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CAN OPENER AND SPOUT

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10 Claims. (Cl. 222—83.5)

This invention relates to devices for puncturing holes in cans of condensed and evaporated milk and other liquid-containing cans.

It is an object of my invention to provide a device which may be readily slipped onto a can and manually operated to puncture a plurality of holes therein, the puncturing mechanism being retractable, and to also provide a spout for discharging the contents of the can.

Another object involves the provision of a device which may be readily slipped onto the top of a can and will retain itself in position thereon, together with mechanism for readily puncturing the can and for retracting the puncturing means without necessitating removal of the device from the can.

A further object is to provide a handy device for puncturing a can, enabling the contents of the can to be poured, and for thereafter sealing the can as a sanitary measure with respect to the unpoured contents.

Further objects and advantages of the invention will appear as the description proceeds.

The invention will be better understood upon reference to the following description and accompanying drawing, in which:

Fig. 1 is an elevational view showing a can with one form of device of the invention fitted thereon, at the completion of the can-puncturing operation, which is also the arrangement when the holes in the can are sealed by the device when the can is stored for future use.

Fig. 2 is a top plan view of the device seen in Fig. 1.

Fig. 3 is a bottom plan view of the same.

Fig. 4 is a sectional view taken as indicated by the line 4—4 in Fig. 1.

Fig. 5 is a left side elevational view of the device seen in Fig. 1.

Fig. 6 is an enlarged fragmentary sectional view taken as indicated by the line 6—6 in Fig. 2.

Fig. 7 is a fragmentary sectional view taken as indicated by the line 7—7 in Fig. 6.

Fig. 8 is a view similar to Fig. 6 but shows the arrangement of the device preparatory to the can-puncturing operation.

Fig. 9 is a view similar to Fig. 6 but with the puncturing means retracted and the can tipped to permit discharge of liquid from the can.

Referring now more particularly to the drawing, there is shown at 10 a can having a top 12 over which a device in accordance with one form of my invention, indicated generally at 14, has been placed. The device 14 comprises a body 16 having a bottom skirt 18 split at suitable intervals as shown at 20 to render the same resilient, whereby the skirt may snugly embrace the peripheral bead 22 depending from the can top 12 and thus hold itself in assembly with the can 10. The body 16 has an inside downwardly facing ledge 24 adapted to seat on the rim 26 of the can top 12.

The body 16 is bored upwardly from the ledge 24 as shown at 27 for the reception of the heads 28 of

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plungers indicated generally at 30, the upper ends 32 of the bores providing shoulders between which and said heads compression springs 34 are disposed, whereby said plungers are constantly urged downward. The plunger heads 28 are sharply pointed downward as shown at 36 to provide means for puncturing the can top 12, as will appear. The portions of the body 16 above the shoulders 32 have reduced polygonal passages 38 in which reduced polygonal portions or stems 40 of the plungers 30 are slidable, the upper ends of the plungers being threaded as at 42 or otherwise securely fastened to preferably flat-topped knobs or heads 44. When the knobs 44 are pressed or punched downward by the hand or hands, the points 36 of the plungers 30 will penetrate and puncture the can top 12 to form holes therein as shown at 46 and 48.

The portion of the body 16 above the skirt 18 is preferably formed with a relatively narrow substantially diametrical boss 50 rabbeted at its ends as shown at 52 and having a central longitudinal slot 54 in which two levers 56 are intermediately pivoted at 58. The outer end of each lever 56 is forked as shown at 60, the arms of the forks slidably embracing the flat sides of the respective plunger stems 40, said forks, when inactive, resting on the ledges 62 of the rabbets 52.

The mutually facing central portions of the lips 64 defining the slot 54 are vertically slotted at 66 for the reception of the polygonal stem 68 of a central retractor plunger 70. Opposite sides of the retractor stem 68 are milled out as shown at 72 for the loose reception of the inner ends 74 of the levers 56, sufficient clearance being provided so that in effect relative pivotal movement between the inner ends of the levers and the retractor stem may occur with reciprocal movement of said stem in the slots 66.

When the puncturing plungers 30 have been depressed to puncture the holes 46 and 48 in the can top 12, as shown in Fig. 5, there is considerable friction between the ruptured portions of the can top and the plunger points 36, and, of course, the points are urged into the positions shown in Fig. 5 by the compression springs 34. To permit the contents 76 of the can to be poured out, it is necessary to retract the puncturing plungers 30. This may be done by the user by pressing down on the preferably flat topped head 78 of the releasing plunger 70 with his thumb while his hand holds the assembled can 10 and device 14, with the result that the levers 56 are rotated oppositely about their pivots 58 and thus their forked ends 60 are raised into engagement with the lower faces of the plunger knobs 44, overcoming the frictional and spring resistance and raising the plunger points 36 clear of the ruptured portions of the can top 12 defining the holes 46 and 48, as shown in Fig. 9. The lower portion of the body 16 adjacent the hole 46 is milled out as shown at 80 to provide a spout, and thus, when the can 10 is tipped as shown in Fig. 9, the liquid contents 76 will pour out through the hole 46 and the spout 80. When it is desired to store the can away for future use, the user merely releases pressure on the retractor 70, whereupon the compression springs 34 expand to bring the various parts to the relation shown in Fig. 6, where it is noted that the plunger points 36 are seated snugly in the can top holes 46 and 48 and thus maintain the can and its contents in sanitary condition. When it is desired to throw away the can 10, the device 14 may be readily lifted off the can and is ready for use on another can.

The various knobs or heads 44 and 78 are preferably removably threaded to the respective plunger stems 40 and 68, so that, upon removal of the heads, the plungers

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and springs may be completely disassembled from the body to permit the entire device to be washed and cleaned.

Various modifications may suggest themselves to those skilled in the art without departing from the spirit of my invention. Hence I do not wish to be restricted to the specific form shown or uses mentioned, except to the extent indicated in the appended claims, which are to be interpreted as broadly as the state of the art will permit.

I claim:

1. A device of the class described, comprising a body having a resilient depending skirt for yieldably embracing the upper part of a cylindrical liquid-containing can of a size adapted to be embraced by a person's hand, said body having an abutment to engage the top of the can, said body having a pair of spring-pressed sharp can-puncturing plungers urged by their springs into engagement with the top of the can, said plungers having heads disposed above said body and manually forcible to puncture the top of the can, and means limiting the degree of penetration of said plungers into the can, said device including retracting means operative by the hand holding the assembled can and body for withdrawing said plungers from the can top, said body having a spout adjacent one of said plungers to discharge liquid from the can when the can is tipped in the direction to lower said spout while said plungers are held in withdrawn positions.

2. A device of the class described, comprising a body having resilient portions adapted to embrace the upper outer part of a liquid-containing can adapted to be held in one hand, to releasably retain said body is assembly with the can, said body having a pair of spaced sharp pointed plungers manually forcible against the can top to penetrate the same and form spaced holes therein, and plunger-retracting means carried by said body and including a member within convenient reach of the thumb of the hand holding the can for pushing movement by the thumb toward the can to withdraw said plungers, said body having a spout adjacent one of said plungers to discharge liquid from the can when the punctured can is tipped in the direction to lower said spout while said plungers are withdrawn.

3. A device of the class described, comprising a body having means for holding the same in assembly with the upper part of a liquid-containing can, said body having a pair of spaced sharp pointed plungers manually forcible against the can top to penetrate the same and form spaced holes therein, manually operative retracting means carried by said body for withdrawing said plungers, said body having a spout open at all times, said spout being disposed adjacent one of said plungers to discharge liquid from the can when the can is tipped in the direction to lower said spout, while said plungers are withdrawn, and means operative pursuant to release of said retracting means for returning said plungers to positions closing the holes in the can.

4. A device of the class described, comprising a body having means for holding the same in assembly with the upper part of a liquid-containing can, plunger means carried by said body and having spaced sharp points for penetrating the can top and forming spaced holes therein, lever means pivoted to said body and movable relative to said plunger means and engageable with said plunger means and operative to retract said points free of the can, said body having a spout adjacent one of said points for discharging liquid from the hole formed by said one point when the can is tipped in the direction to lower said spout and said points are retracted, and means operative upon release of said lever means for moving said points into hole-closing positions.

5. A device of the class described, comprising a body having means for assembling the same with a liquid-containing can, said body having a pair of spaced can-puncturing members disposed adjacent the can when said body is assembled with the can, said members being manually movable to puncture the can, lever means oper-

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atively connected with said members for retracting said members clear of the holes produced thereby in the can, said body having a spout below the top thereof and immediately adjacent one of said members so that liquid may flow directly from the hole produced by said one member to said spout, and means operative upon release of said lever means for moving said points into positions closing said holes.

6. A device of the class described, comprising a body having a depending resilient skirt for surrounding the upper part of a cylindrical liquid-containing can and releasably holding said body in assembly with the can, said body having an abutment to engage the top of the can, said body having a diametrically opposite pair of spring-pressed sharp-pointed can-puncturing plungers urged by their springs into engagement with the top of the can, said plungers having heads disposed above said body and engageable by hand to manually force said plungers to puncture the top of the can, said body having a diametrical slot extending between said plungers, a pair of levers disposed in said slot and pivoted to said body, the outer ends of said levers being disposed between said body and the heads of said plungers, said heads, when said can-puncturing plungers are fully depressed, being disposed adjacent the outer ends of said levers, manually operable means for rotating said levers to move the outer ends of said levers upward and thereby retract said plungers from the can, said body having a passage adjacent one of said plungers and communicating with the hole produced by that plunger when said plungers are retracted, to serve as a spout for pouring the liquid issuing from that hole when the can is tipped in a direction to lower said spout, said springs being operative, upon release of said means, to move said plungers into positions closing said holes.

7. A device of the class described, comprising a body having a peripheral depending skirt adapted to embrace the upper end of a liquid-containing can, said body having a pair of spaced sharp-pointed plungers adapted to be forced against the can top to penetrate the same and form a pair of spaced holes therein, a third plunger carried by said body, a pair of levers pivoted to said body, one end of each lever being loosely pivoted to said third plunger, the other end of each lever having a lost-motion connection with each of said pair of plungers, said third plunger being operative to turn said levers and thereby retract said pair of plungers free of the holes in the can top, said body having a spout adjacent one plunger of said pair of plungers for discharging the contents of the lower hole when the can is tipped in a direction to lower said spout, and means operative upon release of said third plunger for moving said pair of plungers into positions closing the holes.

8. A device of the class described, comprising a body adapted to be removably mounted on the upper part of a liquid-containing can, said body having a pair of plungers having stems with can-top puncturing points at one end of each, springs disposed between said body and said points and biasing said points against the can top, heads on the other ends of said stems and disposed outside of said body and adapted to be forced by hand to cause said points to puncture holes in the can top, a third plunger carried by said body and including a stem, a head on the latter stem and disposed outside of said body, and means operatively connecting the third stem to the first two stems so that movement of the third plunger in one direction will result in retraction of the first two plungers, said body having a spout adjacent one of the first two plungers to discharge liquid from one of the punctured holes in the can top when the first two plungers are retracted, all of said heads being removable from the respective stems to enable the plungers and springs to be disassembled from said body so that the various parts of the device may be easily washed and cleaned and re-assembled.

9. A device of the class described, comprising a body having means for holding the same in assembly with the

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upper part of a liquid-containing can, said body having a pair of spaced sharp pointed plungers manually forcible against the can top to puncture holes therein, manually operative retracting means carried by said body for withdrawing said plungers, said means being operative by the same hand which holds the can, said body having a spout below the top thereof and immediately adjacent one of said plungers so that liquid may flow directly from the hole produced by said one plunger to said spout when the can is tipped in the direction to lower said spout, while said plungers are withdrawn, and means operative pursuant to release of said retracting means for returning said plungers to positions in which they close the holes in the can.

10. A device of the class described, comprising a body adapted to be removably mounted on the upper part of a liquid-containing can, said body having a pair of plungers having stems with can-top puncturing points on one end of each, springs disposed between said body and said points and biasing said points against the can top, heads on the other ends of said stems and disposed outside of said body and adapted to be forced by hand to cause said points to puncture holes in the can top, a third

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plunger carried by the body and including a stem, a head on the latter stem and disposed outside of said body, and means operatively connecting the third stem to the first two stems so that movement of the third plunger in one direction will result in retraction of the first two plungers, said body having a spout adjacent one of the first two plungers to discharge liquid from the hole produced by said one plunger when the first two plungers are retracted.

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