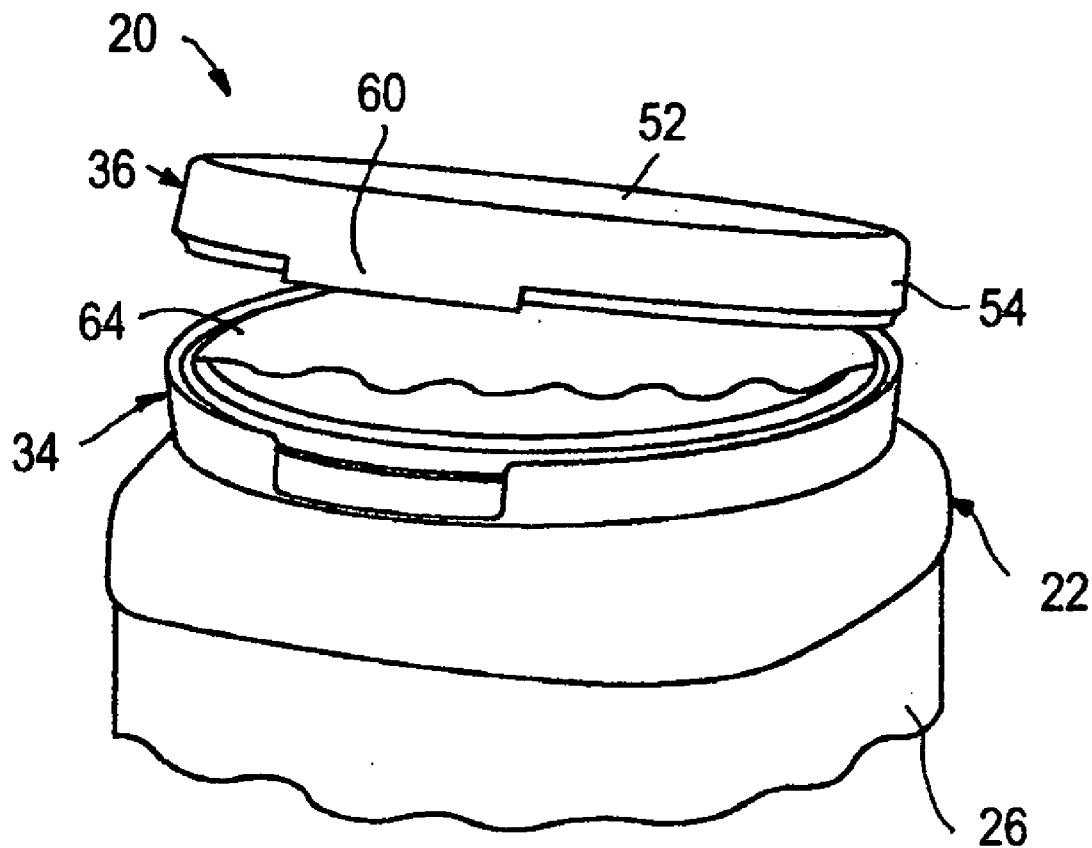




US 20060219652A1

(19) **United States**(12) **Patent Application Publication**
Grant et al.(10) **Pub. No.: US 2006/0219652 A1**(43) **Pub. Date: Oct. 5, 2006**(54) **PLASTIC CLOSURE FOR CONTAINERS**(52) **U.S. Cl. 215/237; 220/258.1; 220/254.3;
215/232**(75) Inventors: **Edward A. Grant**, Northwood, OH
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TOLEDO, OH 43666 (US)(73) Assignee: **Owens-Illinois Closure Inc.**(21) Appl. No.: **11/095,961**(22) Filed: **Mar. 30, 2005****Publication Classification**(51) **Int. Cl.****B65D 39/00** (2006.01)**B65D 51/18** (2006.01)**B65D 51/20** (2006.01)**B65D 41/00** (2006.01)(57) **ABSTRACT**

A plastic closure for receipt on a container includes a plastic ring having an internal recess adapted to be received by snap fit over an external crown or bead on the container finish. A plastic lid is coupled by a hinge to the ring, with the ring, the lid and the hinge being of one-piece integrally molded plastic construction. The lid has a skirt that is adapted releasably to be snapped to the ring in a closed position of the lid over the ring. The lid skirt preferably has an external bead that is adapted to be received by snap-fit within an internal channel on the ring in the closed position of the lid over the ring, and a conical internal surface on the ring preferably is provided to guide the bead on the lid into the channel on the ring.



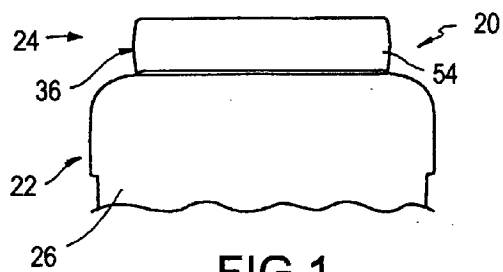


FIG. 1

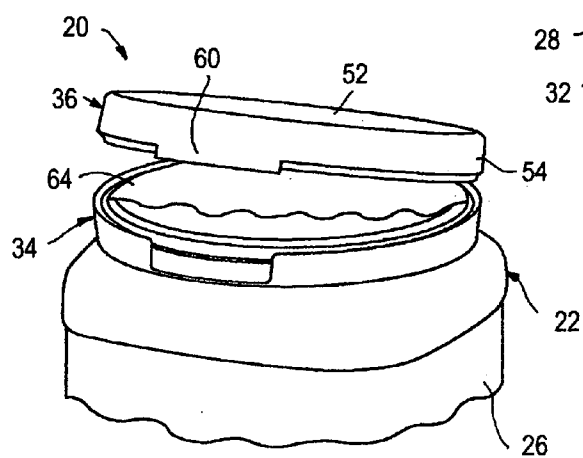


FIG. 2

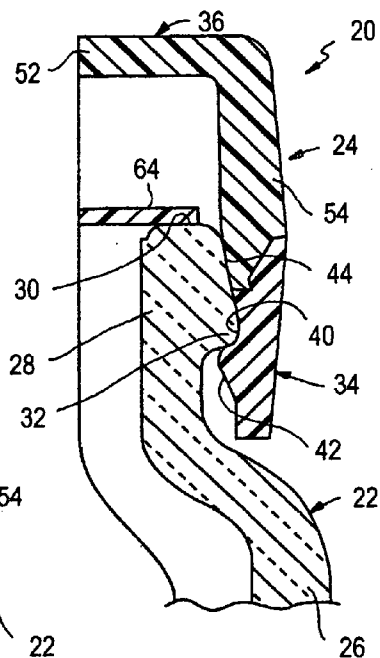


FIG. 3

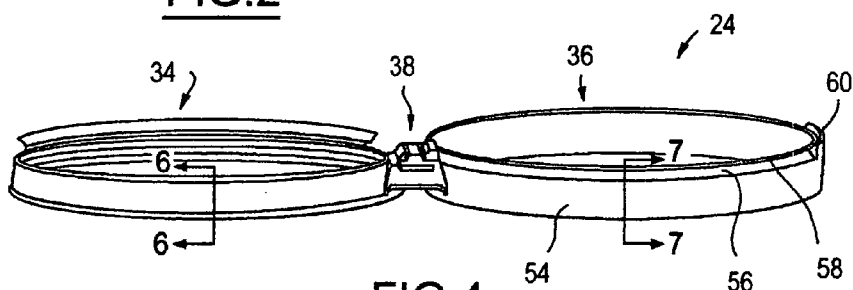


FIG. 4

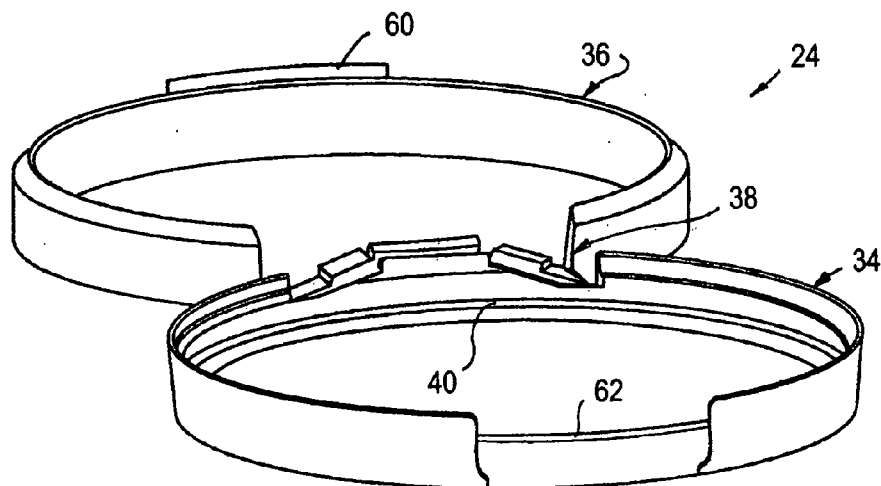


FIG. 5

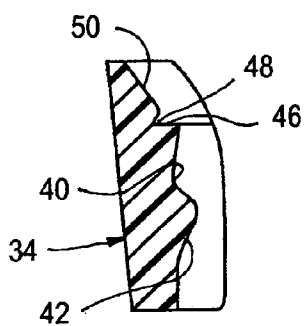


FIG. 6

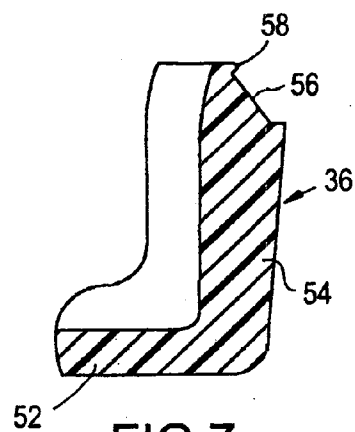


FIG. 7

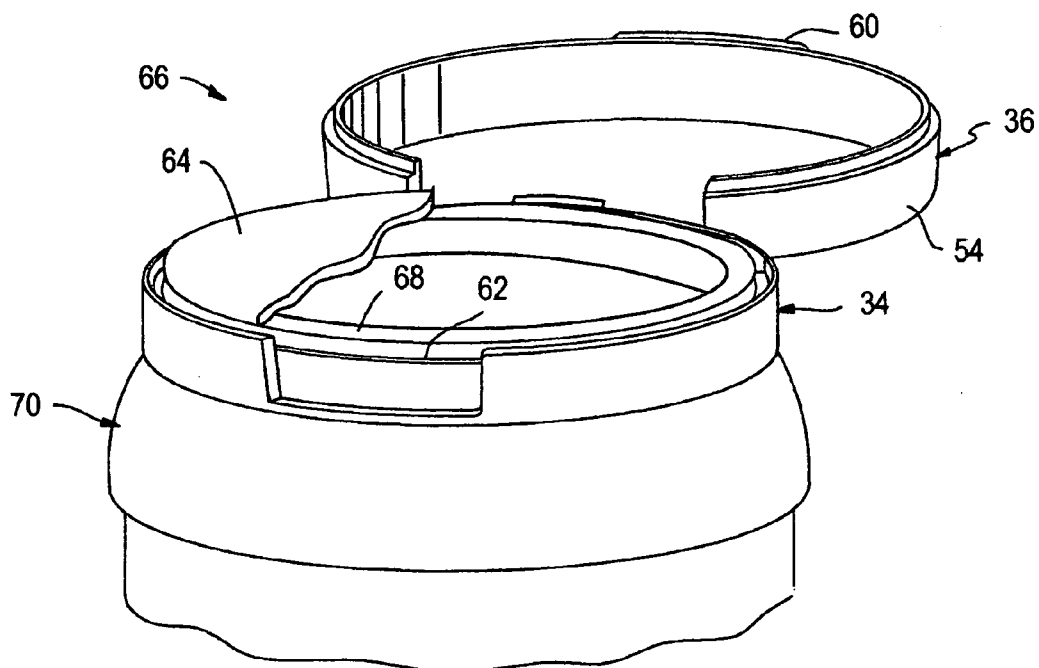


FIG. 8

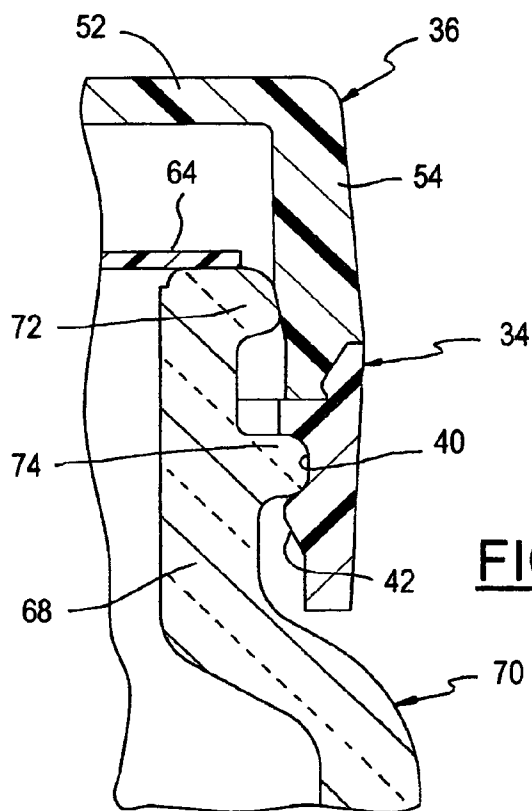


FIG. 9

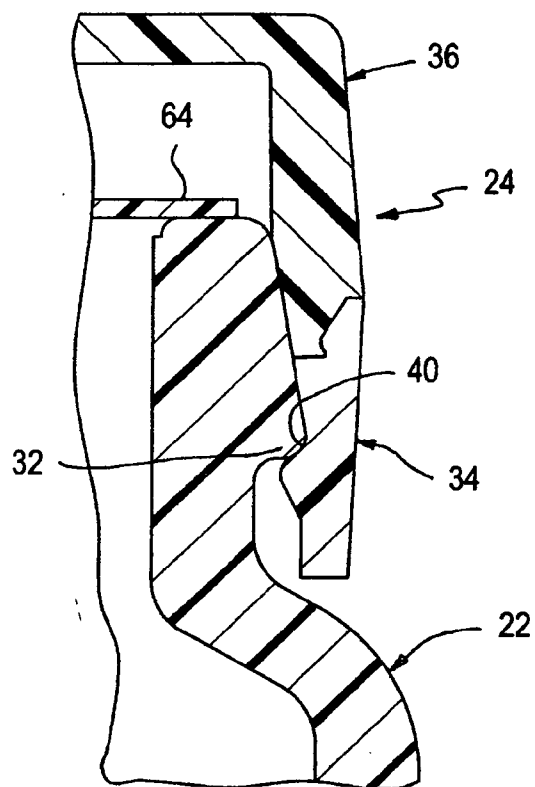


FIG. 10

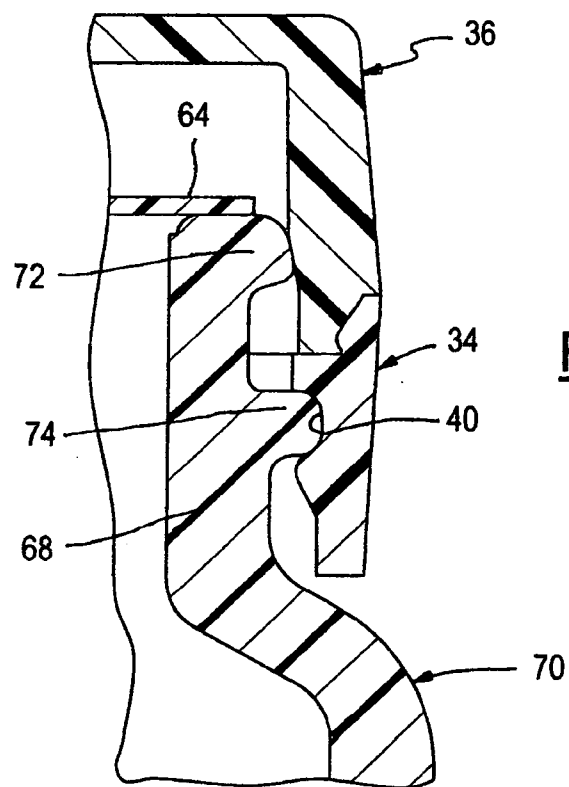


FIG. 11

PLASTIC CLOSURE FOR CONTAINERS

[0001] The present disclosure relates to securement of plastic closures to containers, particularly glass containers.

BACKGROUND AND SUMMARY OF THE INVENTIONS

[0002] A general object of the present disclosure is to provide a plastic closure for securement over an external bead on a container finish, preferably a glass container finish, and/or to provide a package that includes a plastic closure received by snap fit over the external bead on the container finish.

[0003] The present disclosure involves a number of aspects or inventions, which may be implemented separately from or in combination with each other.

[0004] A plastic closure for receipt on a container, preferably but not necessarily a glass container, in accordance with one aspect of the present disclosure, includes a plastic ring having an internal recess adapted to be received by snap fit over an external bead on the container finish such that the ring lies at or below the end of the finish and is retained against axial movement on the container finish. A plastic lid is coupled by a hinge to the ring, with the ring, the lid and the hinge being of one-piece integrally molded plastic construction. The lid has a skirt that is adapted releasably to be snapped to the ring in a closed position of the lid over the ring. The lid skirt preferably has an external bead that is adapted to be received by snap-fit within an internal channel on the ring in the closed position of the lid over the ring, and a conical internal surface on the ring preferably is provided to guide the bead on the lid into the channel on the ring.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] The disclosure, together with additional objects, features, advantages and aspects thereof, will best be understood from the following description, the appended claims and the accompanying drawings, in which:

[0006] **FIG. 1** is a fragmentary elevational view of a package in accordance with an exemplary embodiment of the present disclosure;

[0007] **FIG. 2** is a fragmentary perspective view of the package in **FIG. 1** with the closure lid partially opened;

[0008] **FIG. 3** is a fragmentary sectional view of the package illustrated in **FIG. 1**;

[0009] **FIG. 4** is a side perspective view of the closure in the package of **FIGS. 1-3** as molded;

[0010] **FIG. 5** is an end perspective view of the closure in **FIG. 4**;

[0011] **FIGS. 6 and 7** are fragmentary sectional views taken substantially along the respective lines 6-6 and 7-7 in **FIG. 4**;

[0012] **FIG. 8** is a fragmentary perspective view of a package in accordance with another exemplary embodiment of the present disclosure;

[0013] **FIG. 9** is a fragmentary sectional view of the package in **FIG. 8** with the lid closed;

[0014] **FIG. 10** is a fragmentary sectional view of the closure of **FIGS. 1-7** on a plastic container neck finish; and

[0015] **FIG. 11** is a fragmentary sectional view of the closure of **FIGS. 8-9** on a plastic container neck finish.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0016] **FIGS. 1-3** illustrate a package **20** in accordance with one presently preferred but exemplary embodiment of the present disclosure. Package **20** includes a closure **24** secured to a container **22**. Container **22** has a body **26** from which a finish **28** axially extends. Finish **28** preferably is cylindrical and typically is coaxial with body **26**, although this need not necessarily be the case. Body **26** may be of any suitable geometry such as cylindrical or rectangular. Finish **28** has an open end **30** and an external crown or bead **32**. External bead **32** preferably is circumferentially continuous. Container **22** may be made by any suitable technique, and the geometry of **FIGS. 1-3** (and **FIGS. 8-11**) is exemplary. Although the closure and package of the present disclosure are particularly suitable for wide-mouth container applications as illustrated. The disclosure can be implemented in other applications, such as narrow-neck container applications. Container **22** preferably is of glass construction (**FIGS. 1-3**), but may be of plastic construction (**FIG. 10**).

[0017] Closure **24** preferably is of one-piece integrally molded plastic construction, and includes a mounting base or ring **34** connected to a lid **36** by a hinge **38**. Hinge **38** may be of any suitable type, but preferably is formed by a pair of laterally spaced hinge elements. This lateral spacing between the hinge elements contributes to the stability of lid **36** with respect to ring **34**. The specific exemplary hinge **38** illustrated in the drawings is disclosed in U.S. Pat. No. 6,041,477. Closure **24** may be of any suitable one-piece integrally molded plastic such as polypropylene.

[0018] Ring **34** (**FIGS. 3-7**) is circumferentially continuous and has a circumferentially continuous internal recess **40** that is received by snap fit in assembly over external bead **32** on container finish **28**. A conical internal surface **42** (**FIGS. 3 and 6**) on ring **34** cooperates with a conical external surface **44** (**FIG. 3**) on container finish external bead **32** for guiding and resiliently stretching ring **34** onto finish **28** until bead **32** is received by snap fit into recess **40**. Adjacent to the end of ring **34** remote from surface **42**, there is a ledge or shoulder **46** (**FIG. 6**) that extends radially inwardly from an internal channel **48**. A conical surface **50** extends radially and axially from a position adjacent to channel **48** for purposes to be described.

[0019] Lid **36** has a base wall **52** and a peripheral skirt **54**. Skirt **54** preferably is circumferentially continuous except as hinge **38**. At the free edge of skirt **54** spaced from base wall **52** there is a conical surface **56** (**FIG. 7**) that extends radially inwardly and axially away from base wall **52**. Conical surface **56** terminates at a circumferential external bead **58**. Bead **58** preferably is circumferentially continuous except at hinge **38** and latch **60**. Latch **60** is provided on lid **36**, preferably at a position diametrically spaced from hinge **38**. Latch **60** extends from skirt **54** of lid **36**, and is adapted to engage a corresponding latch element **62** on ring **34** diametrically spaced from hinge **38**. Latch **60** and latch element **62** may be of any suitable type, being illustrated only schematically in the drawings.

[0020] A foil seal 64 (FIGS. 2-3) preferably is received over the open end 30 of container finish 28. Foil seal 64 may comprise a suitable disk, such as a multilayer disk having adjacent metal and plastic layers for induction heat-sealing securement of seal 64 to the end of the container finish.

[0021] In use, closure 24 is secured to container finish 28 either before or after filling the container with product. Container 22 can be filled with product and seal 64 secured to end 30 of container finish 28 before securement of closure 24. Closure 24 can be secured to container finish 28 by urging mounting ring 34 along surface 44 of bead 32 resiliently to expand the ring until the ring snaps over bead 32. This securement of ring 34 to bead 32 may be accomplished with lid 36 open or, more preferably, closed. To open lid 36 and dispense product, a user's thumb is positioned beneath latch 60 and lid 36 is pushed upwardly (in the orientation of FIGS. 1-3). Foil seal 64 then is removed from container finish 28, which provides a tamper indication that the package has been opened. After product has been dispensed from the package, lid 36 is pivoted toward the closed position. As the lid approaches the closed position, bead 58 on lid skirt 54 engages surface 50 on ring 34 to center lid 36 with respect to mounting ring 34. Further downward pressure on lid 36 snaps bead 58 into channel 48, so that the lid is secured to the mounting ring by snap fit and the edge of skirt 54 engages shoulder 46 on ring 34. Conical surfaces 50, 56 are in facing engagement with each other. Because ring 34 is disposed beneath the end of finish 28 (FIG. 3), the inside edge of lid skirt 54 engages the outside edge of surface 44 so that skirt 54 is captured between surface 44 and ring 34. This contributes to the stability of the closure on the container. Bead 58 cooperates with channel 48 to provide a seal when the lid is in the closed position.

[0022] FIGS. 8 and 9 illustrate a package 66 in accordance with a second exemplary embodiment of the disclosure. Reference numerals employed in FIGS. 8 and 9 (and FIGS. 10-11) that are identical with those employed in FIGS. 1-7 illustrate correspondingly identical or related components. The primary difference between the package of FIGS. 8-9 and the package of FIGS. 1-7 is that the finish 68 of container 70 has a pair of axially spaced external beads 72, 74. In the particular embodiment illustrated in FIG. 9, lower bead 74 has a greater outside diameter than upper bead 72. Mounting ring 34 is received by snap-fit over lower bead 74. The internal surface of skirt 54 on lid 36 engages the radially outer edge of upper bead 72 in the closed position of lid 36, as illustrated in FIG. 9. In this way, bead 72 cooperates with lid 36 to stabilize the lid in the closed position of the package and to center the lid during closure. Container 70 preferably is of glass construction (FIGS. 8-9), but may be of plastic construction (FIG. 11).

[0023] There thus have been disclosed a plastic closure for a container, particularly a glass container, and a plastic-closure/glass-container package that fully satisfy all of the objects and aims previously set forth. The finish of the container has a reduced overall height as compared with prior art constructions having threads or the like for mounting the closure on the container and/or having tamper-indicating means on the container finish beneath the thread or crown for mounting the closure. The package of the present disclosure can increase closure application speeds while reducing closure application issues. The closure is a low-profile closure. The preferred embodiments provide

sealing between the closure and the container finish after the foil seal has been removed, and the preferred laterally spaced hinge element construction provides stability between the closure lid and the closure base.

[0024] The disclosure has been presented in conjunction with two presently preferred embodiments, and a number of additional modifications and variations have been described. Other modifications and variations readily will suggest themselves to persons of ordinary skill in the art in view of the foregoing discussion. For example, the exemplary disclosed embodiments are free to rotate around the axis of the container finish. However, the closure could be made non-rotatable on the container finish, such as by providing internal lugs on ring 34 that are received in external recesses on bead 32 or 74, without departing from the disclosure in its broadest aspects. The disclosure is intended to embrace all such modifications and variations as fall within the spirit and broad scope of the appended claims.

1. A plastic closure for receipt on a container having a finish with an end surrounded by an external bead, said closure including:

- a plastic ring having an internal recess adapted to be received by snap fit over the container finish bead such that said ring lies at or below the end of the container finish and said ring is retained against axial movement on the container finish, and

- a plastic lid coupled by a hinge to said ring, said ring, said lid and said hinge being of one-piece integrally molded plastic construction,

- said lid having a skirt adapted to be releasably snapped to said ring in a closed position of said lid over said ring.

2. The closure set forth in claim 1 wherein said lid has an external bead on said skirt that is adapted to be received by snap fit in an internal channel on said ring in said closed position of said lid over said ring.

3. The closure set forth in claim 2 wherein said ring has a conical internal surface adjacent to said internal channel for guiding said bead on said lid into said channel on said ring.

4. The closure set forth in claim 1 wherein said ring has a conical internal surface facing away from said lid and disposed adjacent to said recess for guiding said ring over the external bead on the container finish.

5. The closure set forth in claim 1 including a foil seal for receipt over the end of the container finish within said ring.

6. A plastic closure for receipt on a container having a finish with an end surrounded by an external bead, said closure including:

- a circumferentially continuous plastic ring having an internal recess adapted to be received by snap fit over the finish bead such that said ring lies at or below the end of the container finish and said ring is retained against axial movement on the container finish, and

- a plastic lid coupled by a hinge to said ring, said ring, said lid and said hinge being of one-piece integrally molded plastic construction,

- said lid having a skirt and an external bead on said skirt,

- said ring having an internal channel and a conical internal surface adjacent to said channel for guiding said bead on said lid into said channel on said ring such that said

bead is received by snap fit in said internal channel on said ring in a closed position of said lid over said ring,

said ring having a conical internal surface facing away from said lid and disposed adjacent to said recess in said ring for guiding said ring over the bead on the container finish.

7. A package that includes:

a glass container having a finish with an end surrounded by an external bead, and

a closure that includes:

a plastic ring having an internal recess received by snap fit over said container finish bead such that said ring lies at or below said end of said container finish and said ring is retained against axial movement on said container finish, and

a plastic lid coupled by a hinge to said ring, said ring, said lid and said hinge being of one-piece integrally molded plastic construction,

said lid having a skirt adapted to be releasably snapped to said ring in a closed position of said lid over said ring.

8. The package set forth in claim 7 wherein said lid has an external bead on said skirt that is adapted to be received by snap fit in an internal channel on said ring in said closed position of said lid over said ring.

9. The package set forth in claim 8 wherein said ring has a conical internal surface adjacent to said internal channel for guiding said bead on said lid into said channel on said ring.

10. The package set forth in claim 7 wherein said ring has a conical internal surface facing away from said lid and disposed adjacent to said recess for guiding said ring over the external bead on the container finish.

11. The package set forth in claim 7 including a foil seal for receipt over the end of the container finish within said ring.

12. The package set forth in claim 7 wherein said lid has a skirt that is captured against lateral movement between said bead and said ring in said closed position of said lid.

13. The package set forth in claim 7 wherein said container finish has first and second axially spaced external beads, said ring being received over the first external bead remote from the end of said finish and said lid skirt having an internal surface that engages the second external bead adjacent to the end of said finish in said closed position of said lid.

14. The package set forth in claim 13 wherein said lid has an external bead at an edge of said skirt and said ring has an internal channel into which said external bead is received by snap fit, between said external beads on said container finish, in said closed position of said lid.

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