is spaced from the prongs 12 by $\frac{1}{8}$ of an inch. The material itself has a thickness of $\frac{1}{8}$ to $\frac{1}{4}$ of an inch and a uniform width (that is, across the device as shown in FIGURE 2) of approximately $\frac{3}{8}$ to $\frac{3}{4}$ of an inch. The distance from the junction of the upper arm portion and the elbow (point 2 in FIGURE 1) to a line representing an extension of the lower arm portion is approximately $\frac{3}{4}$ of an inch and the distance from the point X to the junction of the upper arm portion and the handle is approximately

2 inches. The radius of curvature of elbow 15 is approximately $\frac{3}{4}$ of an inch and the angle θ formed by portions 11 and 16 is approximately 70° .

The above dimensions represent one example of the invention. However, it should be apparent that it is possible to vary these dimensions within the spirit and scope of the invention while still carrying out the intended purpose of easily removing the sealed portion of a pop-top can.

Although the invention has been described above in considerable detail and illustrated with respect to a preferred embodiment thereof, it should be apparent that the invention may be varied within the spirit and scope of the invention as defined in the appended claims.

I claim:

1. An opener comprising a straight lower arm portion, an upper arm portion and a curved elbow portion connecting together the said arm portions so that the two said arm portions form a generally acute angle, the free end of the lower arm portion having at least two prongs including a first prong including a portion lying generally in the plane of the lower arm portion, a second prong including a portion which extends away from the lower arm portion in the direction away from the upper arm portion, the distance from the junction of the two said prongs and the junction of the lower arm portion with the elbow portion being approximately $\frac{3}{4}$ of an inch.

2. The invention of claim 1 wherein the distance from the junction of the lower arm portion and the elbow portion to the line including the upper arm portion is approximately $\frac{3}{4}$ of an inch.

3. The invention of claim 2 wherein the distance from the junction of the upper arm portion and the elbow to the line including the lower arm portion is approximately $\frac{3}{4}$ of an inch.

4. The invention of claim 3 wherein the angle formed by the upper arm portion and the lower arm portion is approximately 60° to 90° .

5. The invention of claim 4 wherein the width of the lower arm portion is approximately $\frac{3}{8}$ to $\frac{3}{4}$ of an inch.

6. The invention of claim 2 wherein the free end of the said second prong defines a sharp edge and includes a portion lying in a plane generally parallel to the plane of the lower arm portion.

7. The invention of claim 6 wherein the free end of the second prong is spaced from the lower arm portion by approximately $\frac{1}{8}$ of an inch.

8. The invention of claim 2 including a handle connected to the upper arm portion at a point approximately 2 inches from the junction of the lower arm portion and the elbow.

9. The invention of claim 2 wherein the radius of curvature of the said elbow portion is approximately $\frac{3}{4}$ of an inch.

10. The invention of claim 9 wherein the angle formed by the upper and lower arm portions is approximately 60° to 90° .

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