United States Patent

Dickie

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[54] **CAN CLOSURE**

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[52] **U.S. Cl.** .....**220/57,** 220/24, 220/55 P

[51] **Int. Cl.** **A47j 27/08,** A47j 36/10

[58] **Field of Search**.....220/DIG. 19, 57, 24, 55 P

[56] **References Cited**

UNITED STATES PATENTS

2,157,218	5/1939	Ross	220/57
2,246,533	6/1941	Peters	220/24
2,776,778	1/1957	Valvano	220/24
2,777,125	1/1957	Weisse	220/55 P
3,221,918	12/1965	Callegari	220/24
3,476,284	11/1969	Callegari	220/24

FOREIGN PATENTS OR APPLICATIONS

224,285	11/1962	Austria	220/55 G
673,295	3/1939	Germany	220/57

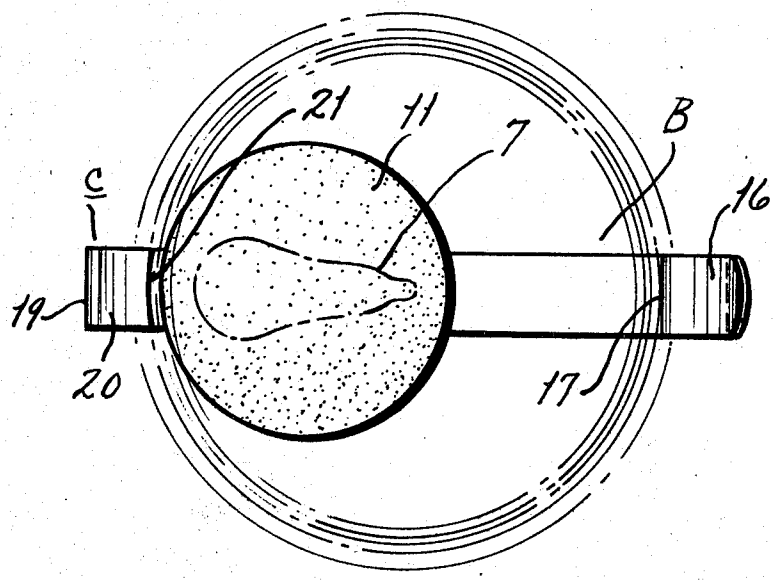
Primary Examiner—Lloyd L. King

Attorney—Ralph W. Kalish

[57] **ABSTRACT**

For use with a convention cylindrical can having a top wall engaged to the side wall by the customary endwise projecting rim, a closure for a dispensing opening formed in said top wall and comprising a resilient pad for sealing disposition across said opening, and a relative rigid, yet resilient body secured to said pad and extending across said can top wall and incorporating means at its opposite ends for forceful abutment against the outer lower edge of said rim at diametrically opposite locations thereon.

4 Claims, 8 Drawing Figures



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FIG. 1

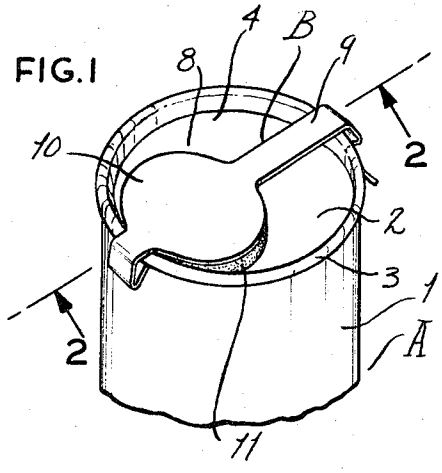


FIG. 2

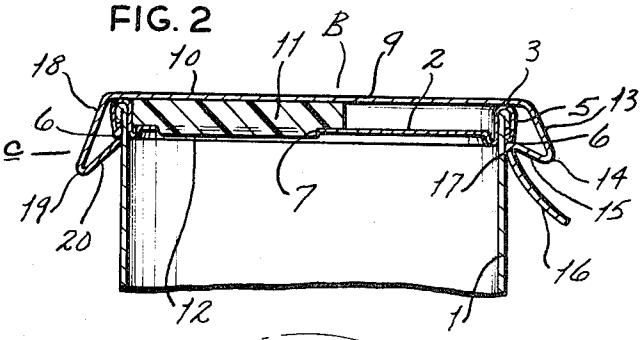


FIG. 3

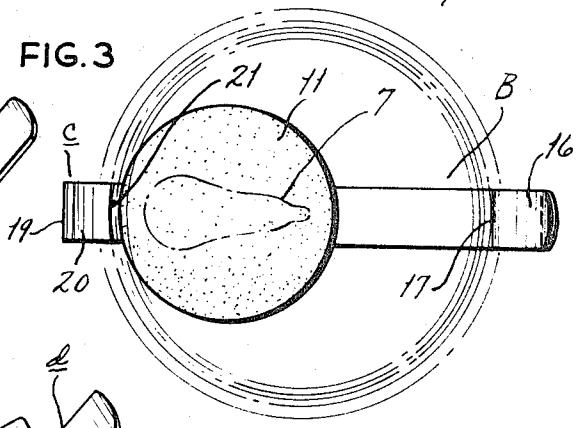


FIG. 4

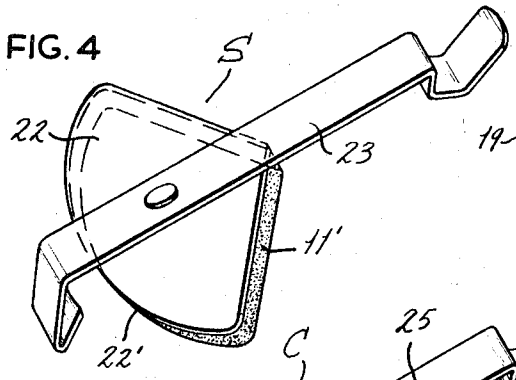


FIG. 5

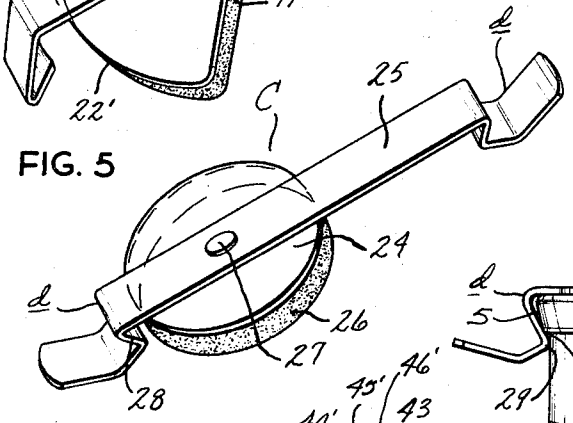


FIG. 6

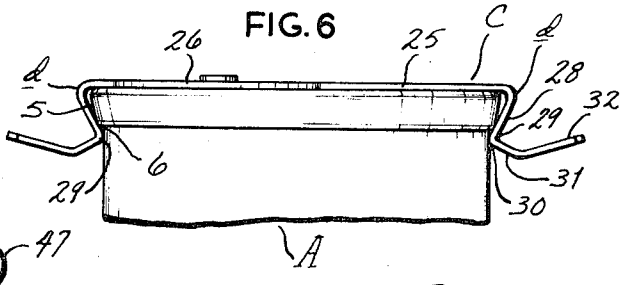


FIG. 7

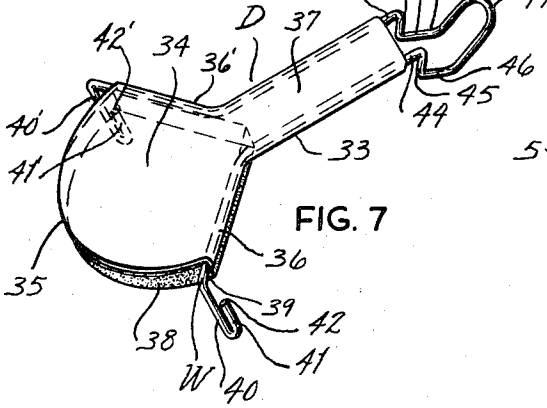
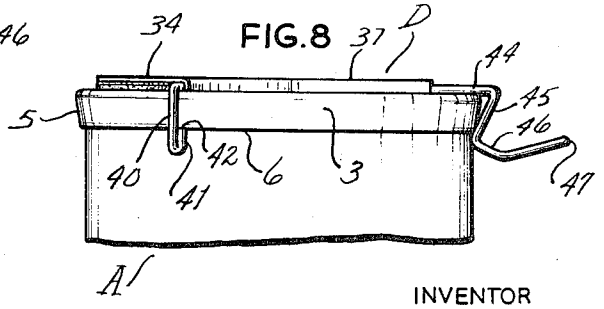


FIG. 8



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CAN CLOSURE

BACKGROUND AND SUMMARY OF THE INVENTION

The present invention relates in general to sealing devices and more particularly to a can closure.

It is an object of the present invention to provide a closure for sealing the dispensing openings provided in the ends of cans such as result from the use of current tab openers for preserving the contents against spillage and contamination as well as to prevent gas loss of carbonated beverages; said closure being uniquely adapted for reliable engagement with the can structure.

It is another object of the present invention to provide a closure of the type stated which is adapted for engagement upon the can in sealing relationship to the dispensing opening without the utilization of tools or other implements.

It is a further object of the present invention to provide a closure of the type stated which may be most economically manufactured being of simple construction and being so uniquely formed as to conduce to ready application upon a can as well as to permit of facile removal.

It is an additional object of the present invention to provide a closure of the type stated which is adapted to effect a gas-and-liquid proof sealing engagement with the dispensing opening of the can so as to permit of disposition of the can within a coolant, as in a portable cooler without content loss or contamination.

It is a still further object of the present invention to provide a closure of the type stated which is extremely durable in usage; which is adapted for presentation in a multiplicity of forms for accommodating cans having various shaped openings located at different places within the can end.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary perspective view of a can closure constructed in accordance with and embodying the present invention, illustrating the same in engaged, operative position upon a can.

FIG. 2 is a vertical transverse sectional view taken on the line 2—2 of FIG. 1.

FIG. 3 is a bottom plan view of the construction illustrated in FIG. 1.

FIG. 4 is a perspective view of another form of a can closure constructed in accordance with and embodying the present invention.

FIG. 5 is a perspective view of a further form of can closure constructed in accordance with and embodying the present invention.

FIG. 6 is a fragmentary side elevational view of a can having engaged thereon the can closure illustrated in FIG. 5.

FIG. 7 is a perspective view of a further form of a can closure constructed in accordance with and embodying the present invention.

FIG. 8 is a fragmentary side elevational view of a can having engaged thereon the closure illustrated in FIG. 7.

DESCRIPTION OF PRACTICAL EMBODIMENTS

Referring now by reference characters to the drawings which illustrate practical embodiments of the

present invention, A generally designates a conventional can having a cylindrical side wall 1, a top wall 2, a bottom wall (not shown) each of said top and bottom walls being provided with the customary rim or bead 3, for engagement to the adjacent edge portions of cylindrical wall 1 whereby said top and bottom walls are recessed, as indicated at 4, endwise of can A. As more fully shown in FIG. 2 it will be seen that rim 3 is reversely turned in the usual manner about the end edge of side wall 1 presenting a short skirt portion 5 which though lying close to the outer face of side wall 1, and, being of relatively thin material, does effect the development by its end edge of a shallow shoulder 6.

Can A is thus of the type particularly designed for beverages either of the carbonated or the non-carbonated type, beer, fruit juices, etc., and is provided in top wall 2 with a dispensing opening, as indicated at 7, which may be of irregular shape being most frequently developed by removal of the widely used tab openers. It is recognized that such dispensing opening 7 may be at any desired location on top wall 2 but is most customarily encountered to one side thereof.

Provided for use with can A is a closure B which by means to be described is adapted to sealingly close opening 7 for preserving the remaining contents of can A in original condition against future consumption after initial partial withdrawal.

Although closure B is of independent construction, for purposes of disclosure the components thereof will be described in relationship to can A.

Closure B comprises a body 8 formed of relatively rigid, yet resilient material such as spring steel, plastic, or the like, and integrally embodies an elongated strap portion 9 having a length greater than the endwise diameter of can A; and with said strap portion 9 being enlarged to form a plate section 10 which by reason of the relative location of opening 7 is eccentric with respect to said strap portion 9. Plate section 10 may be of any selected configuration for developing an area substantially greater than that of the opening 7, and for purposes of illustration, is shown as being of general annular character. Affixed (as by an adhesive, riveting, etc.) to the underface of plate section 10 for direct disposition upon can top wall 2 is a resilient, gas-impervious pad 11, as fabricated of neoprene or like material. Said pad 11 conforms to the shape and extent of plate section 10 which latter thus, in effect, provides a backing therefor. Pad 11, being compressible, has a normal thickness slightly greater than the depth of recess 4 for purposes presently appearing; the portion of pad 11 which projects into, and fills, opening 7 is indicated at 12.

Strap portion 9 at its end remote from plate section 10 slightly outwardly of rim 3, is bent downwardly, radially outwardly of the side wall 1 of can A, to provide an inclined section 13 providing a thumb-receiving surface. At the lower end of section 13, below the adjacent shoulder 6, strap portion 9 is bent back upon itself, as at 14, to form an upwardly and inwardly extending section 15 for abutment at its upper end against shoulder 6, and said strap 9 is thence turned downwardly and outwardly to provide a finger tab 16. Thus, the line of bending as at 17 between section 15 and tab 16 forms an abutment edge for engaging shoulder 6. By reason of its character section 15 is thus urged upwardly into engaged condition.

At its opposite or plate-adjacent end, strap portion 9, slightly outwardly of rim 3, is formed to present an anchoring clip, indicated generally *c*, with said strap portion 9 being bent downwardly and outwardly providing an inclined section 18; the lower end of which terminates spacedly below and slightly outwardly of the adjacent portion of shoulder 6 and defines a line of bending 19 which constitutes the lower terminus of an upwardly and inwardly extending locking finger section 20. The upper or free end edge of finger section 20 is of tapered or knife character as at 21; said edge being adapted for abutting engagement with the proximate portion of shoulder 6. It will be seen that knife edge 21 is located spatially outwardly of the confronting side portion of pad 11 at a suitable distance so as to allow rim 3 to be normally receivable therebetween.

The normal distance between knife edge 21 and line of bending or abutment edge 17 is less than the outside diameter of rim 3. In order to present closure B in operative disposition upon can A, the user will initially locate pad 11 in general overlying centered relationship to opening 7 and will thereon cause the adjacent portion of rim 3 to be disposed between locking finger 20 and the confronting edge of pad 11. Thereupon through manipulating closure B from its opposite or finger-tab end, closure 8 is rocked upwardly using the edge of rim 3 between knife edge 21 and pad 11 as a fulcrum so as to present the can directed face of finger 20 substantially flatwise against can side wall 1, for disposing knife edge 21 against the adjacent portion of shoulder 6. With such relationship developed closure B is then rocked returningly downwardly causing finger 20 to assume an outwardly directed position for urging knife edge 21 against shoulder 6; bringing line of bending or abutment edge 17 downwardly upon the opposite portion of rim 3 and by continuation of downward pressure on strap portion 9 to cause said line of bending 17 to snappingly clear rim 3 whereby upon release of such force said line of bending 17 will abut shoulder 6, all as illustrated in FIG. 2. Thus, by such disposition closure B will be stressed so as to provide a secure engagement through line of bending or abutment edge 17 and knife edge 21 against shoulder 6 with the inherent bias directing finger 20 and section 15 into secured relationship with can rim 3. By such forceful engagement pad 11 will be compressed sealingly over opening 7 so as to prevent any unauthorized emission of can contents therethrough as well as to render said opening gas-proof. Thus closure B is uniquely adapted to grippingly engage suitable portions of a customary can for operative purposes and being designed for manipulation without resort to tools or any other extraneous implements so that the same is readily usable with facility by the average housewife.

Closure B may be readily removed from can A to allow dispensing purposes by the mere application of an upwardly directed force against tab 16 so as to remove line of bending 17 from shoulder 6 and with the anchoring clip portion *c* being easily detached by reverse movement. It is apparent that plate section 10 and strap portion 9 may be separately constructed, and suitably mutually engaged. However, the one part construction shown has proved markedly efficient and with the upper surface of said plate section 10 presenting an unbroken area for receiving desirable printed or pictorial matter.

Referring now to FIG. 4, S designates another form of closure for use in conjunction with can A and incorporates a plate 22 and a separate strap 23, with the former being of general wedge character having an outer arcuate edge 22'. Strap 23 extends across the upper surface of plate 22 and is suitably secured thereto as by a rivet *r*. By reason of the relative location of opening 7 plate 22 is disposed eccentrically with respect to strap 23. Plate 22 and strap 23 are of like construction as closure B but constitute a two part construction. Although the arc of edge 22' may be formed upon substantially the same radius as the inner face of rim 3, such relationship is not critical. The wedge form has been found to be suitable by reason of the geometry of the can end, however, the criterion is merely that plate 22 extends a reasonable distance beyond all edges of opening 7. Affixed to the underface of plate 22 is a resilient, gas-impervious pad 11' which is in all respects similar to pad 11 hereinabove described but is of wedge form in direct correspondence to plate 22.

Referring now to FIG. 5, C designates another form of closure for use in conjunction with can A and incorporates a circular plate 24 having affixed to its underface a circular resilient, gas-impervious pad 26 similar to pad 11. Extending across the upper surface of plate 24 is an elongated narrow strap 25 having limited resiliency as being formed from spring steel and being secured upon said plate 24 as by a rivet 27. Plate 24 is related to strap 25 in the same manner as plate 22 is related to strap 23 hereinabove described, that is, the same is eccentrically located with respect thereto for appropriate covering alignment with the can discharge opening 7.

Each end of strap 25 outwardly of rim 3 is identically formed to present integral end clips d, each of which incorporates an upper gripping section 28 which extends inwardly and downwardly at such an angle that the lower end as at 29 of the opposite clips *d* are spaced apart normally a distance less than the outside diameter of rim 3. At the lower ends 29 of sections 28 each bend clip *d* is bent outwardly and slightly downwardly along a bend line coincident with said lower ends 29, as at 30, to present an intermediate section 31; there being a terminal tab 32 extending outwardly for manipulation purposes. It will be seen that bend line 30 in the manner of an abutment edge will extend beneath shoulder 6 of rim 3 when in operative position and be restrained thereby against inadvertent displacement.

Accordingly, it will be seen that pad 26 is presented centeredly over can opening 7 and the immediately adjacent clip *d* is engaged upon can A through interposition of the intervening portion of rim 3 between pad 26 and gripping section 28 of such adjacent clip *d* whereby the bend line 30 is disposed beneath the proximate portion of shoulder 6. The user will then swing downwardly upon closure C utilizing the aforesaid portion of rim 3 as a fulcrum while simultaneously applying downward pressure on tab 32 at the end remote from plate 24 so as to force the related bend line 30 outwardly of rim 3 to allow same to clear said rim for closure C to be snugly engaged. After said rim has been circumvented the user will then relax the engaged tab 32 to allow the associated bend line 30 to be received beneath the adjacent portion of shoulder 6 whereby closure C is engaged in secure disposition upon can A. Closure C is removed from operative position in a sim-

ple, reverse manner encompassing lifting upwardly on one tab 32 or the other so as to remove the proximate bend line or abutment edge 30 from engagement with shoulder 6.

In conjunction with closures B, S, and C, hereinabove described it has been found desirable to form knife edge 21 and bend line 17 of closures B and S and bend lines 30 of closure C upon a radius conforming to that of can side wall 1 so as to effect a more complete engagement between said closures and the related can A.

Referring now to FIGS. 7 and 8 another form of can closure D is illustrated which is constructed in accordance with the present invention and incorporates a body 33 made of suitable sheet material such as spring steel, plastic or the like formed to present at one end an enlarged plate portion 34 which may be of general wedge shape having an outer arcuate edge 35 and inner converging sides 36,36' which are continuous with an elongated strap-like portion 37, said latter being of such length as to terminate inwardly of the adjacent portion of rim 3 of can A. Plate portion 34 is of an area for suitably covering can opening 7 and the surrounding portions of the can top wall 4. On its under surface plate 34 mounts a co-extensive resilient gas-impervious, pad 38 in all respects similar to pads 12 and 27 above described. Integrally formed with the side portion 36 of plate 34 and the adjacent portions of strap 37 is a tubular passage 39 for extension therethrough of a portion of a continuous retaining wire, indicated generally W. One end extremity of wire w projects beyond the end of tubular passage 39 beyond the arcuate edge 35 of plate 34 and is bent to provide a downwardly extending leg 40 being of greater length than the height of rim 3 for extension therebelow and at its outer end said leg 40 is reversely bent to provide an arm 41 for close lying disposition against the outer face of side wall 1 of can A and being of such length that its end face 42 is disposed for abutting shoulder 6. The opposite end of wire w is of like formation and presented adjacent the opposite extremity of arcuate end 35 to provide a leg 40', an arm 41' and an end face 42' for abutting the adjacent portion of shoulder 6. Thus, the extent of arcuate edge 35 will determine the relative locations of contact of wire ends W with shoulder 6; it being preferable that such points of engagement be approximately 120° apart.

The central portion of wire W projects beyond the outer end of strap 37 to form a clip portion 43 being relatively strong as the same encompasses double wire thickness, there being linear portions 44, 44' which project beyond strap 37 to a point outwardly of rim 3; at which juncture said portions 44,44' are turned downwardly and inwardly to develop gripping sections 45,45' of such length as to terminate normally immediately below rim 3. The lower ends of gripping sections 45,45' are thence bent outwardly to provide short intermediate portions 46,46' and then turned upwardly and outwardly to develop a tab forming loop 47'.

In view of the foregoing it will be seen that closure D provides a multi-point engagement with shoulder 6 by virtue of end faces 42,42' of arms 41,41', respectively, and the lower inwardly projecting ends of gripping sections 45,45'. Tab 47 presents a control surface for requisite manipulation of gripping legs 45,45' to bring about facile application of closure D upon can A or removal of the same therefrom.

Having thus described my invention, what I claim and desire to obtain letters patent for is:

1. For use with a can having a cylindrical side wall, a top end wall and a circumferential rim projecting endwise of said top wall and having a skirt portion abutting the outer face of said side wall to define a shoulder-forming end edge therewith, there being an opening in said top wall; a closure for said opening comprising: a body having a plate of greater area than said can opening; a resilient sealing pad carried on said plate for disposition coveringly of said opening; a flat elongate strap member rigid with said plate and extending at its ends therebeyond; said strap member being disposed transversely of the top end of said can in substantially planar parallel relation to the top end wall and abutting the circumferential rim in two diametrically opposed zones, said strap member having a length slightly greater than the diameter of said rim for radial extension in its end portions beyond said rim, shoulder-engaging members integrally formed with said strap in its outer projecting end portions, the distance between said shoulder-engaging members being normally less than the diameter of the intervening portion of the related can, said shoulder-engaging members each comprising a normally downwardly and outwardly, inclined first section terminating below, and outwardly of, the adjacent portion of the can shoulder-forming end edge, and a normally upwardly and inwardly inclined locking finger section provided at the lower end of each first section, the upper inner end of each locking finger section remote from the connection to the related first section engaging said shoulder, whereby with the distance between said shoulder-engaging inner ends of said second sections being normally less than the diameter of the intervening portion of the related can, said shoulder-engaging members will be urged upwardly when engaged.

2. The invention as defined in claim 1 and further characterized by said resilient pad being constructed of a gas impervious material having a normal thickness slightly greater than the depth of said circumferential rim, the distance between said strap member and the proximate shoulder-engaging end being normally less than the height of said rim so that when said shoulder-engaging members are in operative position said resilient pad will be compressed to provide a snug closure with respect to said top wall opening.

3. The invention as defined in claim 1 and further characterized by a downwardly and outwardly projecting tab integrally provided with one of said shoulder-engaging members for facilitating finger manipulation of the strap member.

4. The invention as defined in claim 1 and further characterized by the inner end of the locking finger section of the shoulder-engaging member other than the one provided with the tab having a knife edge for enhancing engagement with the said skirt.

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