June 9, 1953 H. H. SANDER 2,641,397

TOOL FOR REPLACING BOTTLE CAPS, AND RECRIMPING THE CAPS IN AN AIRTIGHT SEAL

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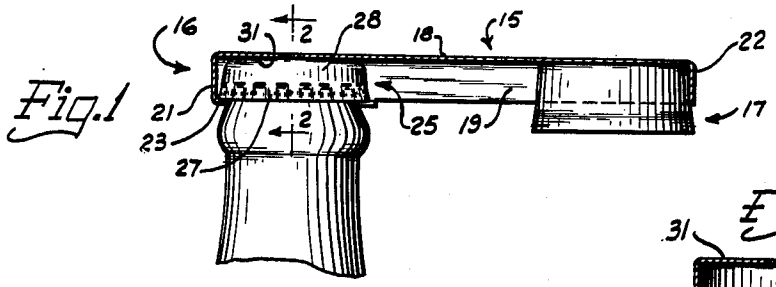


Fig. 1

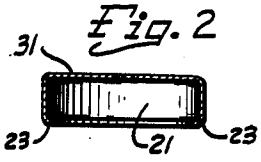


Fig. 2

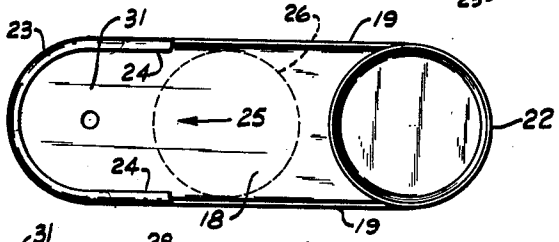


Fig. 3

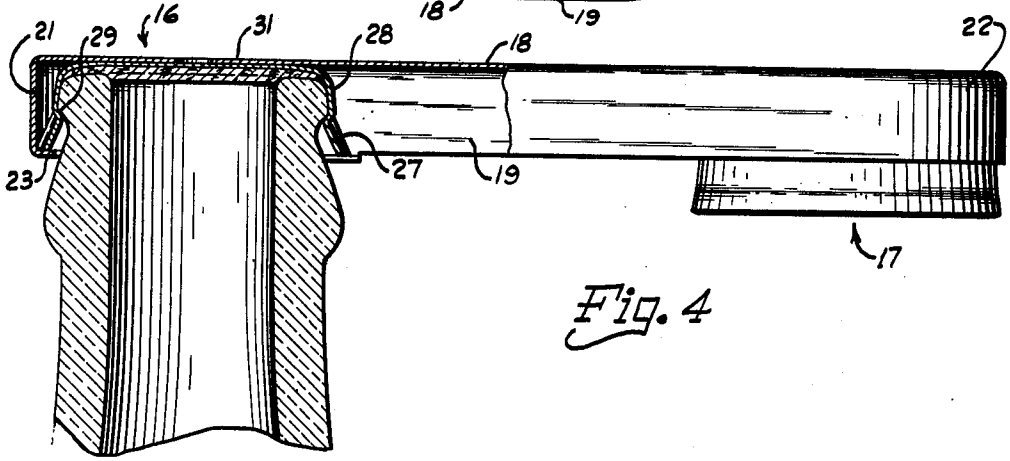


Fig. 4

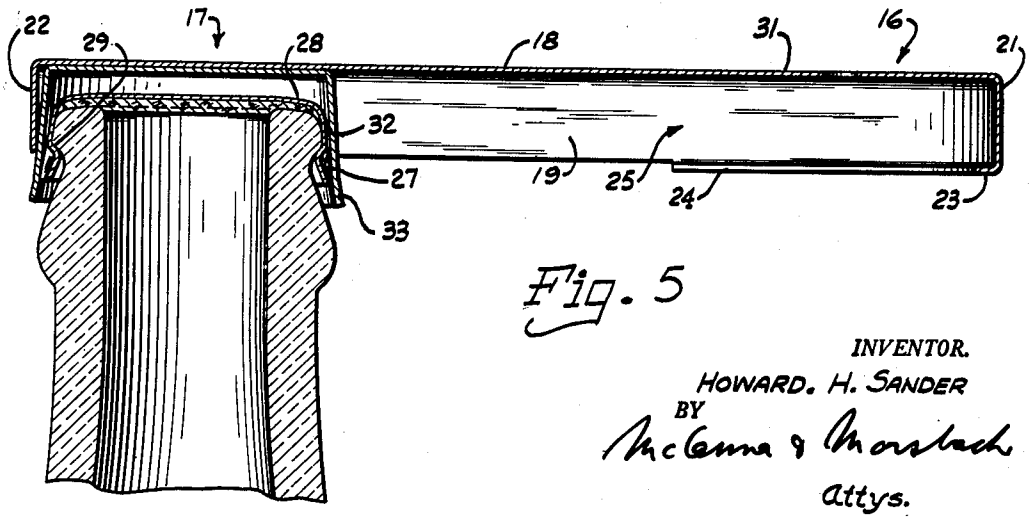


Fig. 5

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Fig. 6

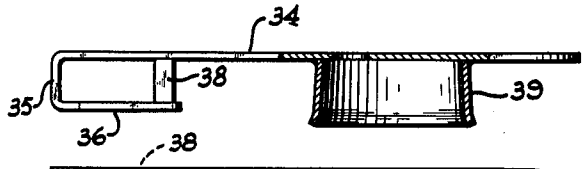


Fig. 7

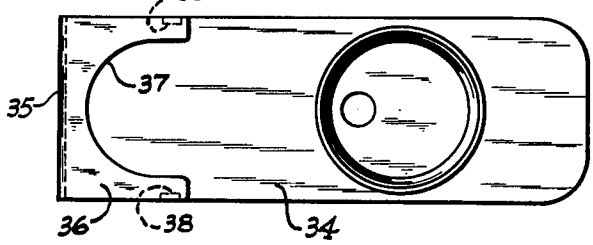


Fig. 8

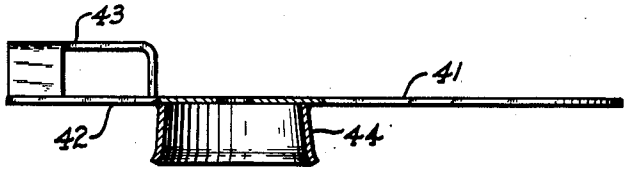


Fig. 9

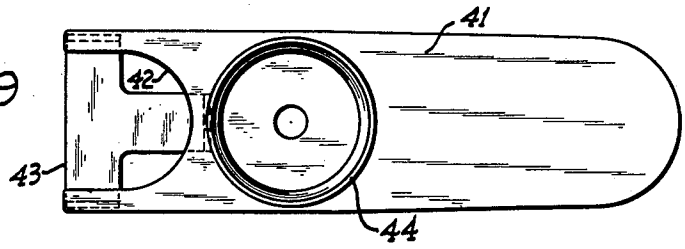


Fig. 10

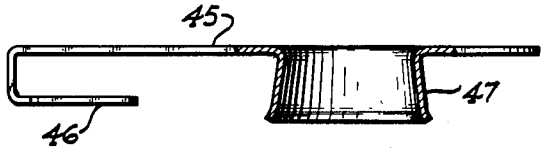
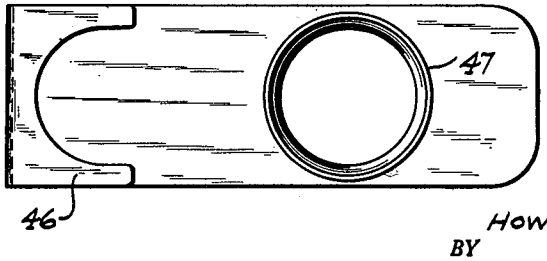


Fig. 11



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TOOL FOR REPLACING BOTTLE CAPS, AND RECRIMPING THE CAPS IN AN AIRTIGHT SEAL

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Fig. 12

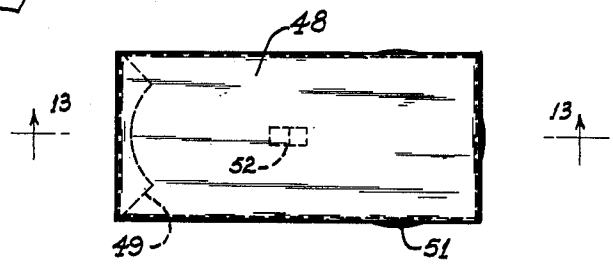


Fig. 13

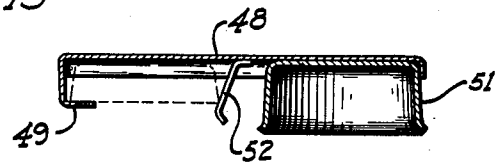
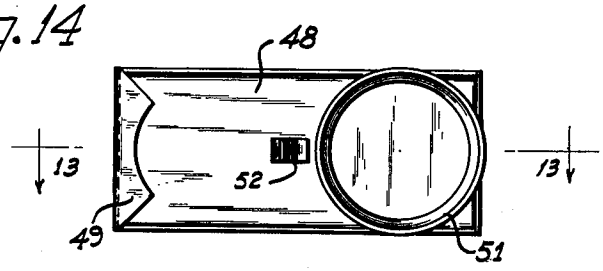


Fig. 14



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TOOL FOR REPLACING BOTTLE CAPS AND RECRIMPING THE CAPS IN AN AIRTIGHT SEAL

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Application May 8, 1950, Serial No. 160,796

1 Claim. (Cl. 226—84)

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This invention relates to hand-operated tools or devices for removing and recapping bottle caps of the type commonly known as crown caps such as are used for sealing beverage bottles. It is well known that in the use of carbonated beverages and the like the entire contents of a bottle are not always used and it is desired to preserve the remaining contents in substantially its original carbonated condition. This effect is lost unless the bottle can be immediately resealed in air-tight condition.

Heretofore, numerous devices have been devised such as plugs and stoppers for closing the bottle after the original cap has been removed but these must be used in addition to a cap remover and a separate plug device is required for each bottle. Also, recapping devices have been provided but these generally are of a complicated nature and invariably they are difficult to operate, or they mutilate the cap, or they do not effect an air-tight resealing of the cap, with the result that such recapping devices are not altogether satisfactory.

An object of my invention is to obviate these difficulties by the provision of an improved tool or device for removing crown type bottle caps in a manner which will not deform or mutilate the cap, and for resealing the bottle, for use in homes and under all conditions where it is desired to remove a portion of the contents of a soft drink bottle or any beverage bottle and then reseal the bottle to preserve the unused contents. To this end my invention contemplates a small and comparatively inexpensive tool or device constructed in such novel manner that it may be used by any unskilled person to perform the functions (first) of removing a crown type bottle cap from its sealed position on a bottle without disturbing the cap, (second) replacing the same cap on the bottle with the crimped apron portion of the cap snapped over the lip portion of the bottle, and (third) re-crimping the apron portion of the cap under the lip portion of the bottle in such a manner as to effect an air-tight resealing of the cap on the bottle.

Another object of my invention is to provide an improved tool or device of the character described which does not mutilate the cap when removing it from a bottle and which by simple and easy operations reapplies the same cap to the bottle and effectively reseals the cap on the bottle so that the contents are preserved in substantially the same air-tight condition as when the bottle was originally filled.

Another object of my invention is to provide a tool or device of the character described embodying certain novel features of construction in combination to perform the functions described.

Another object of my invention is to provide a tool or device of the character described wherein said novel features of construction are capable of manufacture in different embodiments and such manufacture may be at a comparatively low cost, using thin, inexpensive sheet metal and stamping operations.

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Another object of my invention is to provide an improved tool or device having the advantages described and which provides a substantial surface area for the presentation of operating instructions or advertising matter permanently thereon.

Other objects and attendant advantages will be appreciated by those skilled in this art as the invention becomes better understood by reference to the following description when considered in connection with the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section through a tool embodying my invention applied to a bottle cap in performing the first described function;

Figure 2 is a cross-section through the tool taken on the section line 2—2 of Figure 1;

Figure 3 is a bottom view of the tool;

Figure 4 is an enlarged view of the tool, partly in section, showing it applied in performing the second described function;

Figure 5 is also an enlarged view of the tool, in section, showing it applied in performing the third described function;

Figures 6 and 7 are a side view partly in section and a bottom view, respectively, of a modified form of the invention;

Figures 8 and 9 are a side view partly in section and a bottom view, respectively, of another modified form of the invention;

Figures 10 and 11 are a side view partly in section and a bottom view, respectively, of another modified form of the invention;

Figure 12 is a top view of still another modified form of the invention;

Figure 13 is a sectional view taken on the section line 13—13 of Figure 12; and

Figure 14 is a bottom view of the embodiment shown in Figures 12 and 13.

Referring more particularly to Figures 1 to 5, I have here shown a preferred embodiment comprising an elongated body 15 having a jaw or claw structure 16 at one end and a re-crimping structure 17 at the opposite end, these reference numerals being applied to indicate these parts generally. The body 15 is stamped from sheet metal to provide an elongated flat top wall portion 18, side walls 19, and semi-circular end walls 21 and 22. The lower edge of the end wall 21 is folded in to provide a prong or claw edge 23 parallel with the top wall portion 18 and extended along the side walls at 24 to provide a channel having a cap entrance opening 25. Attached to the opposite end of the body 15

is a cup-shaped die or mold which forms part of the re-crimping structure 17 abovementioned.

In performing the first mentioned function the jaw end of the tool is placed over a capped bottle with the cap in the location shown in dotted lines 26 in Figure 3. The cap is now in the open channel entrance 25. By movement of the tool to the right the cap will be located within the jaw structure as shown in Figure 1, with the jaw edges 23 and 24 engaged beneath the crimped apron portion 27 of a crown cap 28. The extended right hand portion of the tool may now be pressed down by the palm of the hand in an easy lever operation to remove the cap from the bottle.

It will be here observed that one of the features of my invention is the application of the jaw edges 23 at the end portion of the jaw structure opposite from which the fulcrum occurs. In other words the tool is fulcrumed on the edge of the cap approximately 180° around the edge of the cap from the edge portion where the main lifting pressure occurs. The edge portions 24 serve as an additional means in retaining the cap in the tool after the cap has been removed. By reason of this construction the cap is not mutilated in the removing operation but is retained in good condition within the jaw structure. To perform the second mentioned function of replacing the cap on the bottle, the tool with the cap retained therein is placed over the bottle and pressed down to the position shown in Figure 4. This snaps the apron portion 27 of the cap over the lip portion 29 of the bottle. This operation may be performed by the one hand which holds the tool; or while so holding the tool to properly position the cap on the bottle the other hand may be used to press down on the end 16. In this movement the cap retaining portion 31 of the tool is pressed flat against the top of the cap and uniformly applies pressure to the cap for snapping it over the bottle rib 29. In this operation the jaw structure is shaped so that the apron portion 27 of the cap is free to expand radially so as to conform to this snap action. Now, to effect the final sealing of the cap (described as the third function) the tool is removed by sliding it to the left, viewing Figure 4, until the cap is located out of the jaw structure. The tool will then be reversed end for end and the die cup will be placed over the cap and pressed down as shown in Figure 5, this movement being similar to that described with reference to the second function. It will be observed that the annular wall of the die is shaped to converge inwardly so as to provide a gradually increasing compression circumferentially on the apron portion 27 of the cap as the die is moved downwardly over the cap. In the preferred embodiment this die wall 32 is at an angle of about 3.7° with respect to the vertical through the greater portion of its length and about 10° at the entrance portion 33 or preferably a parabolic arc shape at the entrance as shown in the embodiments hereinafter described. With this construction only comparatively small pressure need be applied to the top of the tool to effect the closing in of the cap apron into a most effective air-tight seal between the cap and the bottle. The total downward re-crimping or resealing stroke is about ¼'' or less. This simple construction eliminates the use of lever mechanisms and other complicated constructions which have been heretofore used for capping operations.

In Figures 6 and 7 I have shown a modified form in which the body 34 is flat and is turned

down at one end 35 and inwardly at 36 parallel with the body 34. The portion 36 is shaped to provide a semi-circular opening 37. This provides a jaw structure for removing and retaining a cap substantially in the manner described. The inner ends of the jaw or prong portion 36 are fixed to the body 34 by bars 38 welded or otherwise fixedly connected thereto. A die cup 39 of annular form welded or otherwise fixed to the under side of the body 34, is shaped to provide the desired taper walls as previously described.

In Figures 8 and 9 the paw structure is formed on the top side of the body 41. In this embodiment the body plate has a circular opening 42 in one end and a retaining portion 43 which spans the jaw opening 42 and is welded or otherwise fixed to the body plate. The die cup 44 is an annular part welded or otherwise fixed to the under side of the body plate adjacent to the jaw end. This leaves an elongated handle-like body plate which may be used to particularly good advantage in applying the tool for performing the described functions.

In Figures 10 and 11 the tool is stamped and formed from a single piece of sheet metal providing a body plate 45 a jaw structure 46 on the under side of the body plate and a die cup 47 also on the under side punched from the metal of the body plate.

In Figures 12, 13, and 14 I have shown a further embodiment of my invention which the body plate 48 is of shorter over-all length and a comparatively short prong 49 is formed at one end. A die cup 51 generally similar to the described die cup 17 is attached to the opposite end of the body plate at the under side thereof. A spring clip 52 is attached to the under side of the body plate or it may be punched from the sheet metal body. This clip 52 is arranged to yieldingly engage and snap under the cap in the manner shown in Figure 13 to retain the cap in the tool until after performance of the second described function.

I claim:

A bottle cap replacing device comprising a relatively long body member in the form of a metal stamping defining a handle, said body member having curved ends, a depending flange integral with said body member formed around the entire periphery of said body member including said curved ends, a circular flared receptacle having its open end extending in the same direction as said depending flange disposed at one end of said handle and secured thereto within said peripheral flange with the periphery of said receptacle engaging the curved portion of said flange at said one end of said handle over a portion of the periphery of said receptacle, said receptacle having a diameter at its open end to receive a crown type bottle cap and having a gradually decreasing diameter in a direction away from its open end to effect constriction of a crown type cap around a bottle top, and an arcuate member integral with the flange at the other end of said handle and extending inwardly of said flange in a direction approximately parallel with said body member and perpendicular with said peripheral flange.

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