April 28, 1964 R. V. BURDICK ETAL 3,130,857

CONTAINER WITH SNAP-OFF COVER

Filed June 24, 1963 2 Sheets-Sheet 1

FIG. 1

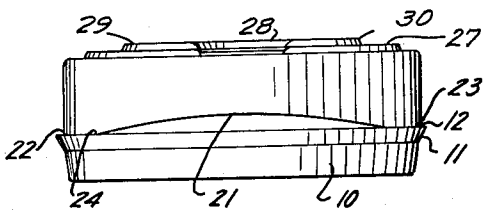
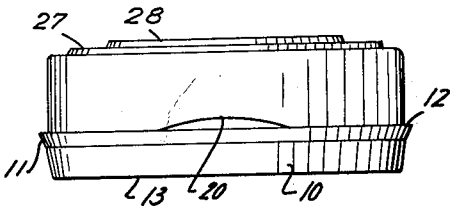


FIG. 2



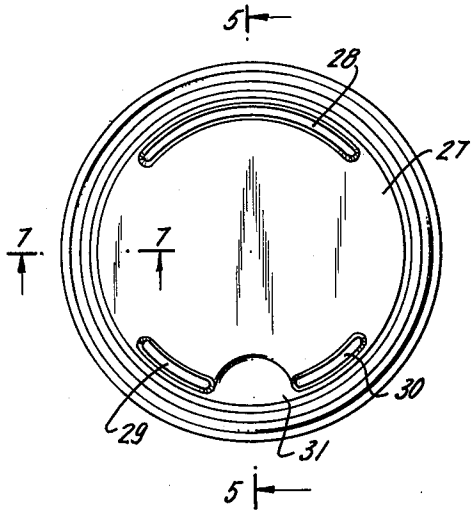


FIG. 3

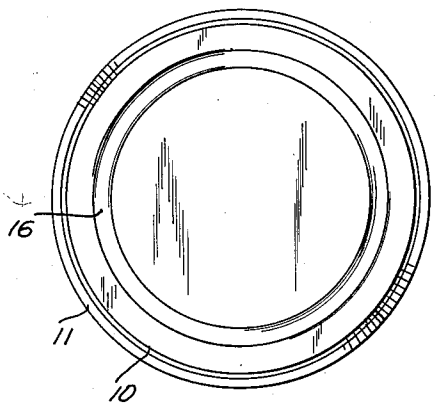


FIG. 4

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FIG. 5

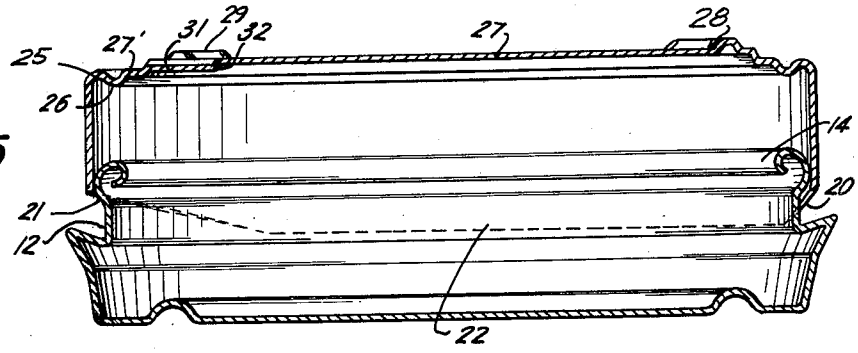


FIG. 6

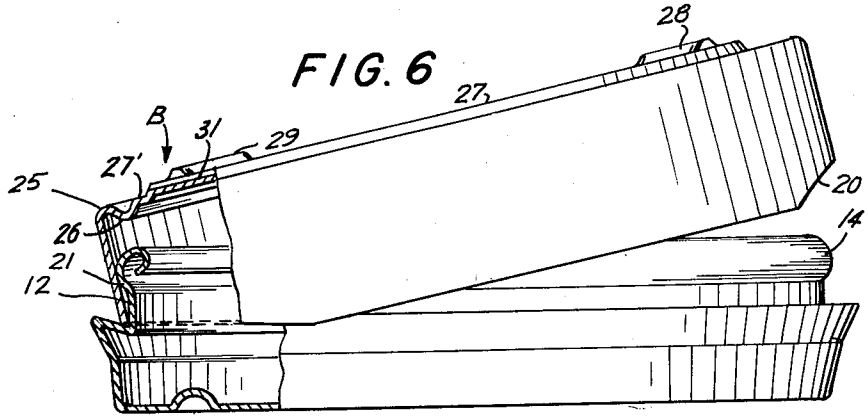


FIG. 7

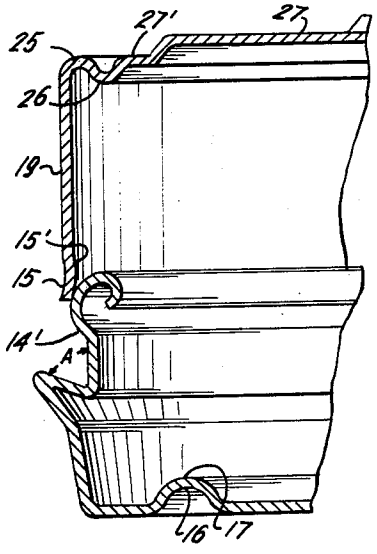
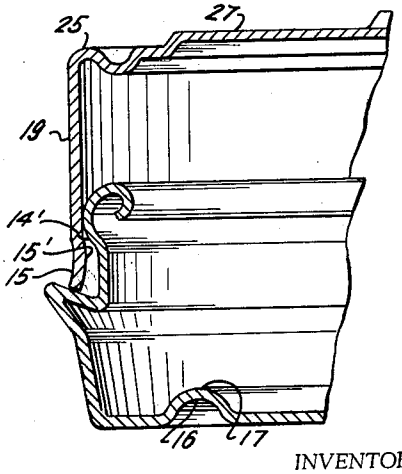


FIG. 8



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United States Patent Office 3,130,857 Patented Apr. 28, 1964

3,130,857

CONTAINER WITH SNAP-OFF COVER

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Filed June 24, 1963, Ser. No. 290,017
6 Claims. (Cl. 220—43)

This invention has to do with boxes of the circular type, made, for example, from relatively thin sheet metal, wherein substantially hermetically to seal semi-solid materials, many of which contain volatiles, such as shoe polishes, waxes, ointments, creams and the like, which it is desired to preserve. Such boxes are disclosed in an earlier Patent No. 2,379,680, issued to one of the applicants herein. The subject application is provided to present an improved design over the type set forth in that patent.

In the above mentioned patent it has been emphasized that boxes of this type, and particularly for such materials as shoe polishes and waxes, have volatile constituents so that such boxes must be designed to maintain a substantially air-tight fit between the cover and the container portion.

Emphasis must always be placed upon maintaining an air-tight fit. The fact that such air-tight engagement between cover and container portion to obtain a substantially hermetic seal is required often makes it difficult and inconvenient to remove the cover from the box. This is true of boxes of the threaded type, not included in this application, where twisting causes too tight an engagement. This is also true in the unthreaded or pry-off type (not included in this application) which requires the use of a special key or coin for opening. The necessity of a hermetic seal results in addition to difficulty in opening such a box, difficulty in closing as well.

The box disclosed herein is of the so-called snap-off cover type. Such a cover provides an air-tight seal in addition to simplified opening and closing. The snap-off cover box disclosed herein provides many new results and advantages over other snap-off cover type boxes. Such new results and advantages will be specifically set forth and will otherwise appear hereinafter by a description of the present invention.

The invention herein disclosed has as its principal object the furnishing of an improved container with a snap-off cover which can be easily removed and replaced to provide an effective air-tight seal.

In addition, it is a further object of the invention to provide such a box which can be manufactured in a minimum of operations.

A container with a snap-off cover embodying the invention and the manner of using the same is described herein with references to the drawings in which:

FIG. 1 is a front elevational view of a box constructed in accordance with the teachings of this invention;

FIG. 2 is a rear elevational view of the box illustrated in FIG. 1;

FIG. 3 is a top plan view of the box illustrated in FIG. 1;

FIG. 4 is a bottom plan view of the box illustrated in FIG. 1;

FIG. 5 is a sectional view taken along the line 5—5 in the direction of the arrows shown in FIG. 4;

FIG. 6 is an elevational view illustrating the "snap-off" or tilting action of the cover to unseat the same, with portions cut away to disclose certain details of construction.

FIG. 7 is a fragmentary elevational view of the box with the cover removed therefrom and in position to be placed thereon; and

FIG. 8 is a fragmentary elevational view of the type shown in FIG. 7 illustrating the cover and container in the completely closed condition with the cover embracing portions of the container in order to sealingly close the box.

In the drawings there is shown a circular box of the type for use in containing semi-solid materials particularly waxes or creams or the like. This box comprises a container portion **10** having an outwardly formed peripheral ledge **11** which provides with the container an upwardly facing channel **12** intermediate the bottom wall **13** and the top peripheral edge **14**, herein shown as being provided with an outwardly expanded, rolled over, beaded edge portion around which the proper seal is effected by engagement with the cover portion described below.

The peripheral ledge **11** and the container portion adjacent thereto form an angle indicated in FIG. 7 by the letter A. As will be explained below in connection with the description of the opening and closing of the cover, it has been found that for proper operation the angle A should lie between a value of 10° and 25°.

The lowermost surface **13** of container portion **10** has formed therein circular channel **16** which is opened downwardly and provides a circular projection **17** within container portion **10**. Channel **16** and projection **17** are concentric with ledge **11** and the outer wall of the container portion. The purpose of channel **16** will be explained below. It should be noted at this point, however, that the channel is open outwardly and the base of the channel forming the projection **17** is within the container portion. With such a configuration, wax or another substance within container **10** will not be rendered inaccessible since projection **17** occupies a minimum of space and the configuration thereof allows access to the wax in the container.

The cover portion or member **18** is provided with a downwardly directed circular skirt **19**. The skirt is straight or of uniform diameter throughout and has no rolled edges or flares or indentations of any kind with the exception of a slightly rolled circular peripheral portion **15**.

The skirt is provided with two cut-out portions **20** and **21**, the former being of greater magnitude than the latter. In between the cut-out portions and opposite from each other the skirt terminates in two peripheral straight edge sections **22** and **23** that are adapted to seat throughout their entire lengths against the ledge **11** and within channel **12** when the cover is placed in sealed engagement with the bottom or container portion of the box. The cover is formed of sheet metal in this particular embodiment and it is contemplated that other resilient materials can be used as well, so that in placing the cover on the bottom portion, as will be explained below, the skirt is readily passed over bead **14** and resiliently engages the same.

When the cover is in position the larger cut-out portion **22**, which preferably is arcuate, has terminal ends which together with the adjacent terminal ends of the straight edges form spaced-apart fulcrum points **24** around which to tilt the cover to unseat the same by pressure in the area of the cut-out portion **21**. The smaller cut-out portion **20** is also arcuate and is of an area insufficient to provide functional fulcrum points where the arcuate portions terminate and join the straight edges opposite the fulcrum points **24**. Such points are not far enough apart to give the functional fulcrum pivotal action required but the cut-out portion **20**, as will be explained below, relieves the tensioning of the skirt in this area whereby tilting or upsetting the cover about the fulcrum point **24** results in the skirt **19** and cut-out **20** becoming disengaged from bead **14** to allow the cover to snap off. Skirt **19** terminates at its upper edge in upwardly directed knuckle **25** which in turn joins downwardly directed knuckle **26** forming the cir-

cular peripheral termination of top surface 27 of the cover. Joining the top surface 27 to skirt 19 by means of oppositely directed knuckles 25 and 26 results in the extremely strong junction point required in order to prevent distortion or damage of the resilient cover from the force required in opening the box as described below.

Top surface 27 is provided with upwardly projecting arcuate walls 28, 29 and 30. Each of these projections has the same radius of curvature. Projection 28 overlies cut-out 20 whereas projections 29 and 30 overlie cut-out 21 and are separated from each other by depressed portion 31 of top surface 27. The depressed portion terminates at one edge at ledge 27' adjacent knuckle 26 and at the other edge in shoulder 32 which is also arcuately formed and extends from one end of projection 29 to an end of projection 30 as shown in FIG. 5. Depressed portion 31 overlies the center of cut-away 20 and is utilized in opening the box. This indentation 31 or "thumb print" in the cover of the can is important since it strengthens the cover and also without such a thumb print a person opening the cover could dent the cover. The depression 31, in effect, is a "pre-denting" of the cover and the location of the print of this depression is important as it insures that a user of the box upon opening will not distort the cover.

Referring now to FIGS. 7 and 8, the ease with which the cover portion can be placed upon the container portion to effect sealing engagement therewith can be seen. In FIG. 7 is illustrated a box with the cover portion thereof in position to be applied to the container. The lower edge of the skirt 19 is in adjacency with bevel 14. The preferred form of this invention is such that the diameter of the circumference of the skirt 19 is slightly less than the outside diameter of the bevel 14. As the cover is drawn from its initial closing position to closing, the portions of the cover above the cut-outs engage the bevel 14 and the resiliency of the material from which the cover is formed allows the skirt to change diameter as it is drawn over the bead 14. As the lower edges 22 and 23 of the skirt engage the bottom portion of the container by becoming positioned within channel 12, the angle of the ledge 11 results in directing the lower edges 22 and 23 of the cover inwardly to insure its disposition within channel 12 and the cover seats readily in channel 12. The box is then in a closed condition and sealed because of the firm manner in which the skirt embraces bead 14.

The rolled portion 15 in the closed condition provides a wedge surface 15' which can engage lower surface 14' of the bead 14 to prevent dislodgment of the cover by an upwardly directed force from within such as may be caused by the provision of a resilient dauber beneath the cover.

The box is easily opened. One desiring to open the box places his finger on flat portion 31 and presses the same downwardly in the direction of the arrow indicated by the letter B as shown in FIG. 6. The placing of the finger and the force in flat part 31 causes the force to be applied directly over the center portion of cut-out 21 resulting in the pivoting of the cover about the point 24 and the skirt in the vicinity of cut-out 20 is raised and allowed to pass over bead 14 due to its resiliency until the uppermost portion of cut-out 20 has cleared bead 14 and the cover opens with a snapping action.

It is noted that the container portion immediately below bead 14 is undercut or of a reduced diameter providing a space for the lower edge of the cover skirt to move into unobstructed by the container during the pivoting open action.

The depressed portion lies directly above the center

of the larger cut-out and applied pressure in the direction of the arrow B will unseat the cover as the ends of the skirt adjacent the first cut-out 21 are pivoted against the ledge and the second cut-out 20 disengages at bead 14. The projections 28, 29 and 30 strengthen the cover as do the peripheral knuckles 25 and 26. The projections 28, 29 and 30 are placed in the cover above the cut-out portions since these are the portions of the cover undergoing the greatest stress during the opening action. Projections 28, 29 and 30 are also formed to be received in a channel 16 of the bottom portion of a like container for stacking purposes.

Thus, among others, the several objects in the invention as specifically aforenoted are achieved. Obviously, numerous changes in construction and rearrangements of parts might be resorted to without departing from the spirit of the invention as defined by the claims.

We claim:

1. In a box of the character described, adapted for use in containing semi-solid materials such as waxes and the like having a top portion and a bottom portion, said bottom portion including a circular bottom, and upwardly extending side wall, a top beaded edge of said side wall, an outwardly formed peripheral ledge intermediate said side wall and extending therefrom upwardly to form an angle therewith in the range of 10° to 25°, a channel formed between said side wall and said ledge, said cover including a circular top surface, a double knuckle formed peripherally of said top surface, a downwardly extending resilient skirt connected at its upper edge to said top surface by said double knuckle, a first cut-out portion of said skirt, a second cut-out portion of said skirt opposite said first cut-out portion, said skirt sealingly embracing said beaded edge with the bottom edge of said skirt disposed within said channel and (a depressed portion of said cover overlying said first cut-out portion) whereby downward pressure on said depressed portion will unseat said cover as the ends of said skirt adjacent said first cut-out portion are pivoted against said ledge and said second cut-out portion is disengaged of said bead.

2. A box in accordance with claim 1 in which upwardly projecting arcuate members are formed in said top surface of said cover above said cut-out portions to strengthen the cover.

3. A box in accordance with claim 1 in which the cut-out portions are arcuate and said first cut-out portion beneath the depressed portion is greater than said second cut-out portion.

4. A box in accordance with claim 1 in which the skirt is cut out so that the peripheral edge thereof is always between the bead and the ledge when the box is closed.

5. A box is accordance with claim 1 in which upwardly projecting arcuate members are formed in the top surface of the cover and the bottom surface of the bottom portion is formed with a circular channel to receive said projections for stacking.

6. A box in accordance with claim 1 in which the lower edge of said skirt in rolled slightly inwardly to provide, in the closed condition of the box, a wedge surface which can engage the lower surface of said bead to prevent dislodgment of the cover by an upwardly directed force applied to said cover.

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