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(54) **CONTAINER AND CLOSURE**

(71) Applicant: **SONOCO DEVELOPMENT, INC.**,  
Hartsville, SC (US)

(72) Inventor: **Paul M. Melia**, Hartsville, SC (US)

(73) Assignee: **Sonoco Development, Inc.**, Hartsville,  
SC (US)

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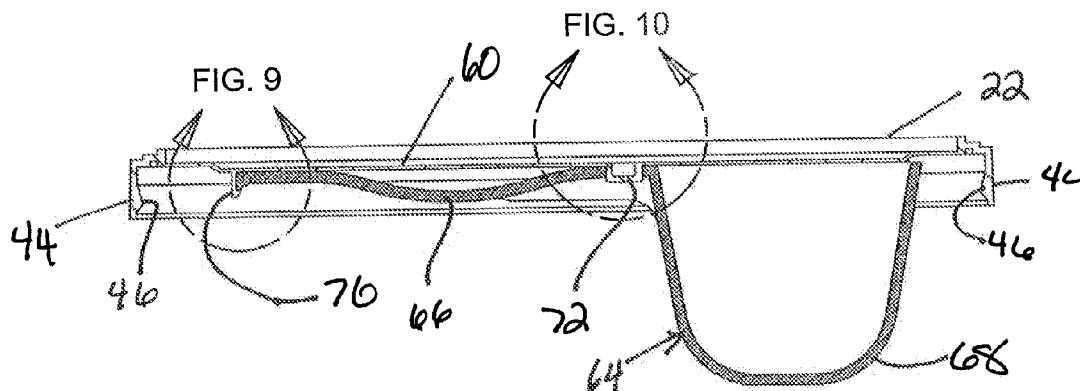
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(57) **ABSTRACT**

A container and closure combination is defined by a container body having a rectangular transverse cross section. A curved bottom transition portion is provided between a bottom wall and the sidewalls of the body portion. A container rim is provided that defines an opening into the container body. The rim is formed with a circular profile having an outside diameter that is less than the outside dimensions of the transverse rectangular cross section of the sidewalls. An upper transition wall is formed supporting the rim. An annular closure or lid is provided and includes a body portion dimensioned for conforming to the opening defined by the container rim. A peripheral skirt projects transverse to the body portion and is dimensioned to surround the container rim in a closely spaced relationship. A scoop may be retained within the container and removably fixed to the closure.



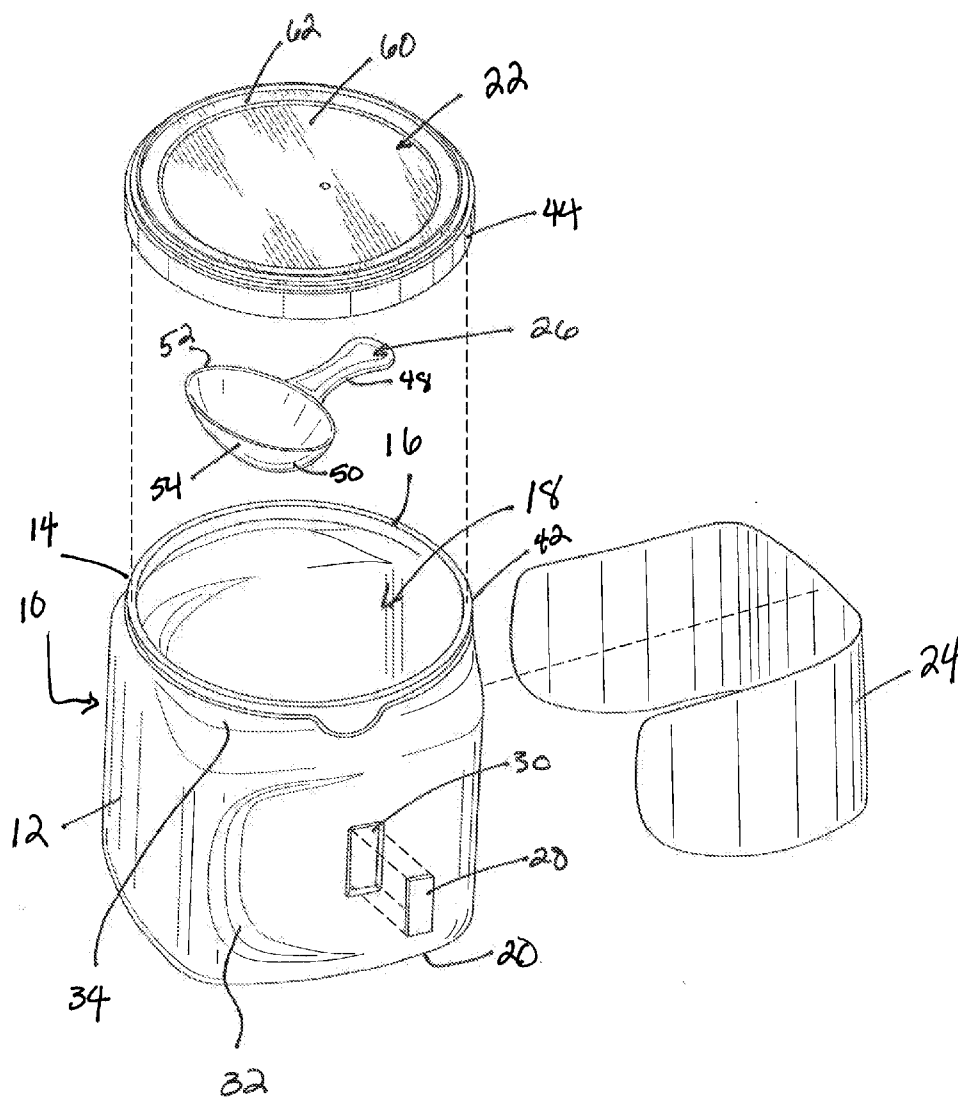


FIG. 1

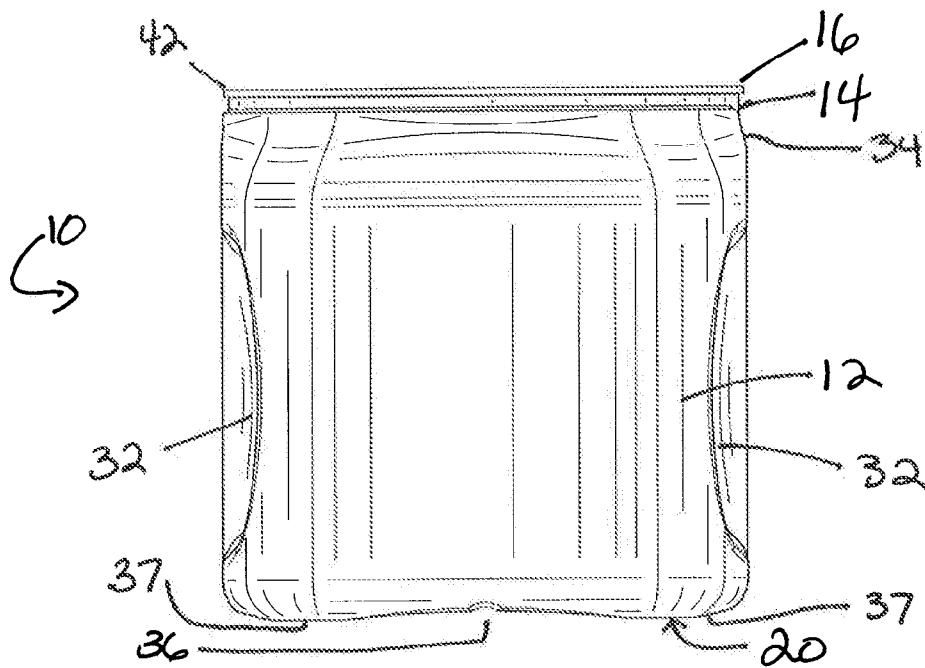


FIG. 2

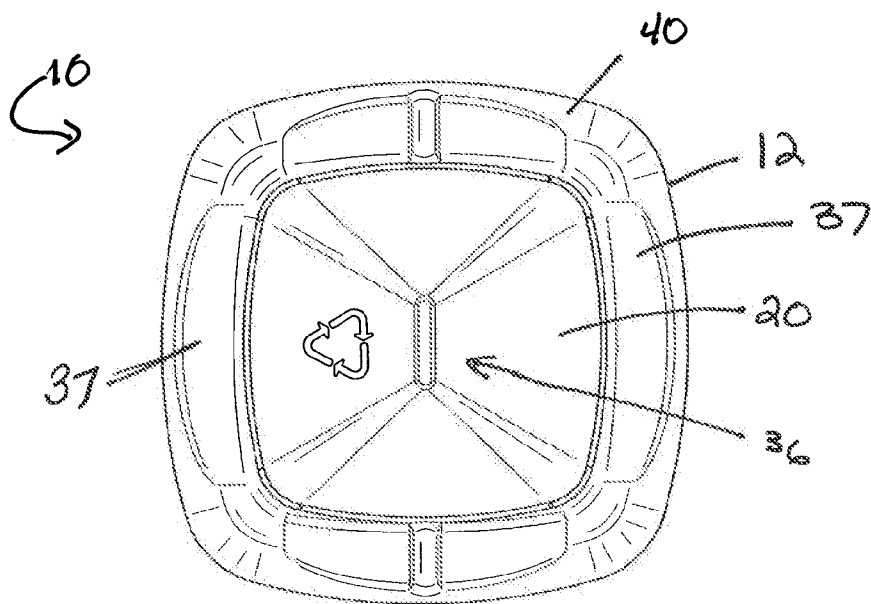


FIG. 3

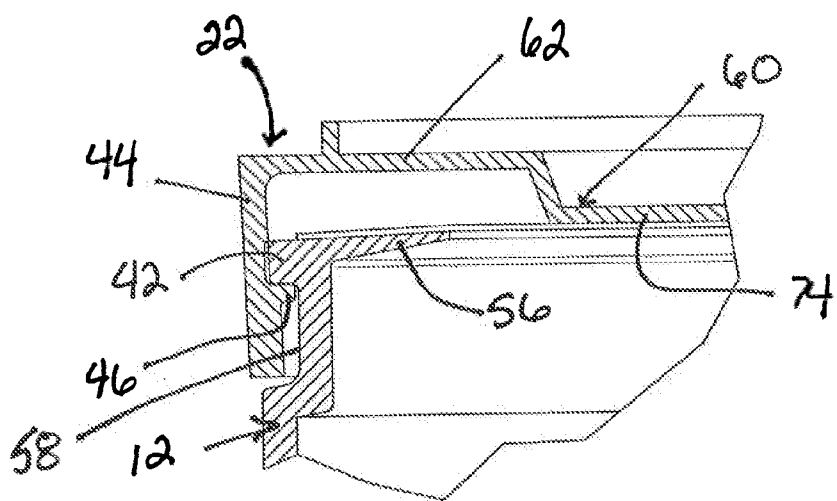


FIG. 2A

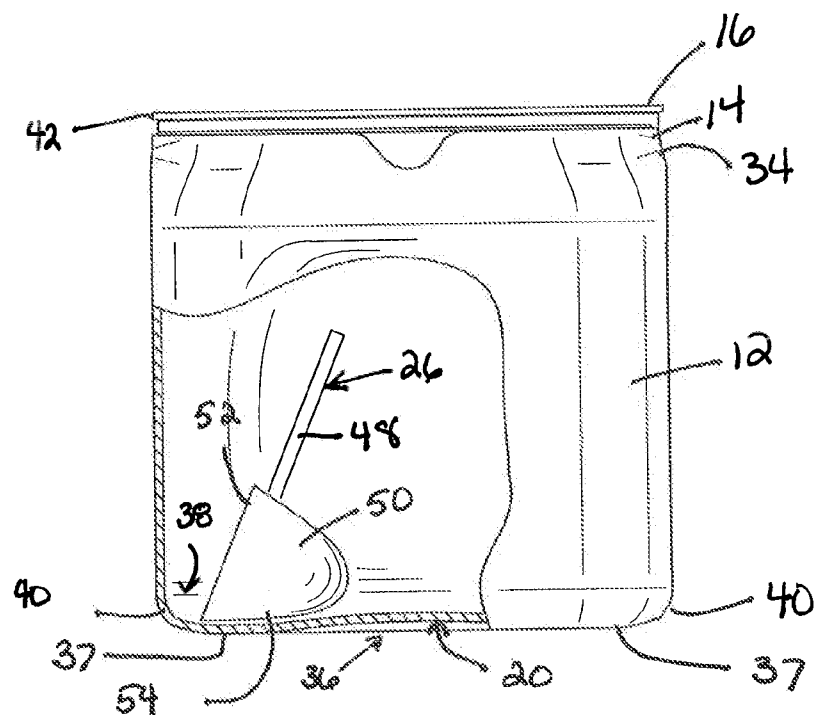


FIG. 4

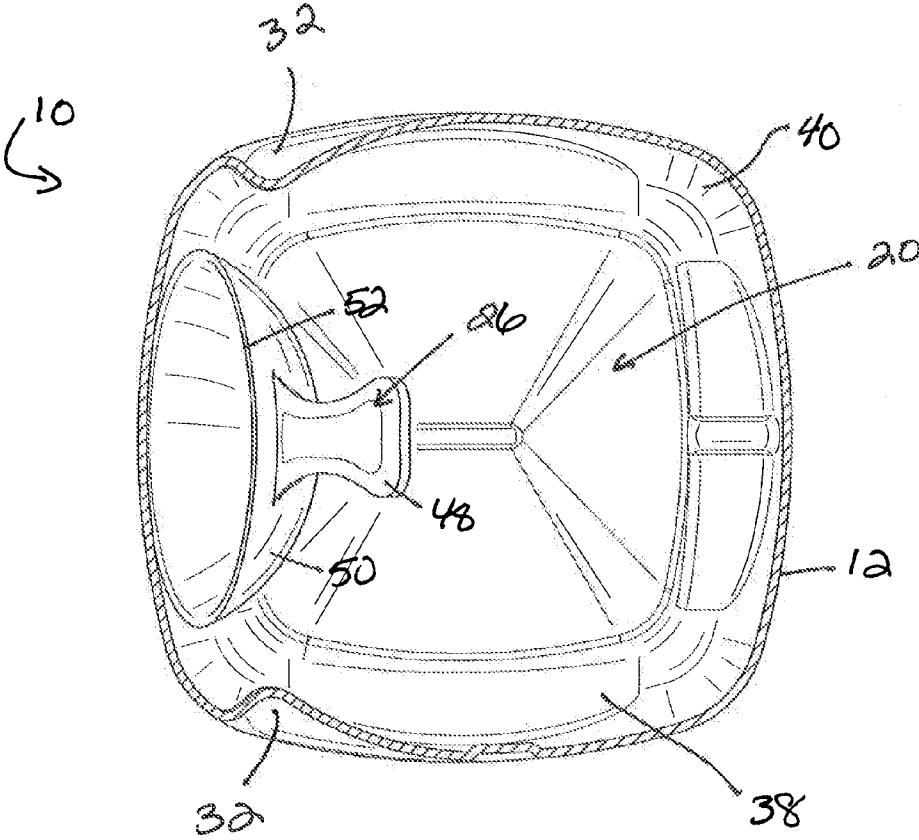


FIG. 5

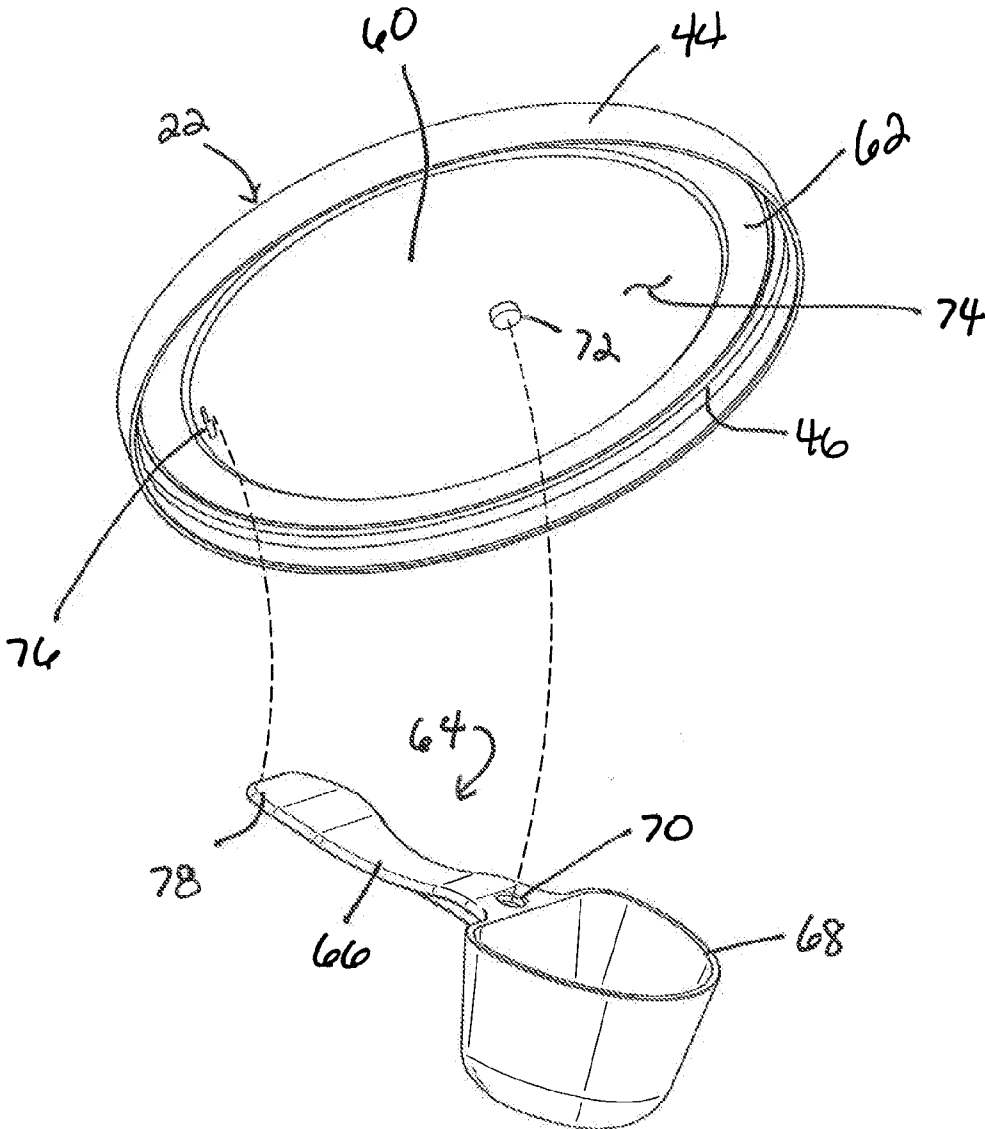


FIG. 6

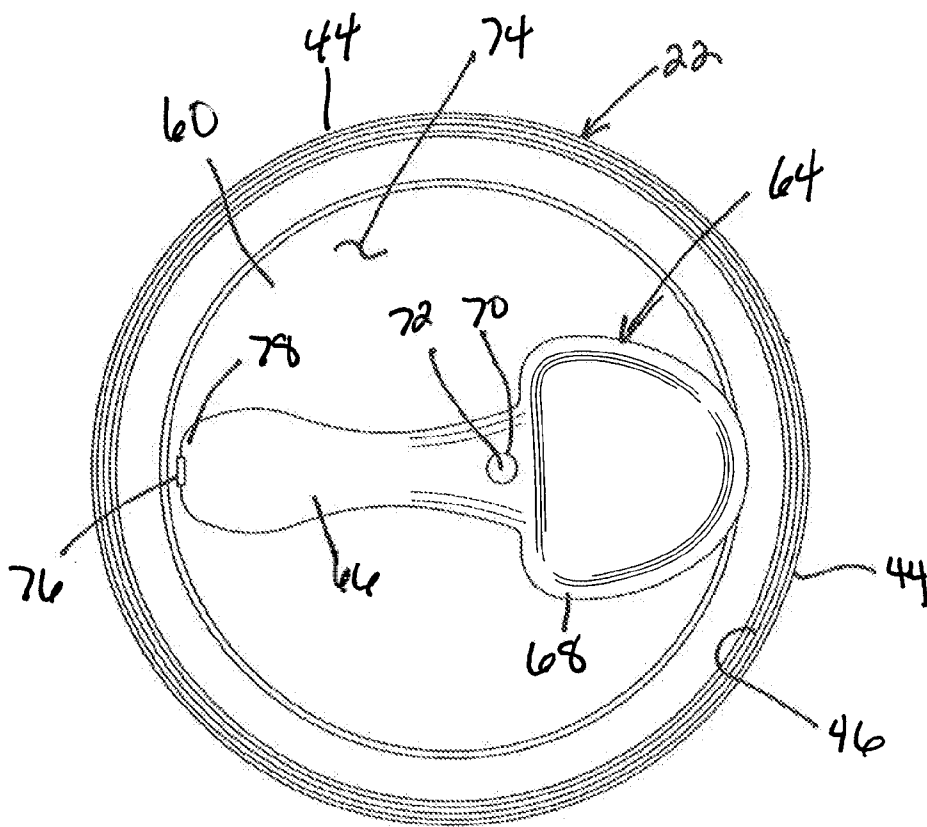
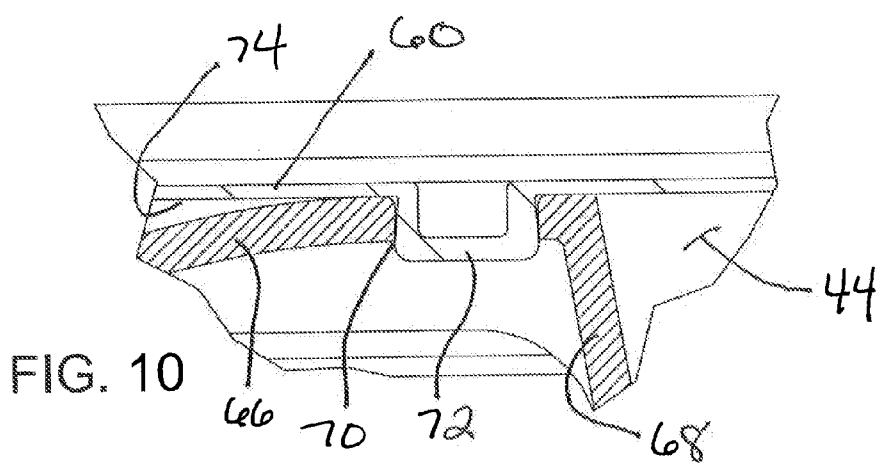
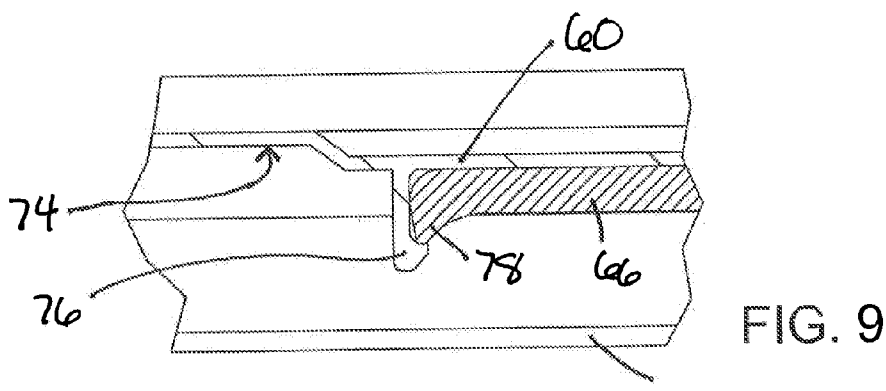
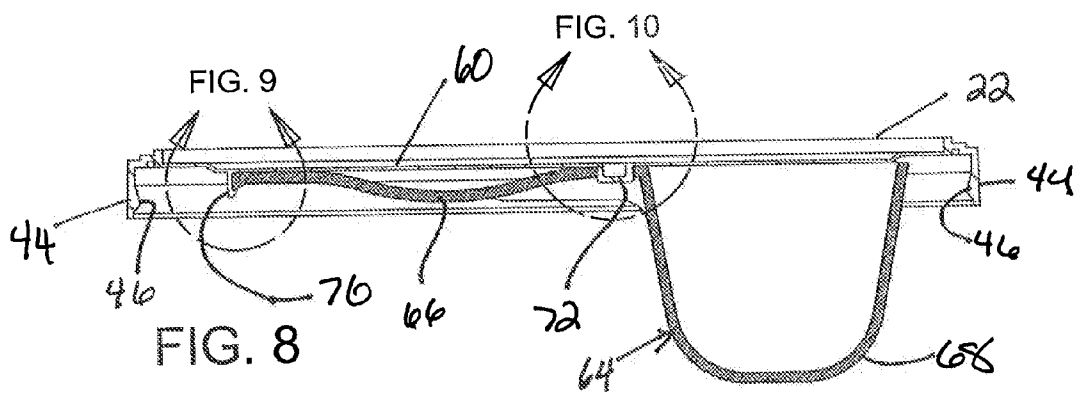


FIG. 7





## CONTAINER AND CLOSURE

### FIELD OF THE INVENTION

[0001] The present application relates to a container and further to a container and closure combination.

### BACKGROUND

[0002] Containers for storing a product, such as a liquid, a powder or granular materials are generally known. The form of a container is often varied to provide advantages in delivery of the product, advantages in sealing the product or for aesthetic reasons. Structures for dispensing the product from a container are known, including scoops for measuring a desired quantity of the product.

### SUMMARY OF THE INVENTION

[0003] In one aspect of the present disclosure, a container is provided having a body defined by a plurality of sidewalls joined at uniform angles and forming a generally rectangular transverse cross section. A bottom wall is positioned at the base of the sidewalls, with the sidewalls projecting upwardly therefrom. A curved bottom transition portion connects the bottom wall to the sidewalls. A container rim forms an opening into a volume defined by the sidewalls and the bottom wall, the rim formed with a circular profile having an outside diameter that is less than the dimensions of the transverse rectangular cross section of the sidewalls. An upper transition wall is formed between the sidewalls and the container rim. The upper transition wall supports the rim and is positioned inwardly of the outside diameter of the rim. The rim includes an outward projecting bead for retaining a circular overcap thereon.

[0004] In a further aspect of the container, the upper transition wall comprises an outwardly open annular groove formed adjacent the projecting bead of the container rim. The container rim may further include an inwardly directed annular flange. The flange may include an inside edge that defines the opening into the container volume. The container rim may be integrally formed with the container body or otherwise added to the container at the sidewall portion that defines the container opening.

[0005] In a further aspect of the container, the bottom wall includes a central portion having an outer concavity therein and a surrounding support surface. The support surface may define a continuous surface that is connected to the bottom transition portion. In a further aspect of the container, the sidewalls may be formed with generally equal dimensions and the transverse cross section of the body is substantially square in form. One or more of the sidewalls may further comprise a surface indentation for assistance in gripping the container by a user.

[0006] In a further aspect of the disclosure, a container and closure combination is defined having a container body formed by a plurality of sidewalls joined at uniform angles and forming a generally rectangular transverse cross section. A bottom wall is positioned at the base of the sidewalls, with the sidewalls projecting upwardly therefrom. A curved bottom transition portion may be provided that connects the bottom wall to the sidewalls. A container rim is provided that defines an opening into a volume formed by the sidewalls and the bottom wall. The container rim is formed with a circular profile. The circular rim may have an outside diameter that is less than the outer dimensions of the transverse rectangular

cross section of the sidewalls. The preferably includes an outward projecting bead forming a periphery. An upper transition wall is formed between the sidewalls and the container rim, with the upper transition wall supporting the rim and positioned inwardly of the outside diameter of the rim. The transition wall may form an outwardly open annular groove formed adjacent the projecting bead of the container rim. An annular closure is provided and includes a body portion dimensioned for conforming to the opening defined by the container rim. A peripheral skirt projects transversely to the body portion and is dimensioned to surround the container rim in a closely spaced relationship. An inwardly projecting ridge is also formed on an inside surface of the peripheral skirt. The ridge is dimensioned to engage within the annular groove on the upper transition portion of the container body to retain the closure in position on the rim of the container.

[0007] In a further aspect of the container and closure combination, a scoop is provided and is retained within the container. The scoop may be removably fixed to the body portion of the closure. The fixing means further comprises a hook portion and an engagement tab formed in a spaced relationship on a bottom surface of the closure body portion. The hook and tab may be formed for engaging the scoop to fix it to the closure body bottom surface. The scoop may comprise a handle portion and a dispensing bowl, with the dispensing bowl having a peripheral rim that defines an open end for the bowl. The peripheral rim of the dispensing bowl may be formed as an ellipse or oval. The handle portion is preferably aligned with a minor radius of the bowl rim, such that a major radius is positioned transverse to the handle. The bowl of the scoop may include a tapered sidewall, positioned opposite the handle. The tapered sidewall of the bowl forms an angle of greater than 45 degrees with respect to the handle.

[0008] Other features of the present invention will become apparent from the detailed description to follow, taken in conjunction with the accompanying drawings.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0009] For the purpose of illustrating the invention, the drawings show one or more forms that are presently preferred. It should be understood that the invention is not limited to the precise arrangements and instrumentalities shown.

[0010] FIG. 1 is a perspective view of a container with a closure lid and other related elements shown in an exploded position.

[0011] FIG. 2 shows a left side elevation view of the container shown in FIG. 1.

[0012] FIG. 2A shows a partial cross section view of the rim of the container of FIGS. 1 and 2 with a portion of a closure lid engaged on the container rim.

[0013] FIG. 3 is a bottom plan view of the container shown in FIGS. 1 and 2.

[0014] FIG. 4 is a front elevation view of the container of FIGS. 1-3, with a portion of the sidewall broken away to show internal structures and a scoop in use.

[0015] FIG. 5 is a top plan view of the container of FIG. 1, with a portion of the sidewalls broken away to show internal structures and a scoop in use.

[0016] FIG. 6 is an exploded perspective view of an overcap and scoop embodiment contemplated for use with a container, including the container embodiment of FIGS. 1-5.

[0017] FIG. 7 is a bottom plan view of the overcap and scoop embodiment shown in FIG. 6.

[0018] FIG. 8 is a cross sectional view of the overcap and scoop embodiment shown in FIGS. 6 and 7.

[0019] FIG. 9 is an enlarged view of a portion of the cross section of FIG. 8.

[0020] FIG. 10 is an enlarged view of a further portion of the cross section of FIG. 8.

#### DETAILED DESCRIPTION

[0021] In the figures, where like numerals identify like elements, there is shown an embodiment of a container that in FIG. 1 is generally designated by the numeral 10. The container 10 includes a body 12 defined by a series of sidewalls, an open top end 14 defined by a rim 16 surrounding the opening 18, and a bottom wall 20 (see FIGS. 2-5). As shown exploded away from the container in FIG. 1, a closure or lid 22 is provided for engagement on the rim 16 and covering the opening 18. A label 24 is provided for wrapping around the sidewalls of the body 12. In the form shown, the label 24 covers a portion of three of the provided sidewalls and is contemplated to be attached to the body 12 by an adhesive (not shown). Other label forms are contemplated and may be applied to the container as desired. A scoop or spoon 26 is shown for assisting in measured dispensing of the contents (not shown) of the container 10. An RFID tag or other inventory identification means 28 is provided within a recess 30 within a sidewall of the container body 12. The recess 30 and tag 28 are preferably positioned below the label 24. Surface features 32 in the form of indentations are provided on two of the sidewalls of the body 12. The surface features 32 may create a decorative appearance and may define a gripping edge to assist in the handling of the container 10.

[0022] As more particularly shown in FIGS. 2, 2A and 3-5, the container body 12 includes a generally rectangular body configuration created by the uniform angle between the sidewalls. In the preferred embodiment, the general transverse cross section of the container body 12 forms a square, due to the side walls having substantially the same dimension. The sidewalls may be provided with a relatively small curvature and the corner connections of the sidewalls are also curved. The bottom wall 20 creates a generally rectangular base for the body 12. The bottom wall 20 is formed with a central concavity 36 that extends to a peripheral base surface 37. In the interior of the container, a trough 38 is formed around the projecting surface formed by the external concavity 36. A rounded transition 40 is provided between the base surface 37 of the bottom wall 20 and the sidewalls of the body 12. The transition portion 40 and the base surface 37 define the trough 38.

[0023] The rim 16 of the container body 12 defines the access opening 18 for the contents (not shown) retained within the container 10. The opening 18 in the top end 14 of the body preferably includes a round form. A transition wall 34 is provided in the top end 14 of the body 12, creating the evolution of the rectangular (preferably square) body form to the round opening 18. The diameter of the circular opening 18 is preferably slightly less than the transverse dimension of the rectangular body 12. Hence, the closure lid 22 fits within the outside profile of the container body 12. Further, the opening 18 is positioned closely adjacent the upper portions of the sidewalls, with the height of the transition wall 34 being relatively small, as compared to the overall height of the container body 12. Overall, the opening 18 and container body 12 are preferably large enough for a user's hand to fit inside the opening 18 while using the scoop 26.

[0024] As shown in the partial cross section of FIG. 2A, the rim 16 preferably includes a bead 42 on its outer periphery for engagement by a ridge 46 on a skirt portion 44 of the lid 22. A horizontal flange 56 is formed as part of the rim 16. The inside ridge 46 (see also FIGS. 6 and 8) formed on the inner surface of the skirt 44 provides for resilient engagement with a groove 58 below the bead 42. The ridge 46 fits within the groove 58, with the bead 42 forming a catch to prevent easy removal of the lid 22 from the container 12. As shown, the periphery of the lid body 60 includes a raised portion 62 that arches over the inward flange 56. A membrane (not shown) may be sealed to the flange 56. The membrane extends across the opening 18 to provide an initial seal of the container 12. The lid 22 is secured to the rim 16 by the engagement of the ridge 46 within the groove 58 and the raised lid portion 62 overhangs the flange 56 and the membrane. Once the membrane is removed, the lid 22 forms the primary seal for the container opening 18.

[0025] The scoop 26 as shown in FIGS. 1, 4 and 5 comprises a handle portion 48 and a bowl portion 50. In the embodiment shown, the bowl 50 is defined by a generally oval or elliptical lip 52, with the handle 48 secured to the bowl 50 transverse to one of the long sides of the oval form. To the extent that the lip form is elliptical, the handle 48 is generally in line with the minor radius and transverse to the major radius. Further, the sidewall 54 of the bowl 50, which is opposite from the handle 48, is tapered inwardly from the lip 52. The angle of the tapered wall 54 is formed to permit the front edge of the oval lip 52 of the scoop 26 to scrape the inside surface of the trough 38 with the handle at useful angle. As shown in FIG. 4, the angle of the bowl wall 54, when lying substantially flat on the inside surface of the bottom wall 20, positions the scoop 26 at an angle less than about 45 degrees with respect to the sidewall of the body 12. Preferably, a line formed along the handle 48 and across the lip 52 of the bowl 50 is at an acute angle with a line tangent to the bowl wall of greater than 45 degrees, but less than 75 degrees.

[0026] As shown in FIG. 5, the scoop 26 is readily manipulated across the inside surface of the bottom wall 20 and product is directed into the bowl 50. At the same time, spacing is provided between the handle 48 and the inside of the sidewall of the body 12. The spacing lets the user direct the scoop into the transition zone 40, leaving hand space for holding (not shown) the scoop handle 48, and while maintaining the lip 52 and bowl wall 54 in contact with the surface of the bottom wall 20 of the container 12. Preferably, the central concavity 36 is shallow and the transition from the center of the bottom wall 20 to the trough 38 of the support base 37 is formed at a shallow angle. Hence, the bowl 50 of the scoop 26 is easily manipulated across the inside surface of the container 10 and the product within the container is readily directed into the bowl for dispensing. Further, the transverse elongation of the scoop 26, as defined by the oval or elliptical form of the lip 52, assists in the dispensing of the product from the scoop 26 into a secondary container (such as in the direction of a powdered material into a mixing bottle).

[0027] In FIGS. 6-10 there is shown an embodiment of a lid 22 having means thereon for temporarily securing a scoop 64 thereto. The scoop embodiment 64 is somewhat different in form from the scoop 26 shown in the prior figures. The scoop 64 comprises an elongated handle 66 and a bowl 68 secured at one end of the handle 66. The bowl portion 68 of scoop 64 is relatively deep and is formed with more uniform dimensions for the lip 52 that defines the bowl opening. It should be noted,

however, that variations in the form of the scoop or similar discharge device are possible for use with the securing means shown or otherwise provided. Hence, the scoop 26 of FIGS. 1, 4 and 5 may also be used with the securing means discussed herein.

**[0028]** The scoop securing means is formed by a number of inter-engaging elements provided on the scoop 64 and lid 22. A receiving opening 70 is formed in the base of the handle 66, adjacent the bowl portion 68. A projection 72 is provided on the bottom surface 74 of the body portion 60 of the lid 22. A clip member 76 also projects from the bottom surface 74 and is spaced from the projection 72. The spacing of the clip 76 from the projection 72 is substantially equal to the distance between the opening 70 and the end 78 of the handle 66. This spacing permits the scoop 64 to be mounted on the bottom surface 74 of the lid 22 as is shown in FIG. 7.

**[0029]** In FIGS. 8-10, the mounting of the scoop 64 to the lid 22 is shown in more detail. The end 78 of the handle 66 is inserted under the clip 76, which has the form of a hook. In addition, the projection 72 is sized to be inserted within the handle opening 70 with a press fit or friction fit. The engagement of the projection 72 within the opening 70 secures the scoop 64 to the underside of the lid 22, with the clip 76 providing added stability to the engagement. Once the scoop 64 is fixed to the lid 22, the lid can be placed on the rim 16 of the container 10. The bowl 68 of the scoop 64 is contemplated to project into the opening 18 of the container 10 when the lid 22 is secured to the rim 16. The securing means is contemplated to maintain the provided scoop in place during shipment and storage of the container and the scoop is easily located by the user when dispensing is desired.

**[0030]** An alternative structure within the container may include the addition of a relatively long neck within the transition portion (34) of the top end of the container, and an internal flange (not shown) spaced below the upper container rim. A separate ring member may be secured to the rim of the container, defining the bead portion of the rim and/or the internal flange. A temporary membrane seal may be provided on the internal flange and, in the embodiment where the scoop is secured to the underside of the lid, the scoop may be positioned in the space above the flange and membrane and below the container rim.

**[0031]** The container is contemplated to be formed by a blow molding process, with the flange 56 and rim 16 formed as part of the initial molding. The container material may be formed from high-density polyethylene (HDPE) or polypropylene. Barrier materials of ethylene vinyl alcohol (EVOH) or amorphous nylons may also be included. The contours of the container are contemplated to provide strength in shipment and use, while minimizing material usage. Overall, the square profile of the body is contemplated to create advantages in packing the containers on pallets or within box-like surrounding structures. There is a minimum amount of unused space during the packing assembly of the containers for shipment. Further, the round opening is contemplated to accept a "standard" round lid construction. The dimensions of the lid are contemplated to closely match the transverse container profile to minimize unused space and to limit the material required for a transition from the "square" body to the "round" opening, as well as to provide efficient packing of the containers during shipment.

**[0032]** The closure lid is preferably formed by injection molding from a relatively flexible material. The flex of the lid is used to permit the skirt portion to move over the outside

bead portion and for the ridge on the inside of the skirt to engage within the groove (if provided). The closure may alternatively be fixed to the container with a portion thereof being hingedly connected to the securing structure. A threaded structure may also be formed on the rim of the container, with the skirt portion of the lid having a matching thread.

**[0033]** The scoop is also contemplated to be formed in an injection molding process. The scoop preferably is made of a relatively rigid plastic, providing minimal flex between the bowl and the handle during use. The scoop preferably has sufficient stiffness and strength to withstand the normal scraping motion. Structural elements may be added to the scoop to increase stiffness, in addition to variations in the materials used.

**[0034]** The present disclosure shows and describes one or more exemplary embodiments. It should be understood by those skilled in the art from the foregoing that various other changes, omissions and additions may be made therein, without departing from the spirit and scope of the contemplated invention, with the scope of the invention being defined by the foregoing claims.

**1. A container comprising:**

- a container body defined by a plurality of sidewalls joined at uniform angles and forming a generally rectangular perimeter, the rectangular perimeter having a transverse dimension;
- a bottom wall positioned at the base of the sidewalls, with the sidewalls projecting upwardly therefrom;
- a curved bottom transition portion connecting the bottom wall to the sidewalls;
- a container rim forming an opening into a container volume defined by the sidewalls and the bottom wall, the container rim forming a circular-perimeter having a diameter that is less than the transverse dimension of the rectangular perimeter formed by the sidewalls;
- an upper transition wall formed between the sidewalls and the container rim and extending upwardly from the sidewalls, the upper transition wall supporting the rim and positioned inwardly of the rectangular perimeter of the body; and
- the rim including an outward projecting bead for retaining a circular overcap thereon.

**2. A container as in claim 1, wherein the upper transition wall comprises an outwardly open annular groove formed adjacent the projecting bead of the container rim.**

**3. A container as in claim 1, wherein the container rim further comprises an inwardly directed annular flange, the flange having an inside edge that defines the opening into the container volume.**

**4. A container as in claim 1, wherein the container rim is integrally formed with the container body.**

**5. A container as in claim 1, wherein the container rim further comprises an inwardly directed annular flange, the flange having an inside edge that defines the opening into the container volume.**

**6. A container as in claim 1, wherein the bottom wall includes a central portion extending inwardly into the container volume and a peripheral edge forming a support surface, the support surface surrounding the central portion.**

**7. A container as in claim 6, wherein the support surface is continuous and is connected to the bottom transition portion.**

**8.** A container as in claim 1, wherein each of the sidewalls have generally equal transverse dimensions such that the rectangular perimeter of the body is substantially square.

**9.** A container as in claim 1, wherein one or more of the sidewalls comprise a surface indentation for assistance in gripping the container by a user.

**10.** A container and closure combination comprising:

a container body, the container body defined by

a plurality of sidewalls joined at uniform angles and forming a generally rectangular perimeter the rectangular perimeter having a transverse dimension,

a bottom wall positioned at the base of the sidewalls, with the sidewalls projecting upwardly therefrom,

a curved bottom transition portion connecting the bottom wall to the sidewalls,

a container rim forming an opening into a container volume defined by the sidewalls and the bottom wall, the container rim having a circular perimeter with a diameter that is less than the transverse dimension of the rectangular perimeter formed by the sidewalls, the rim including an outward projecting bead forming a periphery, and

an upper transition wall formed between the sidewalls and the container rim, the upper transition wall extending upwardly from the side walls, supporting the container rim and positioned inwardly of the rectangular perimeter of the body, the transition wall forming an outwardly open annular groove formed adjacent the projecting bead of the container rim; and

an annular closure, the closure having

a body portion dimensioned for conforming to the opening defined by the container rim,

a peripheral skirt projecting transversely to the body portion and dimensioned to surround the container rim in a closely spaced relationship, and

an inwardly projecting ridge formed on an inside surface of the peripheral skirt, the ridge dimensioned to engage within the annular groove on the upper transition portion of the container body to retain the closure in position on the rim of the container.

**11.** A container and closure combination as in claim 10, wherein the container rim further comprises an inwardly directed annular flange, the flange having an inside edge that defines the opening into the container volume.

**12.** A container and closure combination as in claim 10, wherein the container rim is integrally formed with the container body.

**13.** A container and closure combination as in claim 12, wherein the container rim further comprises an inwardly directed annular flange, the flange having an inside edge that defines the opening into the container volume.

**14.** A container and closure combination as in claim 10, wherein the bottom wall includes a central portion extending inwardly into the container volume and a peripheral edge forming a support surface, the support surface surrounding the central portion.

**15.** A container and closure combination as in claim 14, wherein the support surface is continuous and is connected to the bottom transition portion.

**16.** A container and closure combination as in claim 10, wherein each of the sidewalls have generally equal transverse dimensions such that the rectangular perimeter of the body is substantially square.

**17.** A container and closure combination as in claim 10, wherein one or more of the sidewalls comprise a surface indentation for assistance in gripping the container by a user.

**18.** A container and closure combination as in claim 10, further comprising a scoop retained within the container.

**19.** A container and closure combination as in claim 18, wherein the scoop is removably fixed to the body portion of the closure.

**20.** A container and closure combination as in claim 19, further comprising a hook portion and an engagement tab formed in a spaced relationship on a bottom surface of the closure body portion, the tab formed for frictionally engaging within an opening within a handle of the scoop the hook and tab combining to fix the scoop to the closure body bottom surface.

**21.** A container and closure combination as in claim 18, wherein the scoop comprises a handle portion and a dispensing bowl, the dispensing bowl having a peripheral rim, defining an open end of the bowl.

**22.** A container and closure combination as in claim 21, wherein the peripheral rim of the dispensing bowl is formed as an ellipse.

**23.** A container and closure combination as in claim 22, wherein the handle portion is aligned with a minor radius of the ellipse of the rim of the bowl, such that a major radius of the ellipse is positioned transversely to the handle.

**24.** A container and closure combination as in claim 23, wherein the bowl of the scoop includes a tapered sidewall, positioned opposite the handle.

**25.** A container and closure combination as in claim 24, wherein the tapered sidewall of the bowl forms an angle of greater than 45 degrees with respect to the handle.

**26.** A container for storing and dispensing product comprising:

a container body, the container body defined by

a plurality of sidewalls joined at uniform angles and forming a generally rectangular perimeter, the rectangular perimeter having a transverse dimension,

a bottom wall positioned at the base of the sidewalls, with the sidewalls projecting upwardly therefrom,

a bottom transition portion connecting the bottom wall to the sidewalls, the sidewalls and bottom defining a container volume for retaining product,

a container rim forming an opening into the container volume, the container rim having a circular perimeter with a diameter that is less than the transverse dimension of the rectangular perimeter formed by the sidewalls of the container body, the rim including an outward projecting portion forming an outer periphery of the rim, and

an upper transition wall formed between the sidewalls and the container rim, the upper transition wall extending upwardly and inwardly from the sidewalls, the upper transition wall supporting the container rim inwardly of the rectangular perimeter of the container body;

an annular overcap closure, the overcap closure having

a body portion dimensioned to cover the opening defined by the container rim,

a peripheral skirt projecting transversely to the body portion and dimensioned to surround the container rim in a closely spaced relationship, and

structure formed on an inside surface of the peripheral skirt for engaging the outward projecting portion of

the rim to removably retain the overcap closure in position on the rim of the container;

a scoop for removal of product retained within the container, the scoop having

- a handle portion, and
- a dispensing bowl, the dispensing bowl having a peripheral rim defining an open end of the bowl, the peripheral rim formed as an ellipse,
- the handle portion attached to the bowl adjacent the peripheral rim, the handle attachment aligned with a minor radius of the ellipse of the rim of the bowl, such that a major radius of the ellipse is positioned transversely to the handle, and
- the bowl having a tapered sidewall, positioned opposite the handle, wherein the tapered sidewall forms an angle of greater than **45** degrees with respect to the handle; and

a mechanism for removably fixing the scoop to the closure body, the mechanism comprising a hook portion and an engagement tab formed in a spaced relationship on a bottom surface of the closure body, the tab formed for frictionally engaging within an opening in the handle, the hook and tab combining to fix the scoop to the closure body.

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