June 29, 1943. G. C. DEANE 2,322,843

COMBINATION CONTAINER AND CAP REMOVER

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Fig. 1.

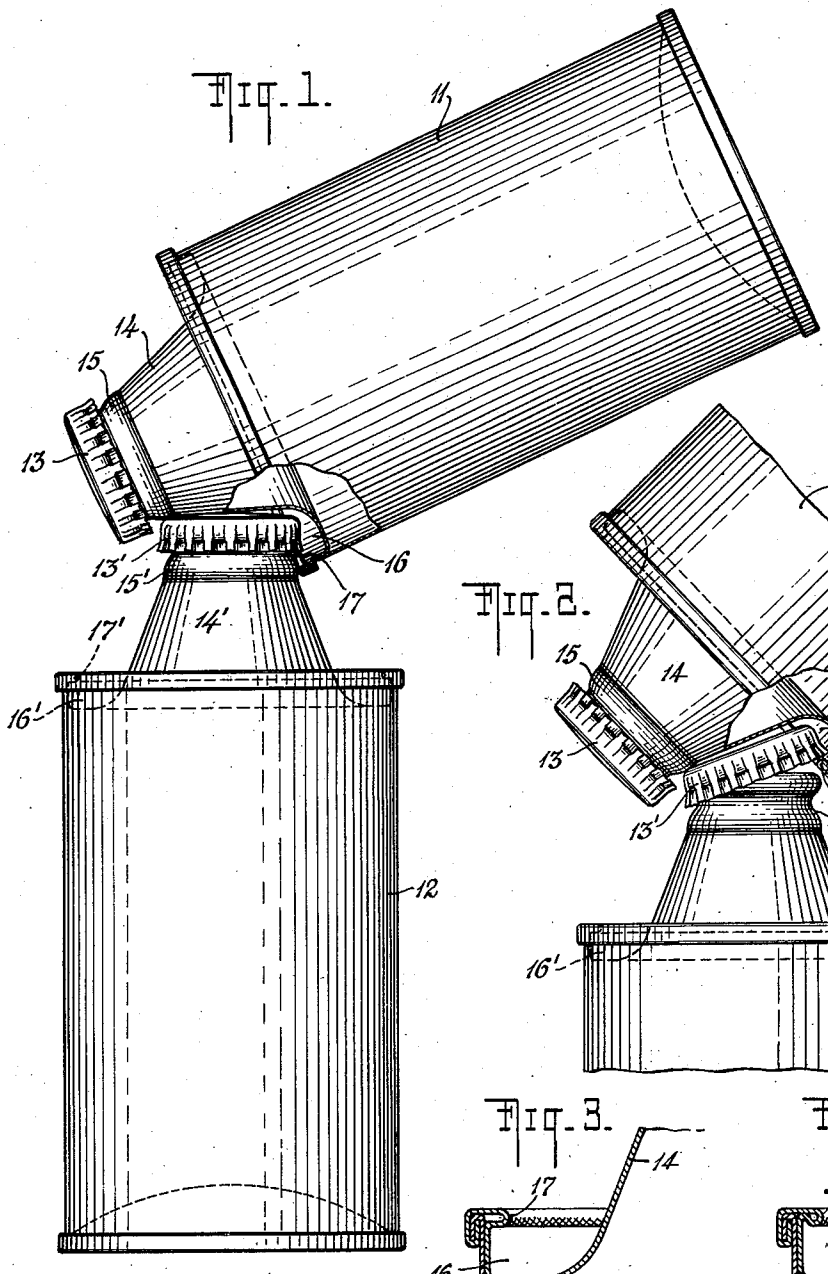


Fig. 2.

Fig. 3.

Fig. 4.

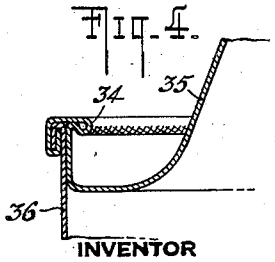
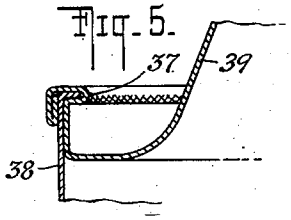


Fig. 5.



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Fig. 6.

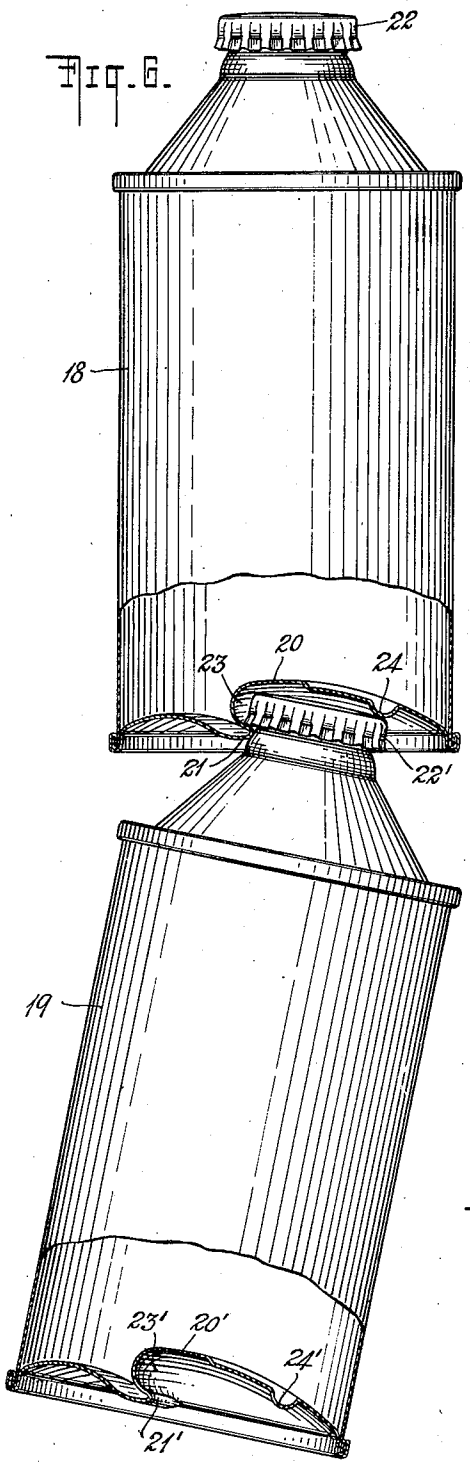


Fig. 7.

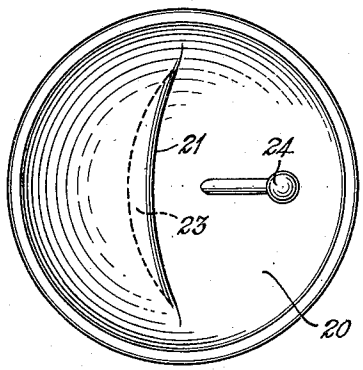


Fig. 8.

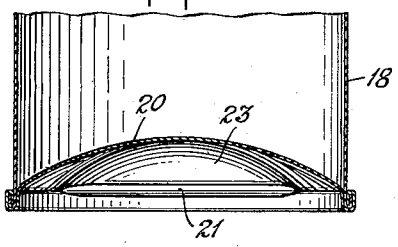


Fig. 9.

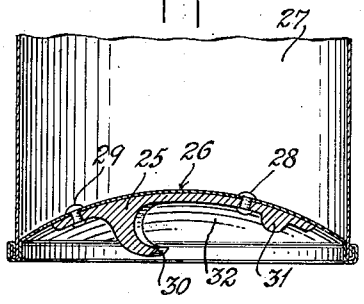
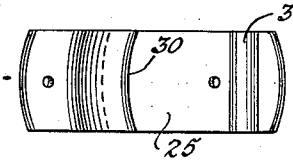


Fig. 10.



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COMBINATION CONTAINER AND CAP REMOVER

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Application January 31, 1940, Serial No. 316,459

4 Claims. (Cl. 220—66)

This invention relates to a combination container and cap remover.

Heretofore containers, particularly containers for liquids, closed with a "crown" type of closure, have required, for opening, a separate unit, commonly called a cap remover or bottle opener, consisting of an edge portion adapted to be inserted under the edge of the "crown" cap, and a fulcrum portion adapted to rest on the top of the cap to be removed, in fixed relation to the edge portion, and distant from it by something less than the diameter of the cap to be removed, the unit being mounted on a firm supporting object, or provided with a lever handle adapted for manual operation of the unit. Cap removers or bottle openers exhibit almost human perversity at times when they are most needed. They are easily lost or mislaid, unless mounted on a supporting object, such as a wall or a table, and in such case are likely not to be found in the places where they are required when their use is desired. Anyone who has attempted to negotiate the removal of a "crown" cap without an appropriately devised cap remover will readily appreciate the value of such devices and will understand the social necessity of their accessibility. Exactly how great is the toll in lost time, lost motion, lost liquid, lost tempers and lost friends subsequent upon the perversity of cap removers at picnics, bridge parties, midnight raids on refrigerators and other informal social gatherings where liquid refreshment is dispensed, or expected to be dispensed, only statistical research would disclose. It is an inference from common experience, however, that the toll is great, and many persons have longed for a simple, easy and dependable solution of the problem.

The invention is a solution of the above-posed problem. It is founded upon the well known fact, apparently unrelated to the problem, that the object most commonly present upon occasions when a cap remover is desired, but missing, is another container of the same or a similar nature as that which it is desired to open. The very presence of the other container serves but to mock, however, and usually only multiplies the problem.

This invention consists in a container having a closure of the crown type or a similar type including those held in closed position by friction, provided with a device adapted to grasp and remove a cap upon a container having a like closure, after the manner of the usual type of cap remover or bottle opener described above.

One of the first requisites of a device which is to form part of a container to be used in connection with the widespread sale and distribution of a liquid in large numbers of containers is cheapness of manufacture. This invention is available for use in connection with the manufacture of containers popularly known as "cans," and requires an addition to manufacturing costs of a sum so small as to be practically negligible, but nevertheless adds greatly to the value and convenience of the container in actual use.

Reference is made to the accompanying drawings, in which

Fig. 1 is a side elevation of two containers with the top of each such container constructed in accordance with my invention, in operating position to remove the cap of one of the containers; Fig. 2 is a side elevation of the same containers after the operation of removing the cap of one of the containers; Figs. 3, 4 and 5 are sectional views of the tops of the body portions of such containers, showing various constructions thereof; Fig. 6 is a side elevation of two containers with the bottom portion of each constructed in accordance with my invention, in operating position to remove the cap of one of the containers; Fig. 7 is a plan view of the bottom of one of the containers shown in Fig. 6, viewed from the bottom; Fig. 8 is a sectional view of the bottom portion of one container shown in Fig. 6; Fig. 9 is a sectional view of a cap removing device affixed to the bottom of a container; and Fig. 10 is a plan view of the device shown in Fig. 9, apart from the container.

Similar numerals refer to similar parts throughout the several views.

In Fig. 1, containers 11 and 12 are shown in side elevation in position for the removal of cap 13' on container 12 by operation of the cap removing device formed as a part of container 11 according to my invention, to show which device, part of container 11 has been cut away. Containers 11 and 12 are shown in identical construction. They are provided respectively with crown type caps 13, 13', necks 14, 14' formed with beads 15, 15', recesses 16, 16' and flanges 17, 17'. In operation, container 11 is placed manually so that flange 17 engages the edge of cap 13' and bead 15 rests on the top of cap 13'. By operating container 11 as a lever, the portion of the top of cap 13' which is engaging the bead 15 serving as the fulcrum of such lever, and lifting upward the main body portion of container 11, container 12 being held motionless, the cap 13' is forced off the neck 14', as shown in Fig. 2.

Fig. 2 is a side elevation of the top portions of containers 11 and 12 shown in Fig. 1 after the

cap 13' has been forced from its seated position on container 12.

The beads 15, 15' are not essential to the operation of my invention. They serve merely to strengthen the necks of the containers. Bead 15 renders neck 14 much stronger and less subject to collapse or distortion by reason of the pressure placed upon one side of the neck in the act of removing cap 13' as described. The neck 14 may be rendered still stronger, if desired, by the formation of additional annular beads similar in configuration to bead 15, or by the formation of corrugations, ribs or other irregularities produced upon the neck 14.

It will be observed that the neck portion 14 of container 11 is formed with a recess 16 so as to provide a space for the cap 13' of the container 12 which is to be opened, when the flange 17 engages the bottom edge of cap 13'. Containers of the general type described are not now provided with such a recess, and my invention requires this departure from constructions heretofore made. It is suggested that the neck portion 14 be made of a length greater than the diameter of the caps 13 and 13', measuring from a point on neck 14 just below the cap 13, for instance the location of the bead 15, to that part of the recess 16 which will be occupied by the portion of the cap 13' to be removed which is nearest to the recess 16 when the containers are in operating position as in Fig. 1. Such a construction will permit removal of the cap 13', as described, without the engagement of cap 13 with any portion of cap 13' or container 12, with the attendant consequence of such engagement that sufficient pressure might be placed upon cap 13 to remove or loosen it from container 11.

The elongated neck construction just described, although a preferred form of my invention, is not essential, however. The neck may be made shorter, so that a part of cap 13 will bear on the top of cap 13', and thus serve as a fulcrum, when the device is employed to remove a cap 13' from another container.

It is essential for the successful operation of my invention in the form shown in Figs. 1 and 2 that flange 17 be formed with a relatively thin edge and yet strong enough to be capable of exerting the pressure upon the cap 13' sufficient to remove the said cap, without material distortion of flange 17. This flange may be constructed in a variety of forms, according to the requirements of the manufacturing process, and to suit the convenience of the manufacturer. The flange may be constructed at the bottom edge of the container as well as at the top.

Fig. 3 is an enlarged sectional view of the top part of container 11, showing the construction of flange 17 in Figs. 1 and 2. Flange 17 is formed as a part of the same piece of material of which neck 14 is formed. Such piece of material, around the entire periphery of neck 14, is bent upward to form a cylindrical band in contact with the inner surface of side portion 33. Thence, said piece of material is bent inwardly, toward the axis of the said neck portion to form flange 17, and thence outwardly and down, and then upwardly, engaging the edge of side portion 33 which is turned outwardly and down, thus forming a tight joint with said side portion 33. Flange 17 may be knurled on the under side, as shown in Fig. 3, to provide a better grip on the cap 13' to be removed, but the knurling is not essential.

Fig. 4 is a sectional view of the top part of a container similar to that shown in Fig. 3, the portions of the sheet of material 35 which form the bottom and the top of flange 34 being pinched together.

Fig. 5 is a sectional view of the top part of a container similar to those shown in Figs. 3 and 4 but of slightly different construction. The side wall 38 is bent inward and occupies the space between the top and the bottom of flange 37, which is formed integrally with the neck portion 39.

Fig. 6 is a side elevation of two containers 18, 19 embodying a form of my invention adapted for application to the bottom of a container. Both such containers are partly cut away at the bottom to show the device of my invention partly in section. Such containers, 18, 19 are respectively provided with bottoms 20, 20', each of which consists in part of a thin fold 21, 21' forming an edge adapted to be inserted under the edge of a crown type cap 22, 22', in part of a recessed portion 23, 23' adapted to accommodate a crown type cap 22' when the edge 21 is inserted thereunder, and in part of a fulcrum portion 24, 24' disposed on one side of the thin edge 21, 21' distant from it by approximately the diameter of the cap 22' whose removal is to be effected by the operation of the device, in fixed relation to said edge 21, and adapted to function as a fulcrum when the device is operated as a lever. In operation the thin edge 21 is inserted under the edge of cap 22' and is engaged therewith, the fulcrum portion 24 of the bottom 20 is brought into contact with the top of the cap 22', and the whole of container 18 operated as a lever, the portion of the edge of cap 22 which is in contact with the edge 21 being thereby separated and pulled away from the top of container 19. The fulcrum portion 24 illustrated in Fig. 6 is a rib or embossed part of the bottom 20. The ribbed or embossed construction is not essential, however, but such is my preferred embodiment of this form of my invention, as such construction contributes strength to the bottom 20, rendering it less subject to distortion when pressure is applied in the operation of the device.

Fig. 7 is a plan view of the bottom 20, viewed from below, showing the thin edge 21 above described, the recess 23 and the fulcrum portion 24 in the form of a raised part of the bottom 20, as in Fig. 6.

Fig. 8 is a sectional view of the bottom shown in Fig. 7, along the center line of such figure, and viewed from the right, showing the thin edge 21 and the recess 23.

Fig. 9 is a vertical section of a device which in general form and operation is similar to the device forming an integral part of container 18 in Fig. 6, and which consists of a separately fabricated cap-grasping portion 25 affixed to the bottom 26 of the container by rivets 28 and 29. While the cap-grasping portion 25 is shown affixed to the bottom 26 by rivets, any other means for fixing such portion 25 to the bottom 26 is within the scope of my invention, for instance, soldering, welding and spot-welding.

Fig. 10 is a plan view, seen from below, of the separately fabricated cap-grasping portion 25 shown in Fig. 9, apart from the bottom 26. The device 25 shown in Figs. 9 and 10 consists principally of the edge portion 30 and the fulcrum portion 31, and is provided with a recess 32.

All the accompanying drawings show containers and parts in the correct proportion and in actual size, except that Figs. 3, 4 and 5 show all

parts enlarged, and the side, top and bottom portions of the containers shown in all the figures are shown thicker than they are actually when made of metal.

My invention may be embodied in a container made of glass, of plastic or other material, as well as metal.

It will be observed that the cap remover portion of a device constructed in accordance with my invention will function whether or not the cap has been removed from the container portion thereof. Thus, with only two of such combination containers and cap removers at hand it is feasible to remove the caps of both.

It would be commercially disadvantageous to make a combination of container and cap remover, by attaching to a container a device such as an ordinary cap remover or bottle opener, as the resulting combination would be bulky, oddly shaped, or ugly in appearance, and would present difficulties in packaging. These possible objections to a combined container and cap remover are obviated by my invention, by which it is possible to produce a neat, well appearing container, not materially different in appearance from containers now in use.

In practice, in producing a container to which is to be attached a separately made cap remover portion as is illustrated in Figs. 9 and 10, it may be advisable to make the container with a second bottom portion, above that to which the cap remover portion is attached by rivets or otherwise, so as to avoid the danger of leakage through an imperfectly closed rivet hole.

It is to be understood that the embodiments of my invention herewith shown and described are to be taken as preferred examples of the same, and that, without departing from the spirit of the invention or the scope of the subjoined claims, various changes, in addition to those above set forth, may be made in the shape, size and arrangement of parts. For instance, the hook portion **25** shown in Figs. 9 and 10 may be affixed permanently by solder, rivets or welding, to the neck portion of the container **18**. Another example within the spirit of my invention is a container **18** provided with a hook portion, such as cap-grasping piece **25** formed with hook **30** but without fulcrum portion **31**, affixed permanently to the neck portion of container **18**, distanced from cap **22** by less than the diameter of such cap, and so placed that part of such cap will function as a fulcrum when the hook portion is placed under the edge of a cap to be removed from another container. Thus, all matters herein set forth, or shown in the accompanying drawings, are to be regarded as illustrative and not in a limiting sense.

I claim:

1. A container formed of sheet material having a cylindrical body portion, a top portion shaped in part like the frustum of a cone, provided with a removable crown cap and joined to the body portion by a substantially flat part, a flange projecting inwardly over said flat part and spaced from the conical part by a distance greater than the depth of the crown cap, the conical part of the top portion extending upward from the flange by a distance at least one-half the diameter of the crown cap, so that the crown cap of another container may be inserted in the space between the flange and the conical part of the top portion and grasped by the flange and the upper part of the top portion with sufficient firmness for removal from its container.

2. A container formed of sheet material having a cylindrical body portion, a top portion shaped in part like the frustum of a cone, provided with a removable crown cap and joined to the body portion by a substantially flat part, a flange projecting laterally inward over said flat part and spaced from the conical part by a distance greater than the depth of the crown cap, the top portion being provided with an annular bead distanced from the flange by more than half the diameter of the crown cap so that the crown cap of another container may be inserted in the space between the flange and the conical part of the top portion and grasped by the flange and the bead with sufficient firmness for removal from its container.

3. A container formed of sheet material having a cylindrical body portion, a substantially frusto-conically shaped top portion provided with a removable crown cap and joined to the body portion by a substantially flat part, a flange projecting laterally inward over said flat part and spaced from the conical part by a distance greater, but not substantially greater, than the depth of the crown cap, the conical part of the top portion extending upward from the flange by a distance at least one-half the diameter of the crown cap and being substantially smooth longitudinally along the conical part from slightly below the flange for a distance at least one-half the diameter of the crown cap, so that the crown cap of another container, guided by sliding along the conical part of the top portion, may be readily inserted in the space between the flange and the conical part of the top portion with a minimum of adjustment and manipulation and may be grasped by the flange and the upper conical part of the top portion for removal from its container.

4. A container provided with a removable crown cap and formed of sheet material having a substantially cylindrical body portion and an end portion having a neck joined to the body portion, a flange in continuation of said body and end portions projecting laterally inward over the end portion and spaced from the neck by a distance greater than the depth of the crown cap, so that the crown cap of another container may be inserted in the space between the flange and said neck and grasped by the flange and the neck for removal from its container.

GERARD C. DEANE.