

March 16, 1965

Z. L. CSERNY ET AL

3,173,571

PACKAGE

Filed June 10, 1963

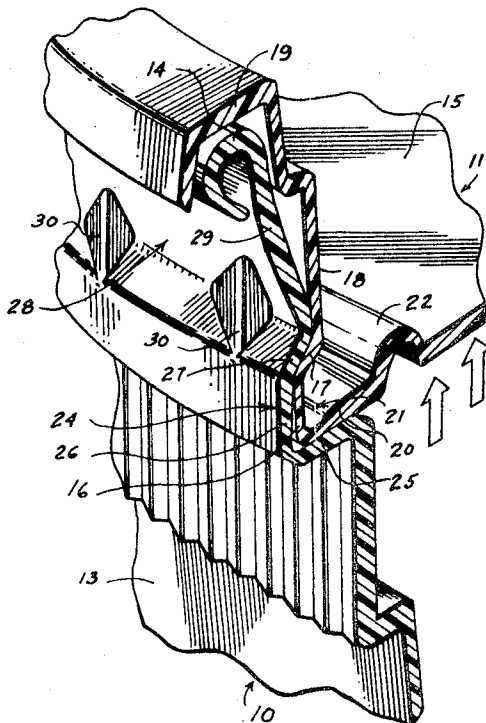


FIG. 2

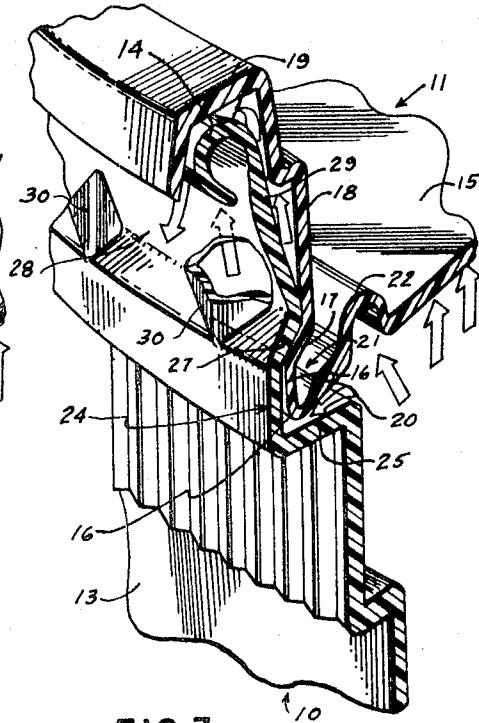


FIG. 3

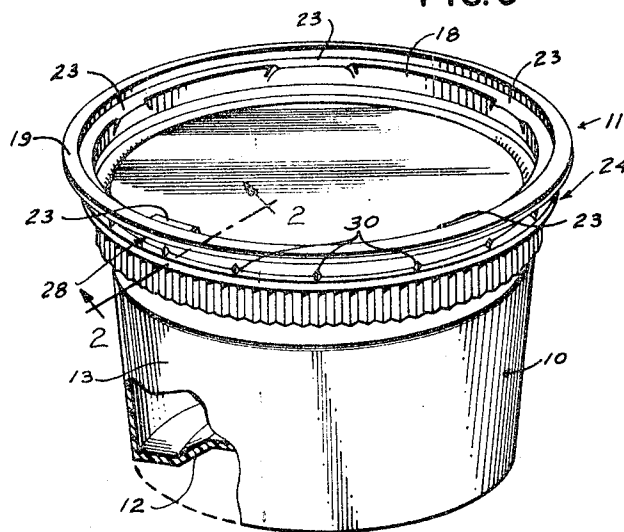


FIG. 1

INVENTORS
ZOLTAN L. CSERNY
THOMAS H. EYLES
BY *George A. Ordway*
Lowry E. Simon
ATTORNEYS

1

3,173,571
PACKAGE

Zoltan L. Cserny, Shrewsbury, and Thomas H. Eyles,
Leominster, Mass., assignors to Foster Grant Co., Inc.,
Leominster, Mass., a corporation of Delaware
Filed June 10, 1963, Ser. No. 286,698
3 Claims. (Cl. 220-44)

This invention relates generally to packages of the container and removable snap-on closure type and, more particularly, to a package wherein a positive hermetic, sanitary seal between the closure and the container is maintained at all times while the closure and container are in assembled relation and which, as occasion requires, simultaneously permits self-venting of gas from the container with the closure still maintained in a held relationship thereupon.

Containers of this character are used extensively for packaging a wide variety of comestibles amongst which, and for example only, is cottage cheese. This and other foodstuffs contain gas-generating bacteria which continue to "work" and thereby generate gas following the packaging and sealing of the cheese within the container. Heretofore, in packages of the character under consideration, when fabricated of paperboard stock because of the separate bottom and sidewall and seamed joint construction of the latter such post-packaging-generated gas has escaped in various modes as either through the seam in the wall or at the joint between the bottom and the sidewall, or both.

Of course, it is highly desirable in packaging foodstuffs to provide a container which will hermetically seal its contents from atmosphere. Presently, as is well-known, the packaging industry has turned strongly to the use of plastics in lieu of paperboard stock. With plastic materials such as polyethylene, or polystyrene, the container is formed in a one-piece construction, i.e., the bottom merging integrally into the sidewall and the latter having no seam therein. This one-piece, seamless construction gives rise to the problem of making special provisions for the escape of any post-packaging gas which may be generated by the particular foodstuff packaged within the container. Absent the provisions of a venting or porting means for containers of the character under consideration when such are formed of plastic materials in one continuous piece results in great likelihood of the lid being forcibly blown off the container, a crack occurring in the package, or at the least unsightly deformation thereof—especially when the packages are stacked, one upon the other, in the customary space-saving merchandising array.

Accordingly, it is an object of the present invention to provide a package of the class described which is self-venting to permit the unidirectional escape of gas generated by its contents while maintaining its closure member in assembled relation with respect to the body of the container.

A further object of the invention is to provide a snap-on lid type of container in which a hermetic seal is effectively maintained between the closure member and the container, the lid or closure member may be readily removed by the user for access to the container's contents and, in the interim, is self-venting at all times to permit escape of gas in a one-way or bypass valving manner.

A still further object of the invention is to provide in a snap-on lid and body type container of the class described a co-acting, channel-bead-sealing arrangement which is so designed and constructed as to dispense with the necessity of providing any especially formed elements in association with the channel and bead sealing parts per se to effect a fulcruming action therebetween for permitting the escape of gas from the container.

Another object of this invention is to provide a package of the class described which is rugged, durable, simple in

2

design and construction, adapted to be inexpensively mass produced, filled and closed-off, on presently existing high speed machines.

Other objects and advantages of the invention will become apparent as the description proceeds and the invention is not to be construed or limited to the exact form therein shown and described other than by the appended claims, reference now being had to the figures of the accompanying drawing wherein like reference numerals indicate like parts.

In the drawing:

FIG. 1 is a perspective view of the container with the closure member mounted in sealing relation thereon, a portion of the container being broken away to show its bottom;

FIG. 2 is a cross-sectional, greatly enlarged, fragmentary perspective view taken substantially along the line 2-2 of FIG. 1; and

FIG. 3 is a view similar to FIG. 2 but showing the closure member flexed upwardly by gas pressure generated within the container, certain parts being broken away for clearness.

Referring to FIG. 1, the package comprises the body or container, generally indicated at 10, and an interfitting snap-on closure member or lid, generally indicated at 11. Container 10 may be cylindrical in form as shown and has a bottom 12 which merges integrally at its periphery with a surrounding sidewall 13.

Bottom 12 may be, and preferably is, recessed a slight distance inwardly and upwardly from its periphery as clearly shown in FIG. 1; such recess providing clearance for accommodating any bulge which may occur by gas-pressure, upward flexing of the lid of the next lower container in a stack. The upper end of the container is open and terminates in a circumferential rim 14 (FIGS. 2 and 3). Lid 11 is relatively shallow and has a flat flexible body portion 15. Circumferentially of body portion 15, lid 11 is formed with a slightly angularly, upwardly and outwardly projecting wall section 16 which merges at its upper end with an inwardly and upwardly projecting portion 17, which, in turn, merges with a vertically upstanding wall section 18. The upper end of wall section 18 is provided with a circumferential, re-entrantly formed, recessed rim 19 adapted to spacedly receive and sanitarily shield rim 14 of container 10. At that point where wall section 16 merges with body portion 15 the cross-sectional thickness of the lid is attenuated as clearly shown in FIGS. 2 and 3. This attenuation assists in obtaining a desired fulcrum action and in permitting an easy flexing action of body portion 15 of lid 11 as will hereinafter appear. Immediately adjacent wall section 16, the lid is formed with a normally horizontally disposed, sealing land 20. Land 20, wall section 16 and projection 17, together, form on lid 11 an outwardly projecting bead, generally indicated at 21. Inwardly from land 20 a slight distance and extending circumferentially around body portion 15 of lid 11 is an upwardly projecting rib 22 which facilitates mounting the lid 11 upon container 13 and which can further aid centered stacking of one package upon another. Internally of rim 19 (see FIG. 1) and slightly below the upper surface thereof, there is formed a series of spaced-apart inwardly projecting, angularly disposed, finger pieces 23, which facilitate centered stacking. By grasping any one of finger pieces 23 and the external surface of rim 19, the lid may be readily and easily removed from container 10.

Bead 21 is adapted to fit snugly within an outwardly projecting channel generally indicated at 24 formed in sidewall 13 of container 10. Channel 24 lies a slight distance downwardly from rim 14, said downward distance being slightly less than the distance depthwise of the undersurface of the depressed body portion 15 of the lid from the undersurface of the interior of rim 19 to provide gas

passage space between the rims. Channel 24 is substantially of a cross-sectional configuration corresponding to the cross-sectional configuration of bead 21. A horizontally disposed bottom portion 25 of channel 24 forms a primary sealing land which is adapted to be engaged by the horizontally disposed, sealing land 20 of the lid. At its outer end bottom portion 25 merges with an upstanding, vertically disposed, wall section 26, the inner surface of which, lies in slightly spaced relation from the outer, angularly disposed surface of wall section 16 of lid 15. The upper end of section 26 merges with an inwardly and upwardly angularly disposed portion 27 which corresponds to the inwardly and upwardly projecting portion 17 of lid 15 and forms a secondary sealing land. Portion 27 forms the lower part of an inwardly projecting groove, generally indicated at 28, and extending circumferentially of the container. The upper portion of groove 28 merges gradually with an outwardly flaring wall section 29 which, in turn, merges with rim 14 at the open end of the container.

Referring particularly to FIGS. 2 and 3, it will be seen that when lid 11 is mounted upon container 13, a space communicating with atmosphere is provided between rims 14 and 19 and wall sections 18 and 29. It will be further seen that bead 21 is press-fittedly received within channel 24 with the undersurface of its sealing land 20 in tight-fitting, primary sealing relationship with the upper surface of land 25 and with the external surface of portion 17 press-fittedly engaging the internal surface of portion 27, the interengagement of the surfaces of portions 17-27 and land 20-25 forming secondary and primary seals, respectively. The secondary seal extends downwardly a slight distance and includes contiguous portions of wall sections 16-26.

A series of porting flutes 30 are formed in spaced-apart relation around the inwardly projecting groove 28. The lower ends of the internal surfaces of flutes 30 terminate substantially at a point above the lowermost portion of the secondary seal. The flutes extend transversely of the groove and terminate at their upper ends so that their interiors are in direct communication with the space existing between wall section 18 of lid 11 and outwardly flaring wall section 29 of container 10.

Upon any gas being generated by food contents packaged within the container, an upward pressure is exerted upon the body portion 15 of lid 11. Such pressure flexes the lid upwardly centrally thereof while a fulcruming action occurs between the interengaging lands 20 and 25. The fulcruming action progresses gradually, outwardly of channel 24 until the primary seal existing between sealing land 20-25 as shown in FIG. 2 is broken as shown in FIG. 3. Continued gas pressure exerted against the undersurface of body portion 15 causes fulcruming action to occur between the upper sealing lands 17 and 27 but only to an extent sufficient to commence breaking the secondary seal between these lands whereupon the lower ends of porting flutes 30 immediately enter into communication with the interior of the container to permit the escape of gas from the container through channel 24, past bead 21, upwardly through flutes 30 into atmosphere. Since the separation of lands 17 and 27 is only partial, the closure of lid 11 is retained in a holding relation upon the container during the escape of gas therefrom. Immediately upon the release of the positive pressure of gas within the container, the seals are reformed as the parts restore from the position shown in FIG. 3 to the position shown in FIG. 2.

From the foregoing it is apparent that a package of the one-piece container and snap-on lid type is provided in which a series of fluting ports operate to permit the easy, non-disruptive, unidirectional outward flow from within the container of gas generated therein when the gas pressure rises to a magnitude which flexes the lid an extent sufficient to break the primary seal and only commences to break the secondary seal and yet which maintains the

lid in a holding relation upon the container during the escape of gas—all, without the use of any special or extraneous protuberances of any character in the sealing-bead-channel construction per se of the package.

Of course, it will be understood that many changes may be made in the design and construction hereof without departing from the spirit and scope of the invention; it is not, therefore, to be limited to the exact form herein shown and described other than by the appended claims.

What is claimed is:

1. An article of manufacture adapted for use with a press fit removable lid having a depressed body portion and a circumferential bead portion which merges into a circumferentially extending upstanding wall portion;

said article of manufacture comprising:

a seamless plastic container having a bottom, and a side portion terminating in a top portion;

a channel formed in the side portion of the container adjacent the top portion thereof;

said channel including an outwardly extending bottom surface portion and a continuously upwardly and inwardly extending top surface portion;

said channel projecting outwardly from the interior of and extending circumferentially around said container and adapted to receive the bead of the press fit lid; the channel and the bead each having a cross-sectional configuration such that at least a portion of the channel surface is in continuous circumferential sealing engagement with the bead whereby the contents of the container are normally sealed from the atmosphere when the lid is in place;

said top portion of the channel merging into an outwardly flaring wall section;

a plurality of circumferentially spaced, porting flutes originating at points on the outwardly flaring wall section and extending downwardly through the top portion of the channel to provide ports for venting the interior of the container to the atmosphere;

the points at which the flutes originate being laterally outwardly offset with respect to the bottom of the outwardly flaring side wall an approximate distance at least as great as the depth of the channel with respect to the bottom of the outwardly flaring side wall;

whereby excess pressure exerted against the bottom of the lid is allowed to exhaust and the contents of the package are subsequently sealed from the atmosphere.

2. An article of manufacture adapted for use with a press fit removable lid having a depressed body portion and a circumferential bead portion which merges into a circumferentially extending upstanding wall portion;

said article of manufacture comprising:

a seamless plastic container having a bottom, and a side portion terminating in a top portion;

a channel formed in the side portion of the container adjacent the top portion thereof;

said channel including an outwardly extending bottom surface portion and a continuously upwardly and inwardly extending top surface portion;

said channel projecting outwardly from the interior of and extending circumferentially around said container and adapted to receive the bead of the press fit lid, the channel and the bead each having a cross-sectional configuration such that at least a portion of the channel surface is in continuous circumferential sealing engagement with the bead whereby the contents of the container are normally sealed from the atmosphere when the lid is in place;

said top portion of the channel merging into an outwardly flaring wall section;

a plurality of circumferentially spaced, substantially vertical porting flutes originating at points on the outwardly flaring wall section and extending downwardly through the top portion of the channel to provide ports for venting the interior of the container to the atmosphere;

5

the points at which the flutes originate being laterally outwardly offset with respect to the bottom of the outwardly flaring side wall an approximate distance at least as great as the depth of the channel with respect to the bottom of the outwardly flaring side wall;

whereby excess pressure exerted against the bottom of the lid is allowed to exhaust and the contents of the package are subsequently sealed from the atmosphere.

3. A sanitary package of the class described comprising in combination:

a press fit removable lid having a depressed body portion and a circumferential bead portion which merges into a circumferentially extending upstanding wall portion; and

a seamless plastic container having a bottom, and a side portion terminating in a top portion;

a channel formed in the side portion of the container adjacent the top portion thereof;

said channel including an outwardly extending bottom surface portion and a continuously upwardly and inwardly extending top surface portion;

said channel projecting outwardly from the interior of and extending circumferentially around said container and adapted to receive the bead of the press fit lid; the channel and the bead each having a cross-

6

sectional configuration such that at least a portion of the channel surface is in continuous circumferential sealing engagement with the bead whereby the contents of the container are normally sealed from the atmosphere when the lid is in place;

said top portion of the channel merging into an outwardly flaring wall section;

a plurality of circumferentially spaced, porting flutes originating at points on the outwardly flaring wall section and extending downwardly through the top portion of the channel to provide ports for venting the interior of the container to the atmosphere;

the points at which the flutes originate being laterally outwardly offset with respect to the bottom of the outwardly flaring side wall an approximate distance at least as great as the depth of the channel with respect to the bottom of the outwardly flaring side wall;

whereby excess pressure exerted against the bottom of the lid is allowed to exhaust and the contents of the package are subsequently sealed from the atmosphere.

References Cited by the Examiner

UNITED STATES PATENTS

3,061,139 10/62 Edwards 150—0.5

FRANKLIN T. GARRETT, *Primary Examiner*.