

[54] CAN CLOSURE STRUCTURE

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[51] Int. Cl.B65d 41/00

[58] Field of Search.220/DIG. 19, 29, 42 B, 60

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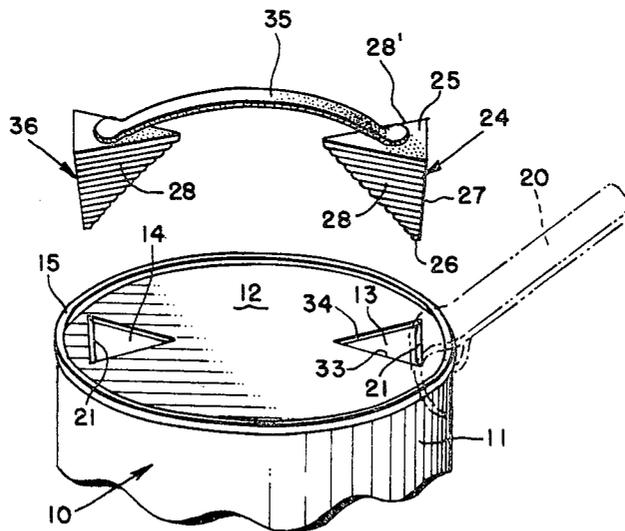
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[57] ABSTRACT

A device is provided which sealingly preserves the contents of a container of liquid after a portion of such contents are withdrawn, such device being insertable into a hole formed in the top of the container and there pressed into place whereupon ribs formed in appropriate tapering surfaces of the device will engage with the edges about the hole to retain the device within the hole.

7 Claims, 8 Drawing Figures



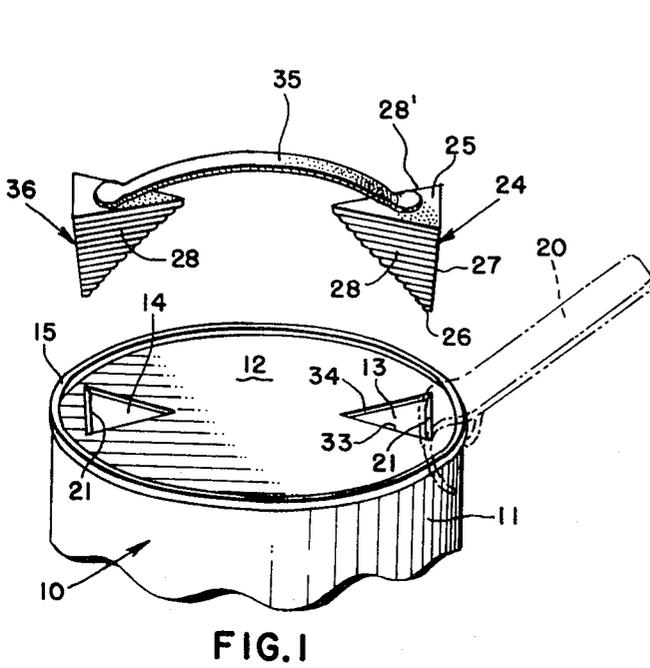


FIG. 1

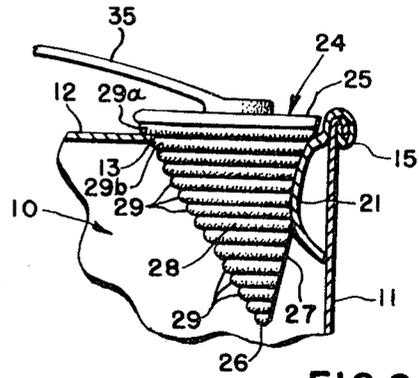


FIG. 2

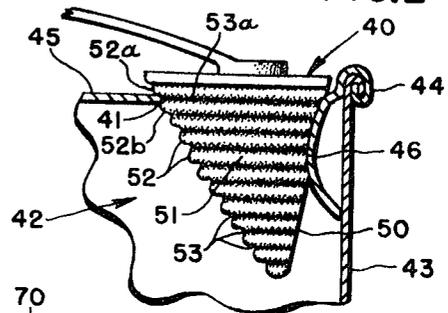


FIG. 3

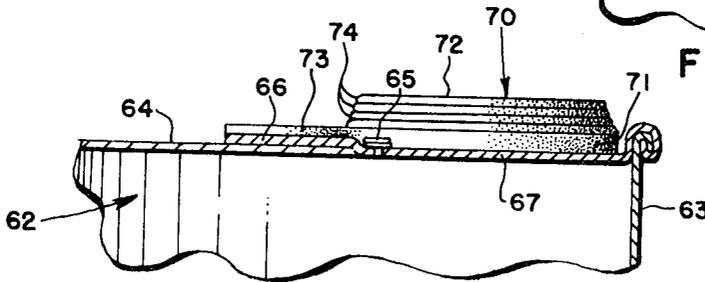


FIG. 5

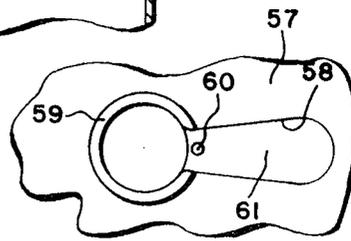


FIG. 4

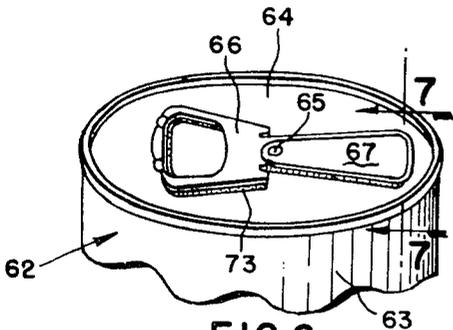


FIG. 6

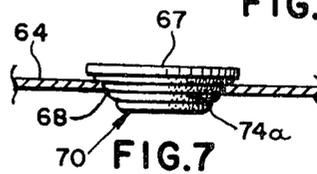


FIG. 7

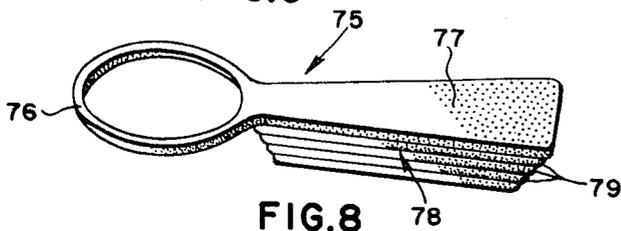


FIG. 8

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CAN CLOSURE STRUCTURE

BACKGROUND OF THE INVENTION

1. Field of the Invention.

This invention relates to closures for containers for liquids and the like, which containers are generally characterized in having a metal end through which a hole may be made to permit withdrawal of the contents of the container, and more particularly to closure means which may be removably retained within the hole formed for the stated purpose in order to preserve the contents of the container when less than the full contents therein are desired to be withdrawn.

2. Description of the Prior Art.

The beverage can in many different sizes for many different kinds of beverage, and like containers for many other liquids, is an inescapable feature in contemporary living. Such containers were at one time made throughout of thin sheet metal. In many applications such construction has been supplanted by one in which the body of the container is non-metallic while the ends are of metal.

It is common to open such cans by means of a key which hooks beneath a peripheral flange about the cover, thereby providing a lever for a sharp point at the end of the key. Upon manipulation by the user, such point is driven into the top of the can to start a hole therein. Upon further depression of the point of the key an essentially triangular hole is opened in the top. The triangular hole may be of larger or smaller size depending upon the size of the key.

For ease in pouring, a second hole is commonly made about 180° from the first hole. The function of the second hole is to admit air so that there will be a smooth flow of liquid upon tilting the can to pour out the contents therein. Except for such second hole, liquid contents would be dispensed in a gurgling and erratic fashion because of the need for air to enter the single hole through which liquid was emerging. The same 180° spacing of the second hole from the first is to forestall emission of liquid through both holes. It is common for a person upon making the air hole to make a hole lesser in size than the first hole through which the liquid is to be emitted.

In addition to cans of the sort just described, another kind of beverage can has recently come into wide use. In cans of this description, the top is scored about a configuration which will give a convenient hole upon removal of metal within that configuration. The mechanism for removal of that metal is the provision of a handle attached by a rivet to the metal to be removed, which may be grasped and the metal of the top then peeled away along the scored line to leave a hole.

With cans of either of the preceding descriptions it is not uncommon following withdrawal of less than the entire contents therein to wish to preserve the remainder in useable condition. A good example of where there is a need for preservation is the case of a carbonated beverage contained within the can, for then in order to preserve the carbonation it is necessary to releasably close the hole promptly after it has been opened.

Some efforts have been made as reflected by the prior art to provide a releasable closure plug for use with cans after they have been opened. Some are deficient in that they do not permit use with openings of different size, while others suffer from the disadvantage that they require too great precision in manufacture in order to be useable. Relatively difficult manufacturing procedures and excessive expense have commonly been called for by prior art structures.

SUMMARY OF INVENTION

The primary object of the present invention is to provide closure means for container cans for liquids, which closure means are intended for use following initial opening of the container by forming a hole in the top thereof. By utilizing the present invention a very simple yet effective closure means for holes formed in cans is provided which is susceptible of use despite variations in the size of the hole which may be formed. This object may be achieved by means of the unique horizon-

tally ribbed surface of diminishing dimension downwardly which is formed in the resilient material of the closure.

A further object is to minimize the expense of fabrication of the closure member here provided, an indispensable criterion for such an item to be commercially successful, since the present device is not the kind of item which can command any substantial amount in purchase price. This object is implemented by eliminating the critical nature of the dimensions required for the releasable temporary plugging of a hole. Because of the ribs of diminishing size, a fit will be achieved simply by forcing the closure means into the hole until the dimension of the hole itself selects the particular rib which will serve to seal the hole.

DRAWINGS

How the foregoing and many other objects are to be implemented will become clear through a consideration of the accompanying drawings wherein:

FIG. 1 shows a perspective view of a can top having spaced holes formed therein, and closure means which can be used to releasably plug such holes;

FIG. 2 is a side view of a closure member in place within a hole in a can;

FIG. 3 shows an alternative embodiment for the closure means seen in FIG. 2, this embodiment also being shown in side view within the hole in a can;

FIG. 4 is a top view of a conventional can top showing a score line along which a portion of the top may be torn to create a hole for removal of contents;

FIG. 5 is a side view of closure means according to the present invention secured atop a can which is as yet unopened, the closure means being affixed to the top of the can to be a part of the can prior to opening;

FIG. 6 is a perspective view of the can top with closure means seen in FIG. 5;

FIG. 7 is a section at 7-7 in FIG. 6; and

FIG. 8 is a perspective view of a closure means such as that seen in FIG. 5 adhered in inverted position to the top of a can, in this drawing such closure means being depicted as independent of the can.

DESCRIPTION

In FIGS. 1 and 2 of the drawings a can 10 is depicted having a cylindrical wall 11 and metal top 12. Holes 13 and 14 have been formed in top 12 by means of a common tool or key which hooks under flange 15 about the periphery of top 12. Such key is depicted in FIG. 1 in phantom lines and is there indexed with numeral 20. As may be seen in FIG. 2, upon formation of hole 13, a wedge 21 cut out from the material of top 12 is forced downwardly and is disposed roughly parallel to wall 11.

A plug 24 is provided for hole 13. In FIG. 1 such plug 24 is shown above hole 13 preparatory to inserting it thereinto, while in FIG. 2 such plug 24 is shown in place sealingly disposed within hole 13. Plug 24 has a top surface 25 which is triangular in shape. Three surfaces depend downwardly from top surface 25, all three tapering downwardly to a point 26 at the bottom of plug 25. One of these surfaces, 27, is flat, and, as may be seen in FIG. 2, is the surface which butts against wedge 21. The remaining two surfaces 28 and 28' are identical, and only surface 28 is depicted in the drawings. A plurality of horizontal ribs 29 are formed in surfaces 28 and 28'. Plug 24 is made of a tough moldable resilient material, and we have found polyvinyl chloroform to be suitable for this purpose.

The absence of ribs on surface 27 permits better sealing because such surface for some extent lies against the surface of wedge 21, and indeed is the only one of the three surfaces 27, 28, and 28' which is in contact with a flat surface.

In operation, plug 24 is pushed through hole 13 downwardly until it can go no further. At that point the rib 29a will not enter through hole 13 because it is too large, while the next smaller rib 29b has entered hole 13. Plug 24 cannot then easily

be withdrawn because rib 29a following insertion of the plug in the manner stated, springs upwardly to catch underneath a free edge 33 at hole 13. Simultaneously, in like manner a rib on surface 28' will catch underneath edge 34 at hole 13.

When it is desired to withdraw plug 24 from hole 13 an upward force may be exerted on the plug by means of handle 35 attached to the top of plug 34.

As is shown in FIG. 1 plug 24 may be paired with a second plug 36 by means of handle 35 to accommodate the situation where a pair of holes are placed in the top of a can, which holes are not separated by 180°. Handle 35 constitutes a pliable handle so that the relative position of plugs 24 and 36 may be readily changed. Hole 14 and plug 36 are in all respects identical to hole 13 and plug 24 respectively, so that it is not deemed necessary further to explain the details of construction as to these two elements. Hole 14 may be somewhat smaller or larger than hole 13, but plug 36 will operate in respect thereto identically as does plug 24 in conjunction with hole 13.

In FIG. 3 a plug 40 molded of resilient material having the same triangular figuration as plug 24 in FIG. 2 is shown disposed within a hole 41 in the top of a container 42. There is again a cylindrical wall 43 therein, a flange 44, a top 45, and a wedge 46 pushed down out of top 45 to lie roughly parallel to wall 43. Plug 40 has a smooth or flat surface 50 and a corrugated surface 51. It is specifically as to corrugated surface 51 that this embodiment of closure means differs from that seen in FIGS. 1 and 2. Ribs 52 are present, horizontally, in corrugated surface 51. Each pair of horizontal ribs 52 is spaced by a groove 53. By means of the provision of such grooves 53, greater flexibility and improved sealing properties have been found to be present upon insertion for sealing of a hole 41 in a can by a plug 40.

Again hole 41 is sealed when plug 40 is forced into such hole until rib 52a is too large to enter the hole while next smaller rib 52b has entered. Groove 53a occurs between ribs 52a and 52b.

In the embodiment of the present invention illustrated in FIGS. 5-7 is shown an application of the present invention in a can which in its conventionally and unmodified form has the features of FIG. 4 in its top. A fragmentary portion of top 57 of a container, otherwise not shown, is depicted in FIG. 4. Such top 57 is scored along a line 58. A handle 59 is attached by rivet 60 to the portion 61 of the top within score line 58. When handle 59 is grasped and pulled up, the portion 61 of top within the score line is torn away to leave a hole defined by such score line. We have presented FIG. 4 because when our invention is applied as in FIGS. 5-7 such score line is not visible.

Referring now to FIGS. 5-7, container 62 has a cylindrical wall 63 and a top 64. The structure employs also a rivet 65 by means of which a handle 66 is attached to the portion 67 of the top within the score line, whereby such portion may be peeled away by pulling upon handle 66 to leave a hole 68 in the top of the can.

Overlaying portion 67 of the top of the can within the score line is a closure member 70. This closure member 70 is formed of a material such as polyvinyl chloride so that it is resilient, and may serve to releasably seal hole 68 once it has been formed. The closure member 70 is adhered to portion 67 and to handle 66.

The closure member 70 has a top portion 71, a plug portion 72 and a handle portion 73. There are horizontal ribs 74 present in plug portion 72. Plug portion 72 tapers toward a smaller dimension with distance from the top portion 71 thereof.

To operate closure member 70 handle 66 riveted to the top of the container 62 is grasped together with handle portion 73 of the closure member 70, and by means of pulling thereon portion 67 of the top of the container within the score line is removed to create hole 68. Contents of the container may then be removed. When it is wished to releasably seal hole 68, the closure member 70 is inverted and the plug portion 72 is

inserted into hole 68. As was true for the first embodiment, force is exerted upon the top 71 of closure member 70 and plug portion 72 will enter hole 68. Sealing is achieved when closure member 70 can no further enter into hole 68. The last rib 74a which entered will then catch on the underside of the top wall about hole 62 to restrain closure member 70 from withdrawal from such hole.

In FIG. 8 is illustrated a closure member 75, independently of any container, which will function in all respects the same as the closure member 70 described in connection with FIGS. 5-7. Thus, closure member 75 has a handle portion 76, a top portion 77, and a plug portion 78. Horizontal ribs 79 are present in plug portion 78, which plug portion 78 is of downwardly diminishing dimension for disposition within a hole in the top of a container such as was described in connection with the embodiment of FIGS. 5-7.

While we have described specific embodiments of our invention, it is apparent that changes and modifications may be made therein and as so changed and modified the resultant structures will still fall within the ambit of our invention.

We claim:

1. A closure device for a container including a top capable of having a hole made therein, said closure device being made of tough, moldable, resilient material and comprising a triangular top portion having three surfaces of diminishing widths tapering downwardly therefrom to substantially a point at the bottom of said closure device, one of said surfaces being substantially smooth and the remaining two surfaces having a plurality of parallel, horizontal, juxtaposed ribs formed thereon, each pair of juxtaposed ribs being separated by a groove, whereby the same closure device may seal holes of differing size in the tops of containers upon being forced into such holes until one of said ribs catches beneath and bears against an edge about said hole while the next larger rib cannot be forced into such hole and said smooth surface bears against a smooth surface depending into the interior of said container from said hole in the top thereof.

2. A closure device as claimed in claim 1 including a handle portion attached to the top thereof, manipulation of said handle portion toward said smooth surface being capable of assisting in removal of said closure device from sealing disposition within a hole in the top of a container.

3. A closure device as claimed in claim 2, wherein said handle portion comprises a pliable strap having one end attached to said closure device, the other end of said strap being attached to a second closure device.

4. A closure device as claimed in claim 3 wherein said closure device and said second closure device are substantially identical in construction.

5. A closure device as claimed in claim 2 wherein said handle portion comprises an integral ring.

6. In a container including a top having a scored portion and having handle means attached to said scored portion whereby said scored portion may be removed from said top to provide a hole therein, the contents of said container being removable through said hole, a closure device for said hole, said closure device being made of tough, moldable, resilient material and comprising a top portion, a plug portion and an integral handle portion, said top portion being larger than said scored portion and said top and handle portions overlying said area to be removed and said handle means, respectively, and being secured thereto, said plug portion tapering upwardly from said top portion toward a smaller dimension with distance from said top portion and including a plurality of parallel, horizontal, juxtaposed ribs formed therein, each pair of juxtaposed ribs being separated by a groove, whereby following removal of said scored portion from said top and withdrawal of a desired quantity of the contents within said container, said closure device may be inverted and forced into said hole until one of said ribs catches beneath and bears against an edge about said hole while the next larger rib cannot be forced into said hole.

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7. A closure device for a container including tops capable of having a hole made therein by removal of a scored portion, said closure device being made of tough, moldable, resilient material and comprising a top portion, a plug portion and an integral handle portion, said top portion being larger than said scored portion, said plug portion tapering downwardly from said top portion toward a smaller dimension with distance from said top portion and including a plurality of parallel, horizontal, juxtaposed ribs formed therein, each pair of jux-

taped ribs being separated by a groove, whereby following removal of a scored portion from the top of a container and the withdrawal of a desired quantity of the contents within the container, said closure device may be forced into the hole until one of said ribs catches beneath and bears against an edge about said hole while the next larger rib cannot be forced into said hole.

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