

May 16, 1961

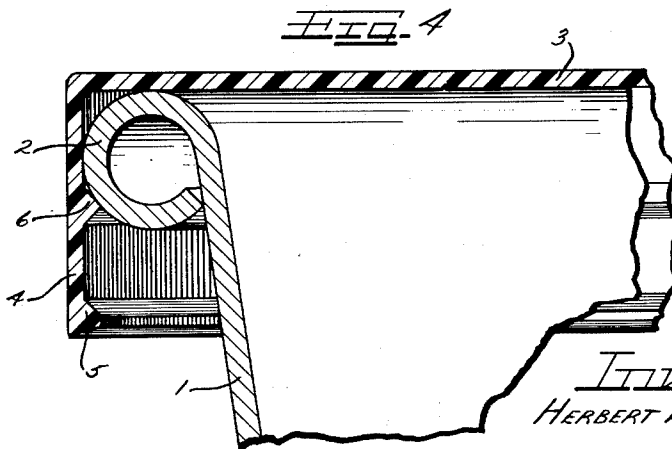
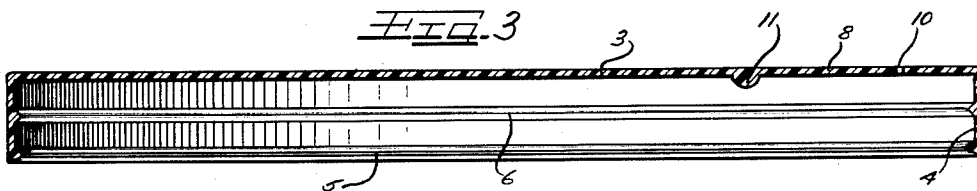
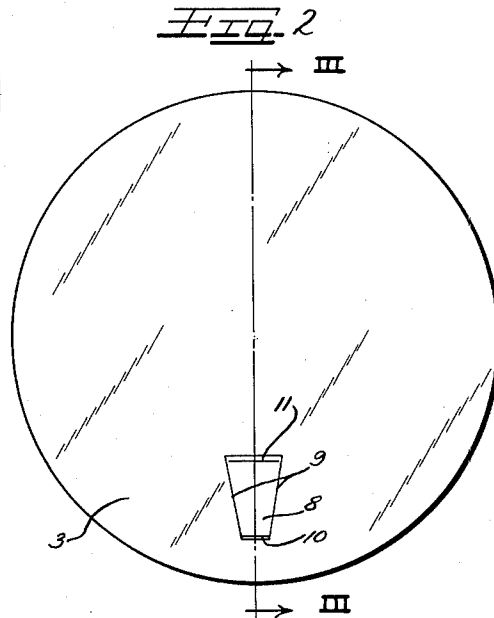
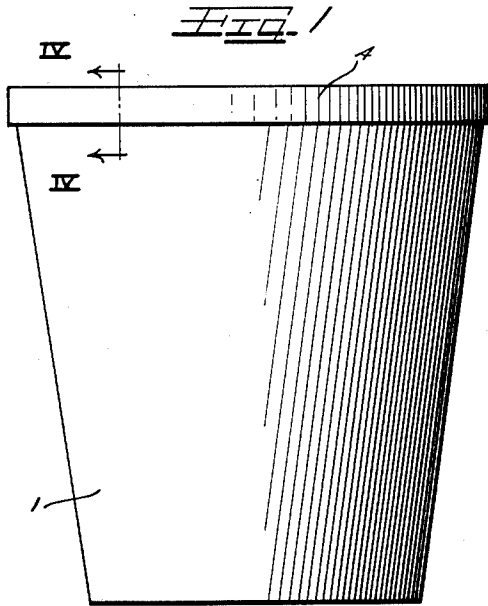
H. L. BENNETT

2,984,381

DEEP SKIRT CONTAINER LID

Filed Sept. 17, 1957

2 Sheets-Sheet 1



Inventor
HERBERT L. BENNETT

By Hill, Sherman, Meroni, Gross & Simpson Attys

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FIG. 5

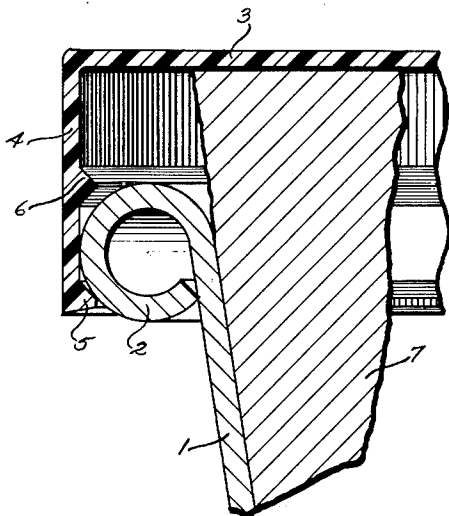


FIG. 6

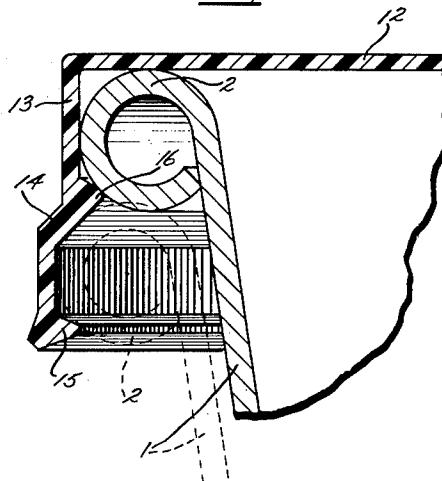


FIG. 7

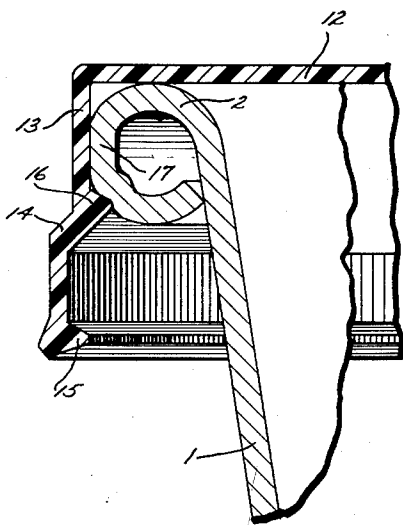
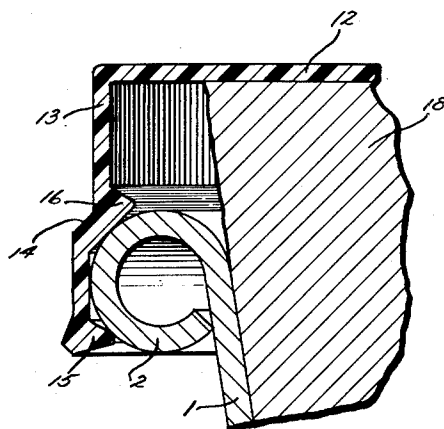


FIG. 8



Inventor
HERBERT L. BENNETT

BY

Hill, Sherman, Meroni, Gross & Simpson

Attys

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DEEP SKIRT CONTAINER LID

Herbert L. Bennett, Easton, Pa., assignor to American Can Company, New York, N.Y., a corporation of New Jersey

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1 Claim. (Cl. 220—60)

This invention relates to improvements in a deep skirt container lid, and more particularly to a lid for covering carry-out soda cups and food containers, and is highly desirable for use in connection with temporary or semi-temporary containers in which a liquid, solid or semi-solid commodity is purchased and carried out for consumption by the user in a different location or while traveling, although the invention will have other uses and purposes as will be apparent to one skilled in the art.

In the past, many and various forms of lids or covers for temporary and carry-out containers have been developed. However, most of these heretofore known covers or lids were prone to become loose or pop off the container upon expansion of the container contents, and frequently this was to the discomfiture of the consumer, and many times resulted in soiling the clothing of the consumer, the interior of an automobile, etc. In most cases it is desirable to use what is generally termed a coverall lid or closure, namely one which covers a container that may be filled to the brim with commodity, and also the brim of the container even though that brim may have a rim bead therearound, for sanitary reasons. Heretofore, coverall lids of such character allowed insufficient room for expansion of the contents of the container, and all too frequently the lid became loosened from its proper engagement with the container, permitting leakage or spilling. In other instances, lids of the character made heretofore did not compensate satisfactorily for variations in rim diameter of the containers, which variations cannot be avoided consistent with economical manufacture, particularly when the containers are made of paper or similar material. With covers known heretofore having deep skirt portions with means thereon for engaging a rim bead on a container, those means most frequently engage the rim bead at substantially its lowest point, well under the bead, and with such an arrangement, variations in diameter frequently resulted in a loose fitting lid or cover right from the outset.

With the foregoing in mind, it is an important object of the instant invention to provide a container lid or cover designed to compensate automatically for expansion of the commodity in the container, while retaining an effective grip upon the container.

Another object of this invention is the provision of a container lid or cover designed to compensate for variations in rim diameter of the container, and still maintain a tight grip upon the container.

It is also an object of this invention to provide a container lid or cover capable of automatically compensating for both an expansion of the contents of the container and variations in rim diameters of containers.

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A further feature of the invention resides in the provision of a container lid having spaced container gripping means in the skirt thereof, one gripping means operating until and in the event expansion of the container contents occur, when the other gripping means will become effective to maintain the cover on the container.

Still another feature of the instant invention resides in the provision of a container lid or cover having a relatively deep skirt therearound with vertically spaced gripping means in the skirt, one set of gripping means being of larger diameter than the other, whereby the cover may be held onto a container having a small diameter with one set of gripping means, and a container with a larger diameter may be held by the other set of gripping means.

It is also a desideratum of this invention to provide a container lid or cover of the "snap-on" variety, comprising a diaphragm with a depending skirt, there being riblike gripping means at the lower end of the skirt, and another riblike gripping means spaced intermediately the skirt and the diaphragm, only one set of gripping means being effective to hold a cover on the container at a time.

Also an object of this invention is the provision of a container lid or cover molded from a thermoplastic material and comprising a diaphragm with a depending annular skirt having vertically spaced annular ribs extending inwardly from the skirt for biting engagement with a portion of the container adjacent the mouth thereof.

Still a further object of the invention resides in the provision of a coverall type container lid having a skirt depending from a covering diaphragm, there being spaced sets of gripping means in the skirt, each of which is designed to engage the rim bead of a container well above the lowest point of the rim bead, and still below the point of maximum diameter of the rim bead in a lateral plane.

While some of the more salient features, characteristics and advantages of the instant invention have been above pointed out, others will become apparent from the following disclosures, taken in conjunction with the accompanying drawings, in which

Fig. 1 is a side elevational view of a temporary container provided with a lid or cover embodying principles of the instant invention;

Fig. 2 is a top plan view of the lid alone;

Fig. 3 is an enlarged transverse vertical sectional view, taken substantially as indicated by the line III—III of Fig. 2, looking in the direction of the arrows;

Fig. 4 is a greatly magnified fragmentary sectional view, taken substantially as indicated by the line IV—IV of Fig. 1;

Fig. 5 is a view similar in character to Fig. 4, but showing how the cover acts when the contents of the container expand;

Fig. 6 is a magnified view of the same general character as Fig. 4, but showing a slightly different construction of the cover;

Fig. 7 is also a magnified fragmentary vertical sectional view, illustrating a different manner of use of the cover of Fig. 6; and

Fig. 8 is a view similar in character to Fig. 7, showing the action of the cover when the contents of the container have expanded.

As shown on the drawings:

The instant invention is illustrated in connection with a container 1, which, as seen clearly in Fig. 4, has an outwardly rolled rim bead 2 around the mouth end

thereof. Such a container may be made of paper, waxed, lined with a thermoplastic, or otherwise treated depending upon the intended usage.

Both modifications of the lid or cover illustrated in the drawings may be molded from a thermoplastic material, and one satisfactory method of making the cover is to injection mold the same from a high impact polystyrene which will provide a substantially transparent lid. In some cases, a rubber content may be added to the polystyrene which will produce a somewhat more flexible lid that is translucent. In either case, while the lid is somewhat flexible, it is relatively rigid in comparison to the container and particularly the mouth end of the container. Each lid is preferably molded in one single piece.

The first form of the invention, seen in Figs. 1 to 5 inclusive, embodies a lid of the coverall type, that is a lid closing a container with the container filled to the brim, the lid extending over the top of the container and downwardly over the rim bead 2. The lid embodies a diaphragm 3 from which an annular skirt 4 depends. This skirt is relatively deep, being substantially twice as long as necessary for engagement with the rim bead of the container.

Adjacent the lower end of the skirt is an inwardly extending rib 5, and intermediate the rib 5 and the diaphragm 3 is another rib 6. The ribs 5 and 6 are similar in structure, each having an upwardly sloping underface and a downwardly sloping upper face which merge in substantially a knife edge for biting engagement with the rim bead of the container. Preferably, these ribs are fully annular extending entirely around the inner face of the skirt.

In application, it is a simple expedient to press the lid onto the container, until the rim bead of the container is engaged by the upper retaining rib 6, as shown in Fig. 4. It will be noted that the retaining rib 6 does not contact the lowest point of the rim bead 2, but does contact that rim bead below the maximum diameter of the rim bead, taken in a median lateral plane therethrough. Consequently, a firm grip is established on the rim bead by the rib 6, which tends to bite into the bead.

In Fig. 5, I have illustrated the same container with the same lid thereon, but in this instance the container has been filled with a commodity 7 such as ice cream, which has expanded beyond the mouth of the container. Heretofore, such expansion of the container contents would force the lid off the container. With the instant lid, however, the expansion has forced the retaining rib 6 out of engagement with the rim bead 2 of the container, but the retaining rib 5 has taken over, as illustrated in Fig. 5, and retains the lid firmly on the container in the same manner it was held by the retaining rib 6 prior to the expansion of the contents. Some very unusual circumstance would have to prevail in the event the contents of the container expanded sufficiently to also force the retaining rib 5 out of engagement with the rim bead.

In the event the lid is to be utilized on soda and soft drink cups, it is sometimes desirable to provide a straw slot in the lid so that the straw may be utilized to drink the contents of the container without removing the lid and risking spillage. Such a straw slot is desirable particularly where the contents of the container are consumed while traveling in a vehicle. Such a straw opening may be provided by way of a push-out tab 8 defined by weakened sidelines 9 of less thickness than the remainder of the diaphragm 3. At the free end thereof, there may be a slight slit in the diaphragm between the diaphragm proper and the end of the tab as indicated at 10, to further facilitate pushing out the tab, while at the fixed end or attached end of the tab, there is a thickened hinge line as indicated at 11. With this structure, it is simply necessary to press with a finger or even with the straw on the tab adjacent the slit 10, and the sidelines 9 will break, permitting the tab to be bent downwardly and

the straw to be inserted in the container. When the tab is not used, the diaphragm 3 is imperforate throughout.

In Figs. 6, 7 and 8 I have illustrated a slightly different form of container lid embodying a diaphragm 12, a skirt 13 which is expanded as at 14 in the lower portion thereof, and this skirt has retaining ribs 15 and 16 of the character above described, but owing to the expansion of the skirt, the retaining rib 15 has a larger diameter at the engaging edge thereof than does the rib 16.

The construction shown in Fig. 6 enables the lid to compensate for manufacturing variances in the size of the rim beads on the containers. Close tolerances are not possible in keeping with economic production when making containers of paper or similar material. Consequently, containers of the same capacity may have a distinct variance in the size of the rim bead. With the lid shown in Fig. 6, a container having a relatively small diameter as shown in the full lines may be engaged by the upper rib 16 when the lid is pressed on the container. However, a container of the same capacity, but having a variance in the form of a rim bead of larger diameter, is shown in dotted lines, and in that event, the lowermost retaining rib 15 would engage the rim bead of the container. With this construction of lid, there is always a positive engagement of the lid on the container, regardless of variances in size of the containers at the mouth end.

In Figs. 7 and 8, I have shown how the lid of Fig. 6 may be utilized to obtain the advantages of the lid previously described. Recalling that the container is more flexible than the lid, it is possible to force the lid over a larger container rim bead until the rib 16 establishes the holding engagement, as seen in Fig. 7. This may result in a slight flattening of the rim bead or distortion of the same, as indicated at 17, but the engagement of the rib with the bead will therefore be more positive.

When a lid is so forced on the container, and the contents 18 of the container expand as shown in Fig. 8, the expansion may be of sufficient power to force the rib 16 out of engagement with the container rim bead, in which event the rib 15 will take over since the rim bead 2 will expand to its former position and size, approximately. In any event, there will be sufficient engagement of the rib 15 with the bead 2 to insure firm holding of the cover in place.

The expanded lower portion of the skirt aids materially, by way of lesser pre-compression, in getting the container bead into the upper portion of the skirt where the bead is engaged by the rib 16. Of course, the sloping underfaces of the ribs also facilitates forcing them over the container bead.

From the foregoing, it is apparent that I have provided a simple and economical form of container lid having double container engaging means, whereby the lid remains firmly secured to the container even though the contents of the container expand and force off one of the engaging means. At the same time, the lid effectively compensates also for manufacturing variances in container size. The lid is economical to manufacture and is replaceable on the container in the event the contents of the container are not fully consumed and it is desired to store the remainder in a refrigerator. Further, the lid is pleasing in appearance, and denotes the character of contents in the container, whether the lid be transparent or translucent.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention.

I claim as my invention:

In combination with a relatively flexible food container having an outwardly disposed hollow annular bead surrounding the mouth of said container, the improvement which comprises a polystyrene two-position cover for sealably closing the container mouth during inversion of said container and upwardly movable relative to said container during expansion of foods in said container, said lid comprising a flat diaphragm portion completely over-

lying the container bead and an integral annular skirt portion depending downwardly from said diaphragm portion at a right angle thereto and having a cylindrical uninterrupted outer side surface, said skirt portion being provided with an inner side surface having an upper container bead engaging rib of generally triangular cross-sectional configuration downwardly spaced from the lid diaphragm portion, said inner side surface of the lid skirt portion having a lower container bead-engaging rib at the lower end of the skirt portion of generally triangular cross-sectional configuration having a flattened apex to provide a cylindrical surface for facilitating initial movement of the lid over the container bead, the extreme outer diameter of the container bead diametrically across the container being substantially the same as the inner diameter of the skirt portion between said ribs and between the upper rib and the diaphragm portion so that the container bead and lid make line sealing contact, along the upper rib, inner diameter of the skirt portion and under-surface of the diaphragm portion when the lid is in a lower position prior to expansion of foods in the con-

tainer, and along the lower rib and along the inner diameter of the skirt portion when the lid is in an upper position after expansion of foods, whereby an effective seal is provided in either of said upper and lower positions.

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