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R. P. YORBA
CAP-REMOVING TOOL
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Fig. 1.

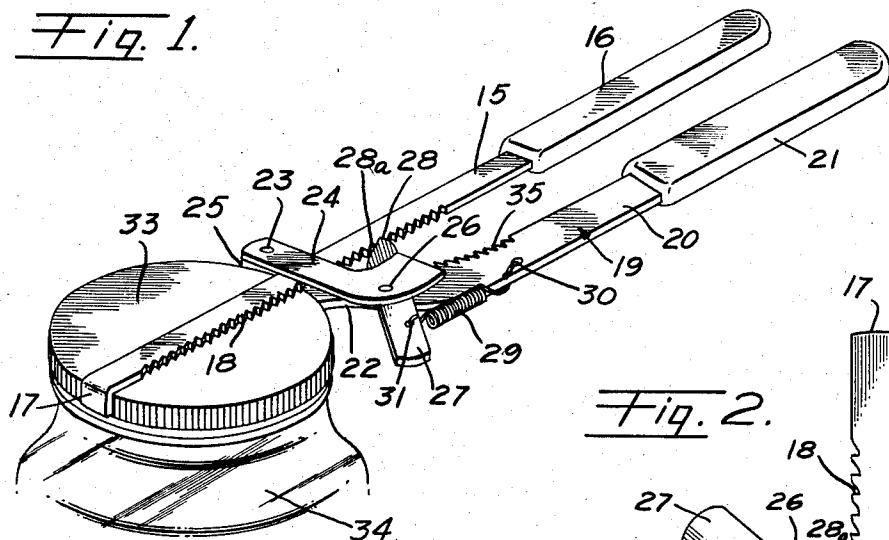


Fig. 2.

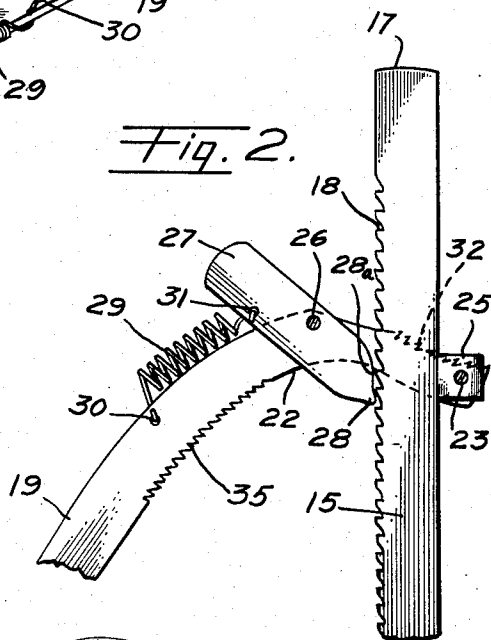


Fig. 4.

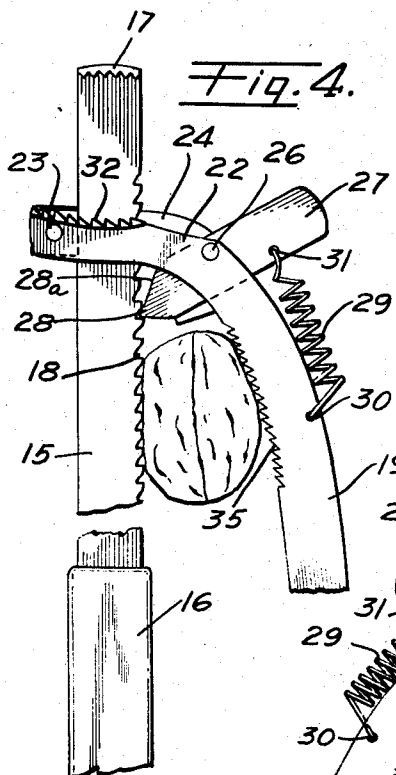
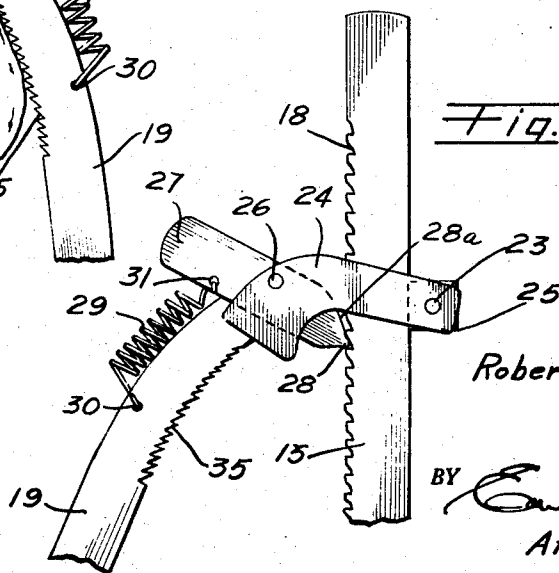


Fig. 3.



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CAP-REMOVING TOOL

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3 Claims. (Cl. 81-3.44)

My invention relates to tools for removing screw caps from jars, bottles and the like, and it has for a purpose the provision of such a tool which is characterized by its structural simplicity, low cost of manufacture, and easy mode of operation to grip and remove a screw cap.

It is also a purpose of my invention to provide a screw-cap removing tool which embodies a fixed jaw and a movable jaw which is adjustable in relation to the fixed jaws to accommodate therebetween screw caps of different diameters so that the tool can be utilized to unscrew caps of various diameters.

A further purpose of my invention is the provision of a tool of this character which, in addition to serving to remove screw caps from jars, can be utilized to crack nuts of various sizes.

I will describe only one form of tool embodying my invention, and will then point out the novel features thereof in claims.

In the accompanying drawings:

Fig. 1 is a view showing in perspective one form of tool embodying my invention in applied position to a jar cap.

Fig. 2 is a fragmentary top plan view of the tool with the link thereof removed, and the tool parts in those positions permitting adjustment of the jaws relatively.

Fig. 3 is a fragmentary top plan view of the tool showing the parts thereof in those positions after relative adjustment of the jaws has been made, and in which the jaws have been secured.

Fig. 4 is a fragmentary bottom plan view of the tool illustrating its use for cracking nuts.

Referring more particularly to the drawings, my invention in its present embodiment comprises an elongated flat shank 15 on the proximal end of which is secured a handle 16. The distal end of the shank is bent at right angles and formed on its inner side with teeth to provide a relatively fixed jaw member 17. One edge of the shank 15 is formed with a series of ratchet teeth 18 all of which extend generally in the direction of the jaw member 17.

The tool also includes a lever 19 of substantially bell-crank form, and it includes a linear portion 20 on one end of which is secured a handle 21. As best shown in Figs. 3 and 4 that bent portion 22 of the lever extends across the shank 15 at one side thereof where it is connected at its free end by a pin 23 to one end of a link 24 of substantial bell-crank form.

Between the confronting ends of the portion 22 and the link 24, a bearing member 25 is mounted on the pin 23. This member 23 may be of angular form as shown, or it may be round. In either event, it is freely rotatable on the pin, and has contact with the smooth edge of the shank 15 so that the pin 23 can function as a pivot for the lever 19 when moving it from one particular position to another.

A pin 26, which extends through the link 24 and the lever portion 22, provides a pivot for a pawl 27 that has

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a tooth 28, the point of which is on a line substantially coincident with the major axis of the pawl so as to provide at one side thereof an angular surface 28a which is of a length to span two or more of the teeth 18.

The pawl 27 is, by means of a tension spring 29, connected at one end to the lever as at 30, and at the other end to the pawl as at 31, urged to the position shown in Fig. 2 wherein it will be noted that also under the action of the spring, the lever is urged outwardly from the shank 15 to a position divergent relative thereto, as shown in Fig. 2.

On that edge of the lever portion 22 facing the jaw member 17 is a flange integral with such portion, and formed with teeth on one side thereof to provide a jaw 32 which, through movement of the lever 19 bodily along the shank 15, can be adjusted in relation to the jaw member 17 to accommodate, between the jaws, screw caps of various diameters. The jaw 32 is also operable by movement of the lever toward the shank, to advance it into engagement with a cap and thereby coact with the stationary jaw member 17 in effectively gripping the cap for unscrewing thereof as will be more fully understood from the following description of the use of the tool.

In the use of the tool to unscrew the cap 33 from the jar 34 as in Fig. 1, the parts of the tool initially occupy the position shown in Fig. 2, wherein the surface 28a of the pawl 27 is in spanning contact with certain of the ratchet teeth 18. By holding the lever 19 in one hand and the shank 15 in the other, the shank can be pushed forwardly or rearwardly until the jaw member 17 and the jaw 32 are spaced one from the other a distance slightly exceeding the diameter of the cap to which the tool is adapted to be applied. This can be readily accomplished since the shank 15 can be slid on the bearing member 25 and the pawl surface 28a. Such adjustment can be maintained by moving the parts of the tool to the position shown in Fig. 3 wherein the tooth 28 of the pawl engages the shank between any two adjacent ratchet teeth 18. It is during this movement of the tool parts that the lever 19 swings about the member 25 as a center.

Once this jaw adjustment has been effected, the distal end of the shank is extended diametrically across the top of the cap 33 so that the fixed jaw member 17 engages the rim of the cap, while the movable jaw 32 is slightly spaced from the cap rim at a point diametrically opposite the fixed jaw member.

With the tool so applied to the cap, the user grasps both handles 16 and 21 in one hand, and by a squeezing action presses the lever 19 toward the shank 15 from the position shown in Fig. 3 to that shown in Fig. 1. Thus the lever 19 and the link 24 are caused to swing about the pin 26 as a center to advance the jaw 32 into gripping engagement with the cap rim, thereby causing the cap to be firmly clamped between the jaw and the jaw member. By now turning the tool in the proper direction the cap can be unscrewed from the jar.

Once removed from the jar the cap can be detached from the tool, or vice versa, by the user merely releasing his grip on the handles 16 and 21 when the lever and the link will be restored to the positions shown in Fig. 3 under the contractive action of the spring 29, thus retracting the jaw 32 to free the cap.

That edge of the lever 19 confronting one edge of the shank 15 is formed with a series of teeth 35 which coact with the ratchet teeth 18 when the lever and shank are moved to the position shown in Fig. 4 to effect the cracking of a nut placed between the teeth. Thus in addition to the tool serving as a cap remover, it can also be employed to crack nuts.

Although I have herein shown and described one form of tool embodying my invention, it is to be understood

that various changes and modifications may be made therein without departing from the spirit of the invention and the spirit and scope of the appended claims.

What I claim is:

1. A screw-cap removing tool, including: a jaw member having a shank; a series of ratchet teeth on the shank; a lever; a jaw fixed on the lever; means mounting the lever on the shank for movement longitudinally thereon to move the jaw toward or away from the jaw member and for swinging movement toward and away from the shank to occupy a first position substantially parallel to the shank, a second position in which it is at an angle to the shank and a third position in which it is at a greater angle to the shank than when in the second position; a pawl having one end formed with a tooth, and fulcrumed between its ends on the lever and said means; and a contractile spring connected at one end to the lever and at the other end to the pawl at that side of its fulcrum opposite the tooth, said spring urging the pawl into engagement with the ratchet teeth and the lever to the second position so that when the lever is moved to the first position it will swing about the pawl fulcrum to advance the jaw toward the jaw member, the tooth of said pawl having an angular surface which when the lever is moved to the third position spans any two adjacent ratchet teeth so as to allow longitudinal sliding movement of the shank in either direction on said means to effect quick adjustment of the jaw member in relation to the jaw.

2. A screw-cap removing tool, including: a shank of flat form; a jaw member fixed on one end of the shank; ratchet teeth on one edge of the shank; a bell-crank lever having a straight portion and a curved end portion extending across one side of the shank; a link hav-

ing substantially the same curvature as said curved end portion and extending across the other side of the shank; a pin connecting the free extremity of said end portion to the corresponding extremity of the link; a bearing member rotatably fitted on the pin between said extremities and having sliding contact with that edge of the shank opposite the ratchet teeth; a jaw on said lever adjacent the pin; a pawl fulcrumed between the link and said curved end portion so that its toothed end can engage the ratchet teeth; and a contractile spring connected at one end to said lever and at its other end to that end of the pawl opposite the toothed end, said spring when not under tension holding the pawl in a position in which the straight portion of said lever is in divergent relation to the shank and the toothed end against said teeth whereby, upon movement of the shank and lever toward each other said spring will be placed under tension to hold the pawl against movement thereby causing said lever to swing about the pawl fulcrum and advance the jaw toward the jaw member.

3. A screw-cap removing pawl as embodied in claim 2 wherein the toothed end of the pawl is formed with an angular surface, and said spring when not under tension holding the pawl in a position in which said surface spans any two of the ratchet teeth thus allowing longitudinal sliding movement of the shank in either direction between the link and said lever to effect quick adjustment of the jaw member in relation to the jaw.

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