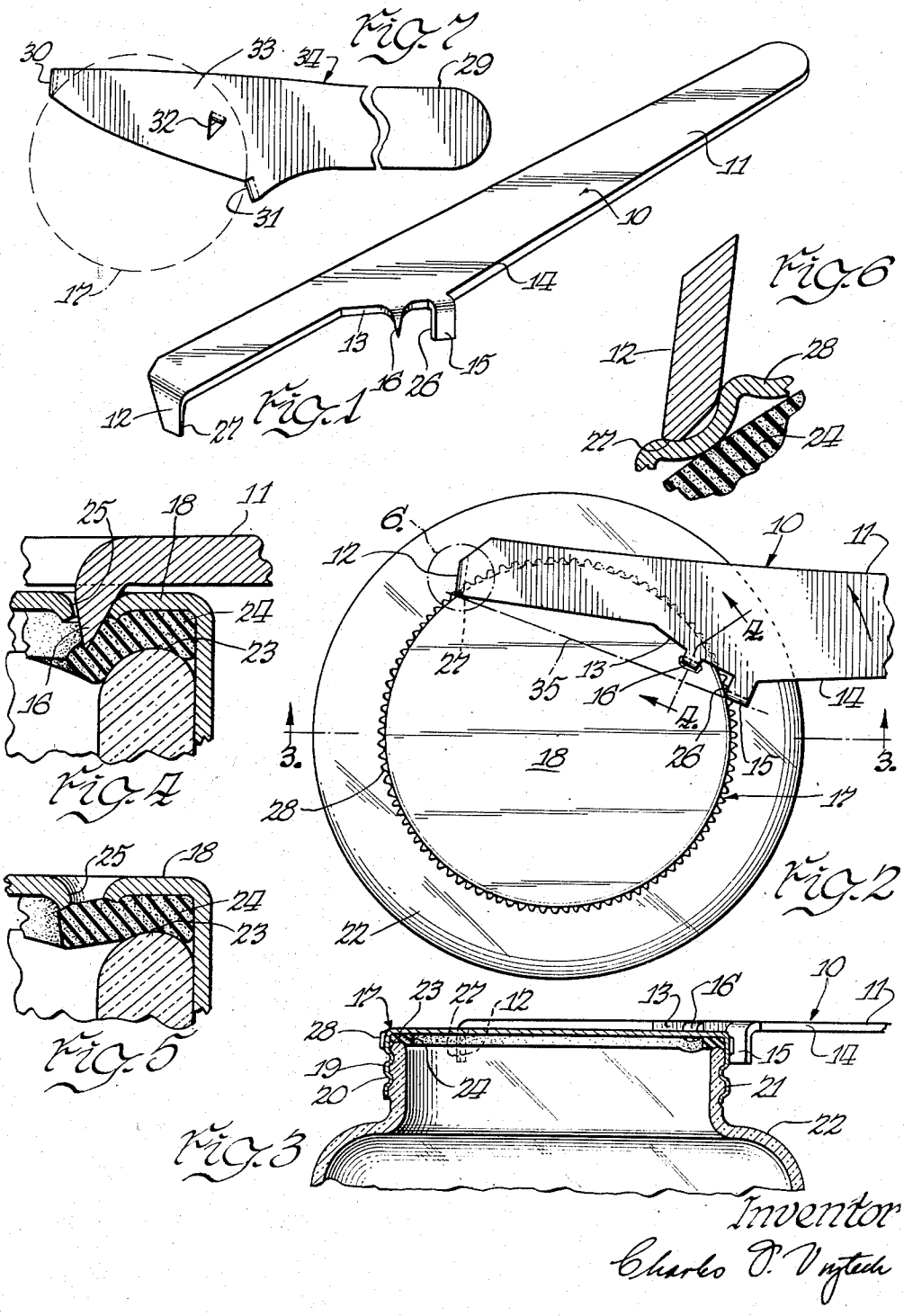
Nov. 30, 1954 C. F. VOYTECH 2,695,536

SCREW CAP REMOVER WITH IMPALING MEANS

Filed May 21, 1953



Inventor

Charles F. Voytech

United States Patent Office

2,695,536

Patented Nov. 30, 1954

2,695,536

SCREW CAP REMOVER WITH IMPALING MEANS

Charles F. Voytech, Chicago, Ill.

Application May 21, 1953, Serial No. 356,346

8 Claims. (Cl. 81—3.48)

This invention relates to screw-cap openers for bottles, jars and the like.

The principal object of this invention is to provide an opener for bottle and jar caps of the screw type which will be extremely inexpensive to make. More specifically, it is an object of this invention to make an opener for screw caps which can be formed as a single piece stamping.

A feature of this invention is a needle for piercing the cap of a bottle or jar to equalize the pressure on both sides of the cap, the needle being then utilized as a means for impressing a torque on the cap to unscrew it. As an additional feature, the needle is made integrally with the opener and other parts of the opener are utilized to afford protection against any damage being done by the needle when the opener is laid away.

A still further feature of this invention is an opener for bottle caps wherein the opener is provided with spaced tabs for engagement with the corrugated side of a bottle cap and with a needle disposed between said tabs so as to be protected thereby.

These and other objects and features of this invention will become apparent from the following detailed description when taken together with the accompanying drawings in which

Fig. 1 is a plan view in perspective of an opener embodying this invention;

Fig. 2 is a plan view of a portion of the opener of Fig. 1 showing the opener applied to a bottle cap;

Fig. 3 is a fragmentary elevation in section of the opener and cap taken along line 3—3 of Fig. 2;

Fig. 4 is an enlarged fragmentary section taken along line 4—4 of Fig. 3;

Fig. 5 is an enlarged fragmentary section taken along line 4—4 of Fig. 3 but with the opener removed;

Fig. 6 is an enlarged fragmentary section taken through one of the tabs of an opener disposed as shown in the dot-dash circle bearing the number 6 in Fig. 2 and showing how the tab cooperates with a cap; and

Fig. 7 is a plan view of a modification of the opener of Fig. 1.

Referring now to the drawings for a detailed description of the forms of the invention chosen for illustration, the opener is shown at **10** as a single elongated piece of metal having a handle portion **11** at one end and having a bent-over tab **12** at its other end. The said other end may be of reduced width compared to the width of the handle end, and may be joined to the handle end by a diagonal **13**. At the intersection of the diagonal **13** with the side **14** of handle **11** is a bent-over tab **15**. The functions of tabs **12** and **15** will be described in detail hereinafter.

Between tabs **12** and **15**, are preferably on diagonal **13**, is a needle **16**, formed integrally with opener **10** from a pointed tab which is bent over in the same general direction as tabs **12** and **15**. It will be observed that both tabs **12** and **15** are of substantially the same length and that needle **16** is slightly shorter than said tabs **12** and **15**. Thus when opener **10** is laid down or dropped on the side toward which said tabs and the needle are bent, the tabs will contact the surface on which the opener is laid, but needle **16** will not contact the surface and hence will be protected by the tabs against damage. Conversely, needle **16** will not scratch the surface since it will not contact it.

Since needle **16** is disposed between tabs **12** and **15**, it will be less likely to cause injury to the user of the opener, the tabs **12** and **15** again serving to avoid contact between the user and the needle.

The purpose of the needle **16** is to provide a means for piercing the cover of a bottle or jar which is to be unscrewed. This establishes a direct passage to the interior of the bottle or jar through which the pressure on both sides of the cover may be equalized. Once the pressure is thus equalized, very little turning effort is normally required to unscrew the cap, and the extension of the needle through the cap provides a means for gripping the cap to exert such turning effort.

The manner in which the opener is applied to a cap is disclosed in Fig. 2. It will be observed that the narrower end of the opener generally overlies the cap **17** to be unscrewed. Said cap is usually made of very thin gage metal having a flat cover portion **18** and a depending flange **19** (Fig. 3) having threads **20** formed therein to cooperate with threads **21** formed in the side of a bottle or jar **22**. A seal is effected between the open end **23** of the bottle and the cap **17** by a washer **24** of rubber or the like which is compressed between cap **17** and said open end **23**.

As shown in Figs. 4 and 5, it is desirable to pierce cap **17** at a point slightly within the open end **23** of the bottle, but still over the region normally contacted by washer **24**. Thus the opening **25** made by needle **16** as shown in Fig. 5 is adapted to be closed by washer **24** when needle **16** is removed, and reestablishes a seal between the interior and exterior of the bottle.

The correct position of needle **16** as illustrated in Figs. 4 and 5 is assured by the relative disposition of the needle **16** and tabs **12** and **15** around the periphery of cap **17**. This disposition is such that when edge **26** of tab **15** and edge **27** of tab **12** engage the periphery of cap **17**, needle **16** will be located in the desired position said cap. It will be observed that the upper peripheral region **28** (Fig. 3) of cap **17** is corrugated. Said edges **26** and **27** are preferably made sharp enough to engaged the corrugations as shown, for example, in Fig. 6. This engagement provides, together with the entry of needle **16** in opening **25**, a means for securely gripping cap **17** so that thereafter by turning the opener counterclockwise as viewed in Fig. 2, said cap will be unscrewed from bottle **22**.

To use opener **10**, the portion containing tabs **12** and **15** is placed over the cap to be unscrewed, with the edges **27** and **26** of said tabs engaging the corrugations in the upper peripheral region **28** of the cap. Since the tabs are longer than needle **16**, it is possible to use the tabs to locate the opener correctly on the cap prior to its use. With the tabs in contact with periphery **28**, pressure is then exerted by the user upon the flat portion of the opener immediately adiacent needle **16**, this being readily done by the palm of the hand. Said pressure causes needle **16** to pierce cap **17** whereupon fluid pressure on both sides of cap **17** is instantly equalized and a firm grip is established upon the cap by the opener. Handle **11** is then uregd in a counterclockwise direction as viewed in Fig. 2 and cap **17** is unscrewed by the combined action of needle **16** and tabs **12** and **15**.

It will be noted from Fig. 4 that needle **16** is disposed over an unsupported region on sealing washer **24** and that needle **16** therefore merely deforms washer **24** to permit opening **25** to be unobstructed for the equalization of pressure on both sides of the cap.

The appearance of opener **10** may be varied to suit the aesthetic taste of the user for whom the opener is intended. The precise location of needle **16** may also be varied. Thus, in the modification shown in Fig. 7, the opener **34** is comprised of a handle portion **29**, a bent-over tab **30** at the opposite end from handle **29**, an intermediate tab **31**, and a needle **32** intermediate tabs **30** and **31**. Said needle **32** is formed from a relatively wide portion **33** of opener **29** by punching and bending over a triangular section of said wide portion **33**. Needle **32** may be identical in shape to needle **16**. The wide portion **33** not only provides greater protection from the sharp needle **32**, but also provides a greater area to be contacted by the palm of the user when the needle **32** is pressed into a cap **17**. Tabs **30** and **31** may be iden-

tical in form and disposition with tabs **12** and **15** respectively in Figs. 1–3.

Attention is directed to the shape and slope of needle **16** in Fig. 4. It is desirable that tabs **12** and **15** be held firmly against the corrugated periphery **28** of the cap **17**. By causing needle **16** to be inclined toward a line **35** connecting tabs **12** and **15**, said needle will exert a pressure on the opener in the direction of the tabs as the needle is pressed into the cap and will help to hold the tabs against the cap.

It is also desirable that needle **16** be spaced as far from tab **12** as possible so that the torque arm formed by the tab and needle be of maximum length, and the forces exerted by the tab **12** and needle **16** be substantially tangential relative to cap **17**.

It is understood that needle **16** may be hardened after it is formed to increase its life and strength. It is also understood that the foregoing description is illustrative of preferred embodiments of the invention and that the scope of the invention is not to be limited thereto, but is to be determined by the appended claims.

I claim:

1. An opener for screw-type caps for jars, bottles or the like, said opener comprising an elongated body, spaced tabs extending transversely from said body and adapted to engage the periphery of the cap disposed on one side of a diameter of said cap, and means on the body for engaging the top of said cap by piercing said top, said means being disposed between the tabs, and said tabs and piercing means depending in the same direction from the plane of the body, and said tabs being angularly related so that an edge of each tab engages the periphery of the cap to be removed.

2. An opener for screw-type caps for jars, bottles or the like, of the type wherein the caps have a corrugated periphery, said opener comprising an elongated body having a tab bent over at one end region thereof, a tab bent over at a point intermediate the ends of the body, and a needle also bent over and disposed between the tabs, said tabs and needle depending in the same direction from the plane of the body, and one tab lying at an angle with respect to the other tab whereby an edge of each tab is adapted to engage the corrugated periphery and said needle will pierce the top of the cap to equalize the pressure of the air on the interior and exterior of the cap and to provide a means for gripping the cap.

3. An opener for screw-type caps for jars, bottles or the like, said opener comprising an elongated body having a tab bent over at one end region thereof, a tab bent over at a point intermediate the ends of the body and a needle between the tabs and disposed closer to the second-mentioned tab than to the first-mentioned tab, said tabs and needle depending in the same direction from the plane of the body, one tab lying at an angle with respect to the other tab whereby an edge of each tab is adapted to contact the sides of a cap and said needle will pierce the top of said cap to equalize fluid pressure on the interior and exterior of the cap.

4. An opener as described in claim 3, said needle being formed integrally with the body of the opener.

5. An opener as described in claim 3, said body being widened between the tabs to provide a substantial area upon which pressure may be exerted by the palm of the user to drive the needle into the cap.

6. An opener as described in claim 3, said needle being formed integrally with the body and being bent over from an edge region of said body in the same direction as said tabs.

7. An opener as described in claim 3, said needle being formed integrally with the body and being disposed inwardly of the edges of the body of the opener.

8. An opener as described in claim 3, said elongated body being generally flat over the region between the tabs, said needle being inclined relative to the plane of the flat region when the opener is in use, the inclination being in the direction of a line connecting the tabs, such that pressure exerted upon the opener in the direction of the cap to cause the needle to pierce the cap creates a component of force between the cap and needle tending to cause a firmer engagement between the tabs and cap.

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