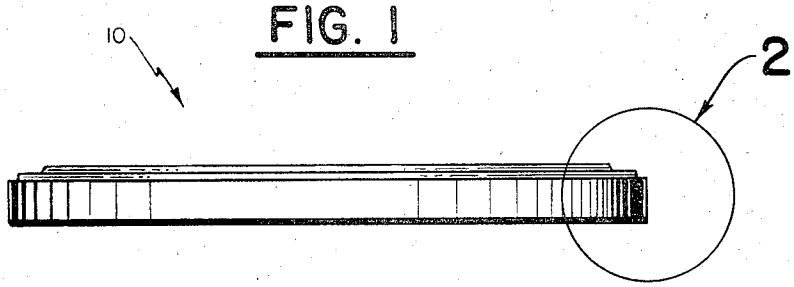
Jan. 14, 1969 R. E. WHALEY 3,421,653

CONTAINER CLOSURE

Filed April 11, 1967

FIG. 1



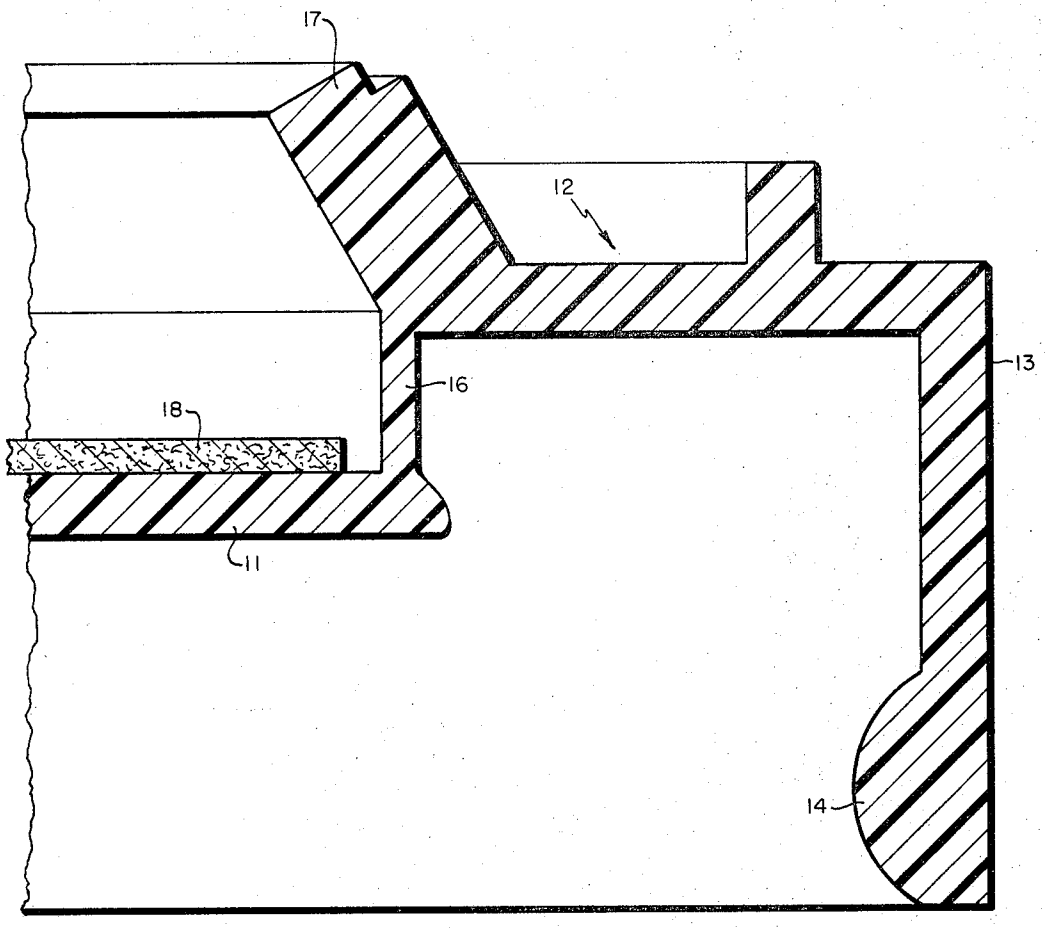


FIG. 2

Robert E. Whaley
Inventor
by Porter & Meyer
Attorneys

United States Patent Office 3,421,653 Patented Jan. 14, 1969

3,421,653

CONTAINER CLOSURE

Robert E. Whaley, 779 Massachusetts Ave., Lunenburg, Mass. 01462

Filed Apr. 11, 1967, Ser. No. 630,010
U.S. Cl. 220—60 2 Claims
Int. Cl. B65d 43/10

ABSTRACT OF THE DISCLOSURE

A one-piece, snap-on container closure of the type adapted for use with an open top container. The closure which is preferably formed of a flexible thermoplastic material is provided with a peripheral shoulder adapted to overlie the bead of the cooperating container, a downwardly depending skirt on the outer edge of the shoulder adapted to engage the outside of the cooperating container, and a depressed center panel. At the inner edge of the shoulder adjacent the depressed center panel there is provided a continuous integral upwardly and inwardly extending flange providing a restricted opening to the depressed center panel and adapted to mechanically retain in the region adjacent the depressed center panel a separate planar insert having substantially the dimensions of the depressed center panel and preferably formed of paper board.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to a one-piece, snap-on container closure formed preferably by molding from a flexible thermoplastic material such as low density polyethylene. The closure is of the type adapted to receive an insert on its upper surface, such as a printed paper board insert and for this purpose is provided with a depressed center panel to receive the insert and with an integral continuous upwardly and inwardly extending flange surrounding the depressed center panel to retain the insert.

Description of the prior art

Open top containers have become popular for a variety of purposes including particularly frozen products, such as ice cream, and the like. These containers are provided with snap-on closures which can be removed easily to gain access to the contents of the container. Such containers have become popular in the marketplace because of the reuse value to the consumer. Once the original contents have been removed from the container the consumer can and does reuse the container for a variety of purposes, such as, for example, for storing leftovers.

Experience has shown that the consumer places considerable value in this reuseability feature and will, where he or she has the choice, choose between two competing products of equal quality at an equal price on the basis that one such product is packed in a container capable of being conveniently reused, and the other is not. But even among reuseable containers the preference of the consumer quite decidedly is toward one where the original product brand identification can readily be removed before such reuse over one where such removal is either difficult or impossible. Thus a container where the product and brand identification is provided solely on a removable paperboard insert will be selected over one where this product and brand identification is either printed on or provided by means of a label adhesively secured to the container.

The problem then is to provide a means associated with the container which permits the easy insertion of an insert of paperboard or the like, which insures that the insert

will remain securely in place during all phases of packaging, distribution and sale, and even during the period of initial use by the consumer, and yet will permit the insert to be removed easily by the consumer after the period of initial use and before reuse.

One suggestion for such means is disclosed in Crisci U.S. Patent 3,176,868. This patent discloses a closure or cover which has a flat horizontal body portion above which projects a concentric ring or flange having a plurality of inwardly directed protrusions spaced above said body portion so as to form a space for the insertion of an insert. The insert if formed from a relatively inflexible material, such as paperboard, and if properly sized so that its outer edge lies immediately against the inner edge of the upstanding ring, will be held in place by the inwardly directed protrusions. The problem with the closure disclosed in Crisci U.S. Patent 3,176,868 comes from the fact that paperboard from which the insert is normally made, and the thermoplastic material, such as polystyrene or polyethylene from which the cover is made, have drastically different temperature coefficients of expansion. When the temperature of the combination is reduced from room temperature to the below freezing, or even below 0° F. temperature used for the storage of frozen foods, the paperboard insert either retains the same size or even expands in diameter depending on the moisture content of the paperboard while the plastic cover shrinks considerably in size. Thus if the insert is sized to cooperate with the retaining ring on the closure at the temperatures used for the storage of frozen products, the insert will be so loose as to fall out of the cover at or near room temperature. Conversely if the insert is sized to cooperate with the retaining ring on the cover at room temperature the insert will either distort the retaining ring and knock off the inwardly directed protrusions, or will itself be distorted out of shape depending on the relative strength of the elements when the container is chilled to the temperatures employed in the storage of frozen products. Under any of these circumstances there is a real danger that the insert will become separated from the parkage during storage or handling leaving the package unmarked and hence unidentifiable. Even when this does not happen the insert becomes distorted out of shape making the package esthetically displeasing and hence relatively unsaleable, especially in the retail market.

SUMMARY OF THE INVENTION

It is the object of this invention to provide means in a one piece snap-on container closure for retaining a paperboard insert thereon throughout the entire range of temperatures to which the closure may be subjected without any reasonable possibility that the insert can become separated from the closure under normal conditions of handling, while at the same time permitting the easy insertion and the easy intended removal of the insert while the closure is at room temperature. Specifically these means include providing the closure with a depressed center panel and providing an upwardly and inwardly extending continuous integral flange on the inner edge of the shoulder of the closure surrounding the depressed center panel and extending thereover. These and other objects of this invention will better be understood from the drawings and from the detailed description which follows.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing:

FIG. 1 is an elevation of the container closure of the present invention.

FIG. 2 is an enlarged elevation in section of the marginal portion of the closure particularly within the area 2 of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The one-piece, snap-on closure of the present invention indicated generally at **10** comprises a depressed center panel **11** and a shoulder portion **12**. In common with all closures of this type a downwardly depending integral skirt **13** is provided at the outer edge of shoulder **12** and is adapted to engage and cooperate with the outside of the wall of a cooperating container. The inner side of skirt **13** is provided with a conventional inwardly extended beaded portion **14** near the bottom thereof. In common with all such closures the shoulder portion **12** is designed to extend over the top of the side wall of the cooperating container with the depressed center panel **11** located within the walls of the container. It will be understood, of course, that while the drawing shows, and this description may make reference particularly to a circular closure designed to cooperate with a generally cylindrical container, the particular shape of the container or of the closure has no bearing on the invention, and the closure of the present invention could equally well be formed to any desired overall shape, such as, for example, oval or generally rectilinear to cooperate with a container having a cross-section of that shape.

Referring then particularly to FIG. 2 where the elements of the present invention are shown in magnified detail, the top of shoulder **12** is provided with a stacking ring **15**, an upstanding flange about 1/16 of an inch in height located at a position to engage bead **14** of skirt **13** of the next higher closure **10** in a stack of closures **10**. The function of stacking ring **15** is to maintain the alignment of the closures **10** in a stack of closures and to separate successive closures slightly so that the bottommost closure in a stack of closures can readily be separated from the remainder of the stack in automatic closure applying machinery.

Center panel **11** is depressed in practice about 1/8 of an inch below the level of shoulder **12** and the outer edge of depressed center panel **11** is connected to the inner edge of shoulder **12** by means of vertical side wall **16**. Continuous integral upwardly and inwardly extending flange **17** is provided on the top surface of shoulder **12** immediately adjacent vertical side wall **16** in the sense that the inner edge of flange **17** is an extension of the inner edge of side wall **16**. In the particular embodiment shown flange **17** extends about 1/8 of an inch above the top surface of shoulder **12** and into the space overlying depressed center panel **11** a distance of about 3/32 of an inch. In other words, the innermost corner of flange **17** is located at a point a little less than 1/8 of an inch above the top of shoulder **12** and about 3/32 of an inch inside of (i.e., away from skirt **13**) the vertical projection of the inner edge of vertical side wall **16**.

The purpose of inwardly and upwardly extending flange **17** is to provide an entrance of restricted size into the region above depressed center panel **11** for inserts such as the insert indicated at **18**. Thus in the particular embodiment shown the diameter of the entrance to the region above depressed center panel **11** formed by inwardly and upwardly extending flange **17** is approximately 3/16 of an inch less than the diameter of center panel **11** as determined by the inner edge of vertical side wall **16**. The particular closure illustrated in the specific embodiment is a closure designed for a one-pint jar and has an overall diameter of 4¾". In this particular closure the diameter of the opening to the region above center panel **11** as defined by the inner corner of flange **17** is 4" and the cardboard insert **18** has a diameter of 4 1/16". Since the cardboard insert **18** has only a slightly larger diameter than the diameter of the opening defined by the inner corner of flange **17** insert **18** will snap into and out of the space above center panel **11** very easily. However, since flange **17** is continuous (i.e., uninterrupted) even this slight difference in diameters makes it impossible for insert **18** once inserted to pop out no matter how roughly closure **10** is handled. Since the only way that insert **18** can readily be removed is by manipulating its edge as with a knife, a small cutout portion is, in practice, provided at one point on its edge to permit removal by manipulation with a finger. The diameter of center panel **11** as defined by the inner edge of cylindrical side wall **16** is sufficiently larger than the diameter of insert **18** at room temperature that due to the differential contraction when chilled, as explained above, the edge of insert **18** comes into firm contact with side wall **16** at the temperature employed in the storage of frozen products. Under this condition it becomes virtually impossible to remove insert **18** even intentionally, so that there is virtually no possibility that the identifying insert, when used in a container for frozen products, could be separated from the closure either intentionally or otherwise.

It will be understood, of course, that the particular dimensions given here are merely by way of illustration. The desired condition is to provide a degree of undercut beneath inwardly extending flange **17** sufficient to accommodate insert **18** at the coldest temperature to which the closure is expected to be exposed to with the opening formed by flange **17** being smaller than insert **18** even at the highest temperature to which closure **10** is expected to be exposed. Obviously, therefore, the necessary degree of undercut is increased as the dimensions of closure **10** and of insert **18** are increased, or as the expected range of temperatures is increased, while a lesser degree of undercut would be satisfactory for a smaller closure or insert or for a more restricted range of temperatures.

Closure **10** is preferably formed of a somewhat flexible thermoplastic material such as, for example, low density polyethylene. The preferred method of making closure **10** is through a normal injection molding process. It has been found that the particular specific configuration shown herein can be made of low density polyethylene in a simple two part mold without any difficulty in stripping the formed closure **10** from the mold. The particular angle at which flange **17** departs from the upper surface of shoulder **12** is of no particular importance since the function of flange **17** is primarily to provide a restricted opening into the region immediately above center panel **11**. It has been found, however, that if flange **17** extends somewhat upwardly, as well as inwardly, closure **10** can be removed from a simple mold readily, whereas it would be anticipated that if flange **17** extended horizontally or downwardly a more complex mold would be required.

I claim:

1. In a one-piece, snap-on container closure formed from a flexible thermoplastic material and adapted for use with an open top container,

a peripheral shoulder adapted to overlie the bead of a cooperating container,

a downwardly depending skirt on the outer edge of said shoulder,

said skirt having an inwardly extending beaded portion near the bottom thereof,

said skirt and said beaded portion adapted to engage and cooperate with the outside of the wall of said cooperating container,

an upstanding flange located on said shoulder at a position to engage the beaded portion of the skirt of the next higher closure in a stack of said closures to maintain the alignment of said closures in said stack of closures,

a downwardly depending sidewall portion at the inner edge of said shoulder at a position within the body portion of said cooperating container,

a depressed center panel extending generally parallel to said shoulder from said side wall portion across said closure,

and an integral upwardly and inwardly extending flange at the intersection of said shoulder and said downwardly depending side wall portion,

said flange providing a restricted opening to said de-

pressed center panel and adapted to mechanically retain in the region adjacent said depressed center panel within said side wall portion a separate planar insert having a lesser dimension than the dimension of said depressed center panel.

2. In combination an open top container, the one-piece, snap-on closure as claimed in claim 1 and a planar insert in the region adjacent the depressed center panel of said closure.

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JAMES B. MARBERT, *Primary Examiner.*