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OPENER FOR SCREW CAPS

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FIG. 1

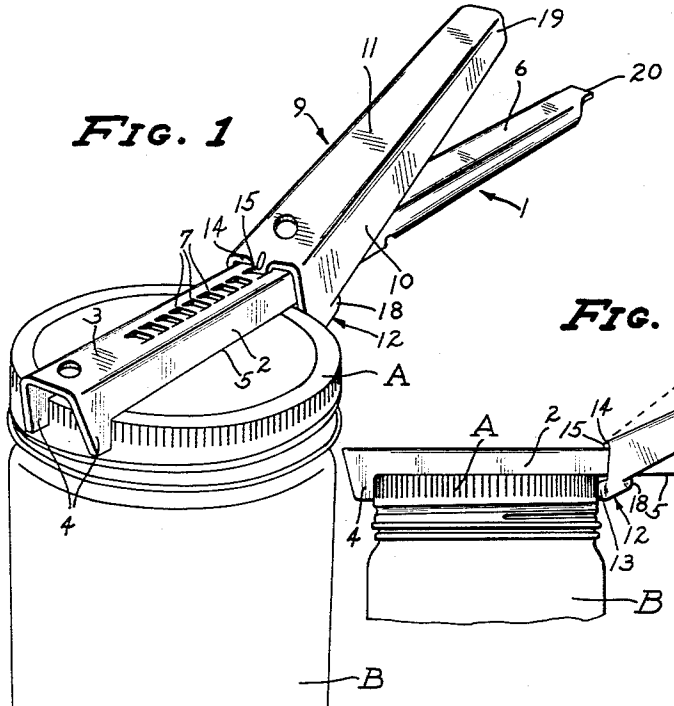


FIG. 2

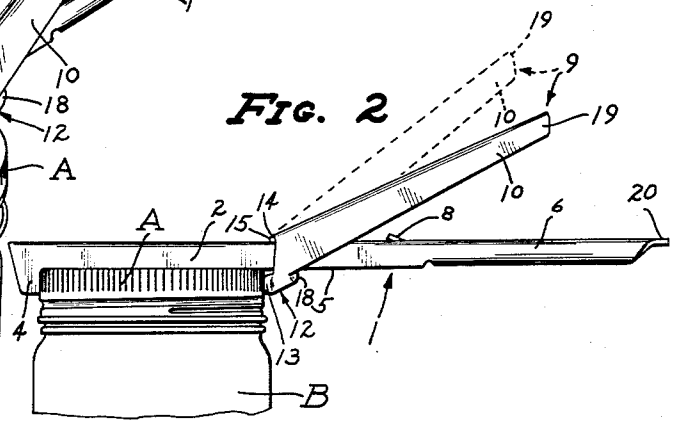


FIG. 3

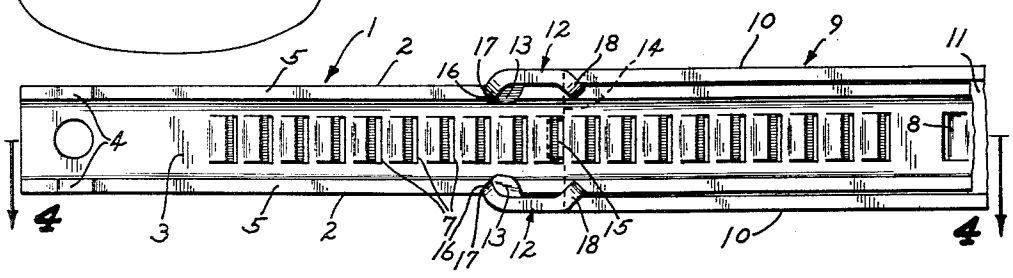
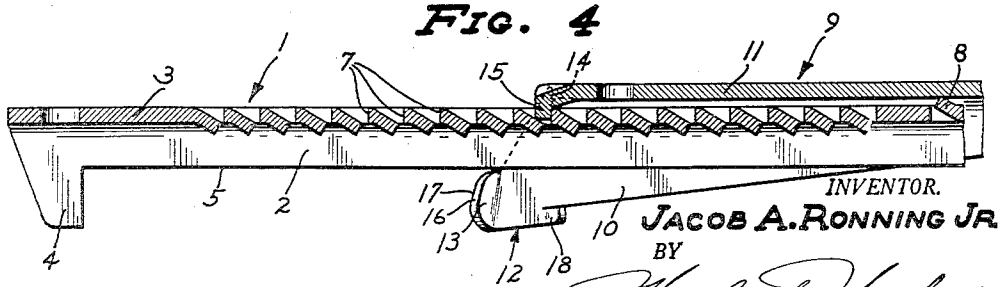


FIG. 4



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OPENER FOR SCREW CAPS

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Application February 9, 1959, Serial No. 791,965

4 Claims. (Cl. 81—3.44)

My invention relates to improvements in devices for removing caps from jars or other sealed containers, and more particularly to improvements in adjustable clamping devices for the applying and removing of screw caps from such jars or containers.

The primary object of my invention is the provision of a device of the class above described, the component parts of which may be stamped and formed from commercially available sheet metal stock and which may be assembled in working relationship with a minimum of time and labor.

A further object of my invention is the provision of a device of the class described which may be efficiently utilized in the tightening and removal of screw caps varying greatly in diameter.

A further object of my invention is the provision of a device of the class immediately above described which may be adjusted to fit screw caps of varying diameters with a minimum of experience and with a minimum of time and effort.

A still further object of my invention is the provision of a device of the class described, the design of which is so simple as to suggest its operation to even the most mechanically unskilled.

The above and still further objects of my invention will become apparent from the following detailed specification, appended claims and attached drawings.

Referring to the drawings wherein like characters indicate like parts throughout the several views:

Fig. 1 is a view in perspective of my device, illustrating its use in the tightening and removing of a screw cap from a conventional jar;

Fig. 2 is a view on a reduced scale and in side elevation of the structure of Fig. 1 and illustrating the method of obtaining clamping pressure by my novel wrench upon the screw top;

Fig. 3 is a greatly enlarged fragmentary view in bottom plan of my novel jar opening wrench; and

Fig. 4 is a view in longitudinal section taken on the line 4—4 of Fig. 3.

Referring with greater particularity to the drawings, the numeral 1 indicates an elongated twisting bar, preferably and as shown stamped and otherwise formed from sheet metal stock to provide a generally channel-shaped member comprising laterally spaced depending flanges 2 and a connecting web portion 3. The forward end portion of the twisting bar 1 is formed to provide laterally spaced depending jaws 4 which, as shown, project below the level of the bottom edges 5 of the side flanges 2. The rear end portion of the twisting bar 1 is formed to define a handle 6; and the web portion 3 thereof, intermediate the jaws 4 and the handle 6, is formed to provide a row of longitudinally spaced abutment forming teeth 7. As shown particularly in Figs. 3 and 4, the web portion 3 of the twisting bar 1, intermediate the row of abutment forming teeth 7 and the end of the bar 1, is formed to provide an upstanding ear 8.

An elongated, but relatively short channel-shaped

clamping lever 9 including laterally spaced depending side flanges 10 and a web portion 11, is nestingly slidably received over the twisting bar 1. As shown, the forward end portions of the side flanges 10 of the clamping lever 9 are formed to define jaw members 12 one each on an opposite side of the twisting bar 1. Said jaw members 12 project below the adjacent bottom edges 5 of the side flanges 2; and are formed at their forward ends to define gripping teeth 13 which project forwardly of the forward edge 14 of the web portion 11 of the clamping lever 9 and of the locking lug 15 depending therefrom.

Preferably, the gripping teeth 13 are inturned, as shown particularly in Fig. 3, and underlie the side flanges 2 of the twisting bar 1 in closely spaced relationship thereto, see Fig. 4. This arrangement positively locks the front end portion of the clamping lever 9 against upward movement with respect to the twisting bar 1 when the clamping lever 9 and twisting bar 1 are in the substantially parallel relationship of Fig. 4. This relationship is not of importance when the size of the screw cap A is such that the clamping lever 9 is in the angular relationship illustrated by Figs. 1 and 2, for such angular relationship also causes an angular relationship between the locking lug 15 and a selected one of the abutment forming teeth 7. Consequently, the greater the force exerted between the clamping lever 9 and the handle 6 of the twisting bar 1, the greater the downward thrust exerted on the locking lug 15 by camming engagement of the gripping teeth 13 against the side of the cap A. To facilitate this camming engagement, the gripping teeth 13 are provided with an upwardly and rearwardly sloping edge 16. Furthermore, the bending of the teeth 13 inwardly in underlying relationship to the adjacent bottom edges 5 of the side flanges 2 affords relatively sharp leading edges 17 which enhance the bite thereof. At this point it should be emphasized that the inturning of the gripping teeth 13, in underlying relationship to an adjacent side flange 2 of the twisting bar 1, aligns one each thereof with one of the jaws 4 of the twisting bar 1 and thus positively limits the clamping lever 9 against forward sliding movement beyond engagement of the gripping teeth 13 with the jaws 4.

As shown particularly in Figs. 3 and 4, the rear end portions of the jaw members 12 are inturned to define stop lugs 18, one each of which underlies an adjacent side flange 2 of the twisting bar 1. As shown in Fig. 4, the stop lugs 18 are spaced from the bottom edges 5 of the side flanges 2 sufficiently to permit upward swinging movements of the rear end 19 of the lever 9 about the pivot axis of the locking lug 15 with a selected one of said abutment forming teeth 7, such spacing being only sufficient to enable the front end portion of the clamping lever 9 to be elevated with respect to the twisting bar 1 sufficiently to permit disengagement of the locking lug 15 with one of the abutment forming teeth 7 and insertion thereof into a desired other one thereof. The spacing between the stop lugs 18 and the bottom edges 5 of the side flanges 2 is preferably such as to positively preclude clearance of the locking lug 15 with the upstanding ear 8, thus positively limiting rearward movement of the clamping lever 9 with respect to the twisting bar 1 when the locking lug 15 is out of engagement with any one of the abutment forming teeth 7.

The operation of my novel screw cap removing wrench is so simple as to be understandable from the above description and drawings. It suffices to state that, as shown in Figs. 1 and 2, the twisting bar 1 is positioned with the jaws 4 thereof in engagement with one side of a screw cap A and with the gripping teeth 13 of the jaw members 12 in engagement with the cover at diametrically spaced points thereabout, after the locking lug 15 has been inserted into a proper and selected one of the abut-

ment forming teeth 7. When a minimum of clamping pressure is exerted between the rear end portion 19 of the clamping lever 9 and the handle 6 of the twisting bar 1, any required amount of twisting force may be exerted to the cap A to seal same against a container B, or alternatively to remove same therefrom.

If desired, and as shown, the extreme rear end portion of the handle 6 may be formed to provide a prying lip 20 to facilitate removal of vacuum lids and the like.

My invention has been thoroughly tested and found to be completely satisfactory for the accomplishment of the above objects and while I have shown a preferred embodiment thereof, I wish it to be understood that same may be capable of modification without departure from the scope and spirit of the appended claims.

What I claim is:

1. A wrench for screw caps comprising an elongated twisting bar formed to provide, a depending jaw at its front end, a handle at its rear end, and a channel-shaped intermediate section including depending side flanges and a connecting web portion, said web portion defining a row of longitudinally spaced abutment forming teeth; and a relatively short channel-shaped clamping lever including laterally spaced depending side flanges and a connecting web portion and nestingly slidably received over said twisting bar, the side flanges of said clamping lever adjacent the forward end thereof extending below the lower edges of the adjacent side flanges of the twisting bar and defining laterally spaced jaw members in generally opposed relationship to the jaw carried by said twisting bar, the forward edges of said jaw members defining gripping teeth which project forwardly of the forward extremities of the web portion of said clamping lever, a depending locking lug defined by the front of the web portion of said clamping lever and selectively engageable with a given one of the teeth defined by the web portion of said twisting bar, the rear end portions of said jaw members being inturned to define stop lugs engageable with the side flanges of said twisting bar, the spacing between said stop lugs and said twisting bar side flanges being such as to permit raising and lowering movements of the front end portion of said clamping lever with respect to said twisting bar for selective engagement of said locking lug with a given one of said abutment forming teeth but limiting upward swinging movements of the rear end of said clamping lever with respect to said twisting bar.

2. The structure defined in claim 1 in further combination with means limiting rearward sliding movement of said clamping lever with respect to said twisting bar, said means including an upstanding ear on the web portion of said twisting bar intermediate said abutment forming teeth and said handle and engageable with the depending locking lug on the front end portion of said clamping lever only in the extreme retracted position of said lever.

3. The structure defined in claim 1 in which the jaw associated with said twisting bar is formed to provide a pair of laterally spaced jaw elements, one each of which is in opposed relationship to one of the jaw members of said clamping lever, engagement of said jaw elements and jaw members limiting forward sliding movement of said clamping lever with respect to said twisting bar, and in further combination with means limiting rearward sliding movements of said clamping lever with respect to said twisting bar.

4. The structure defined in claim 3 in which said gripping teeth underlie the side flanges of said twisting bar and limit upward movement of the forward end of said clamping lever with respect to said twisting bar when said clamping lever is in substantially parallel relationship with the twisting bar, whereby to prevent accidental disengagement of said locking lug with a selected one of said abutment forming teeth.

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