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Butcher(10) **Pub. No.: US 2019/0389626 A1**(43) **Pub. Date: Dec. 26, 2019**(54) **CONTAINER WITH BOTTOM CRADLE****Publication Classification**(71) Applicant: **Butcher Design, LLC**, Cable, OH (US)(72) Inventor: **Gregory H. Butcher**, Cable, OH (US)(73) Assignee: **Butcher Design, LLC**, Cable, OH (US)(21) Appl. No.: **16/449,560**(22) Filed: **Jun. 24, 2019****Related U.S. Application Data**

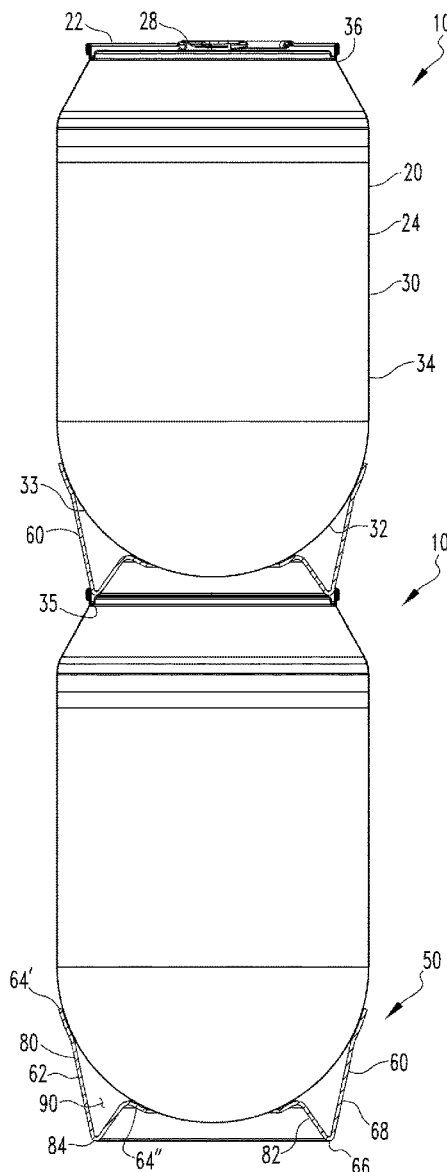
(60) Provisional application No. 62/689,886, filed on Jun. 26, 2018.

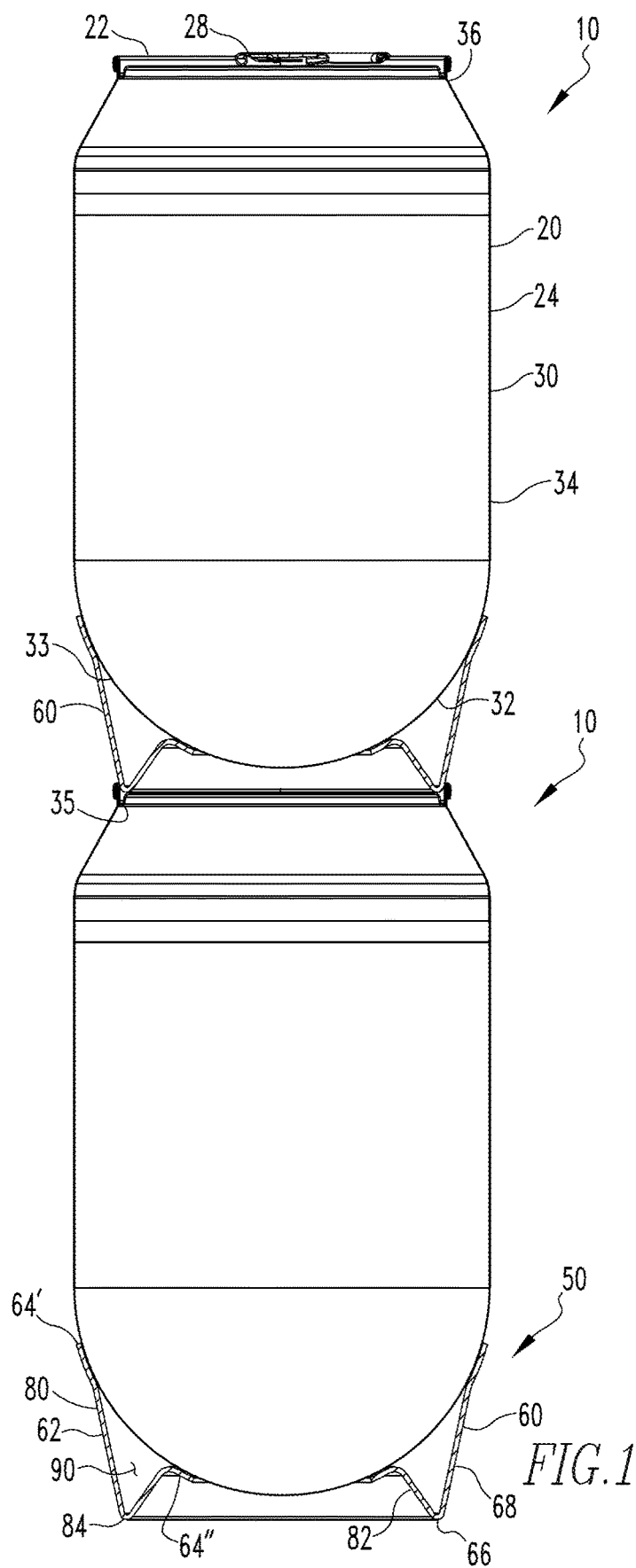
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(57)

ABSTRACT

A disposable container includes a single headed can body, a closure coupled to the can body and a cradle. The single headed can body includes a generally convex base and a generally cylindrical sidewall defining an open end. The can body convex base and can body sidewall are unitary. The closure is coupled to the can body open end. The disposable cradle is coupled to the can body convex base.





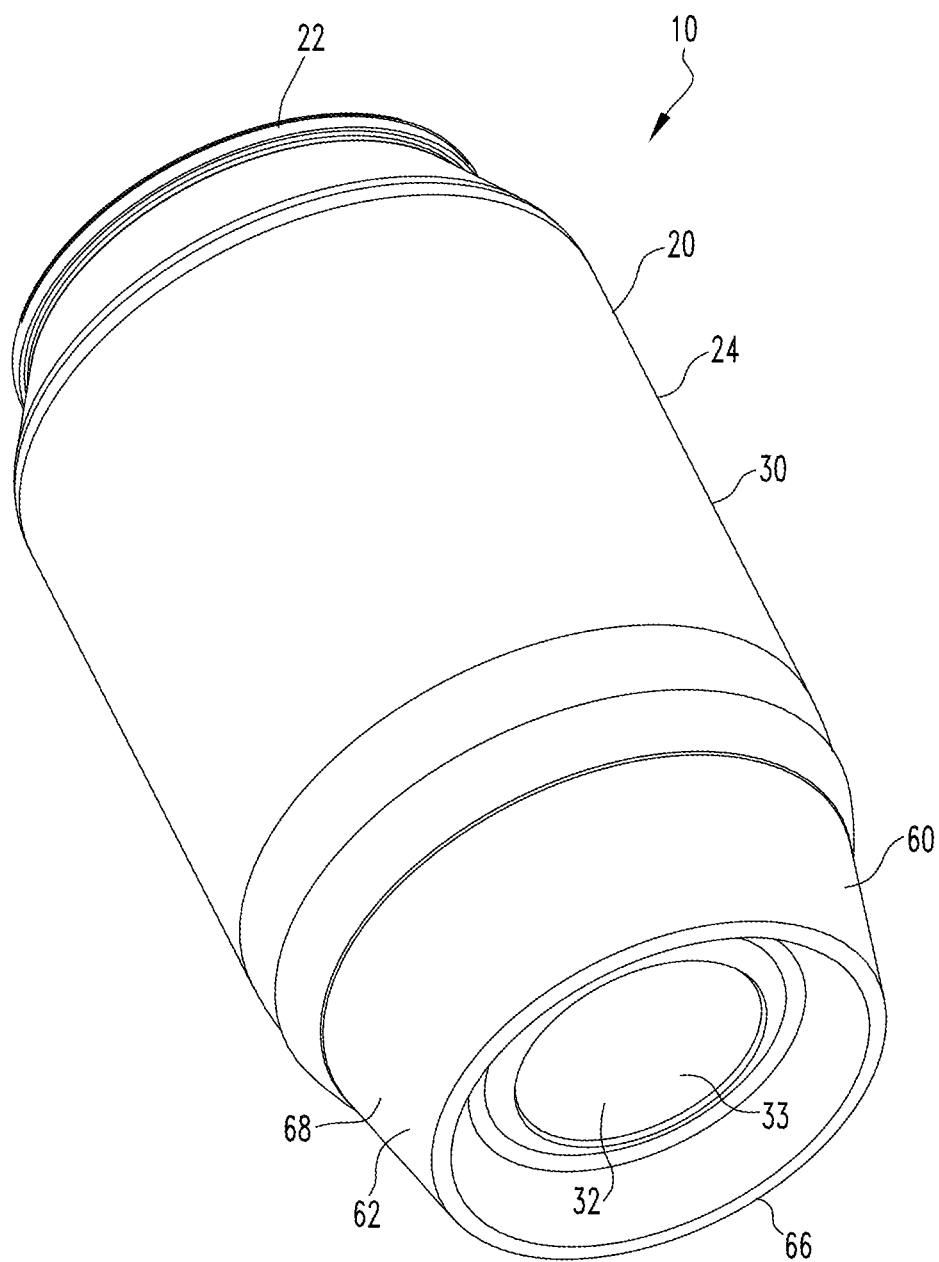


FIG. 2

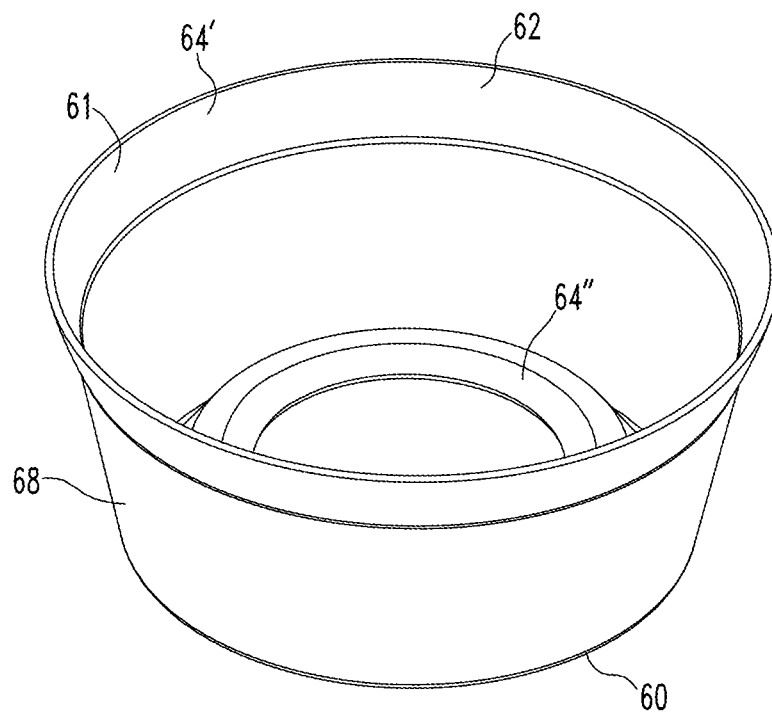


FIG. 3

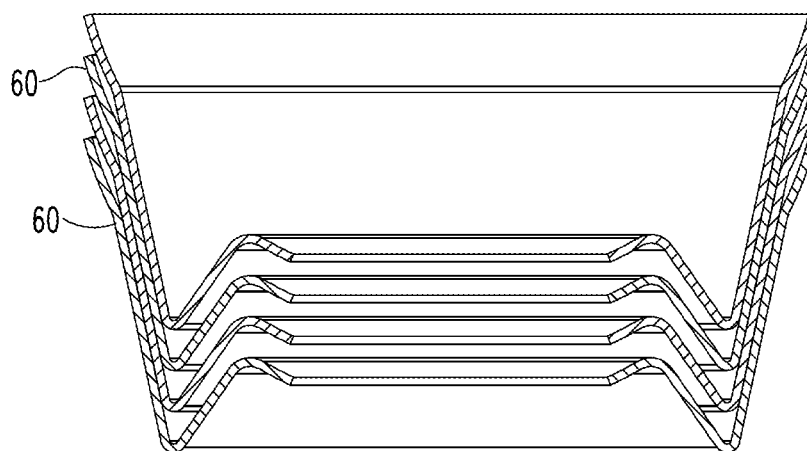
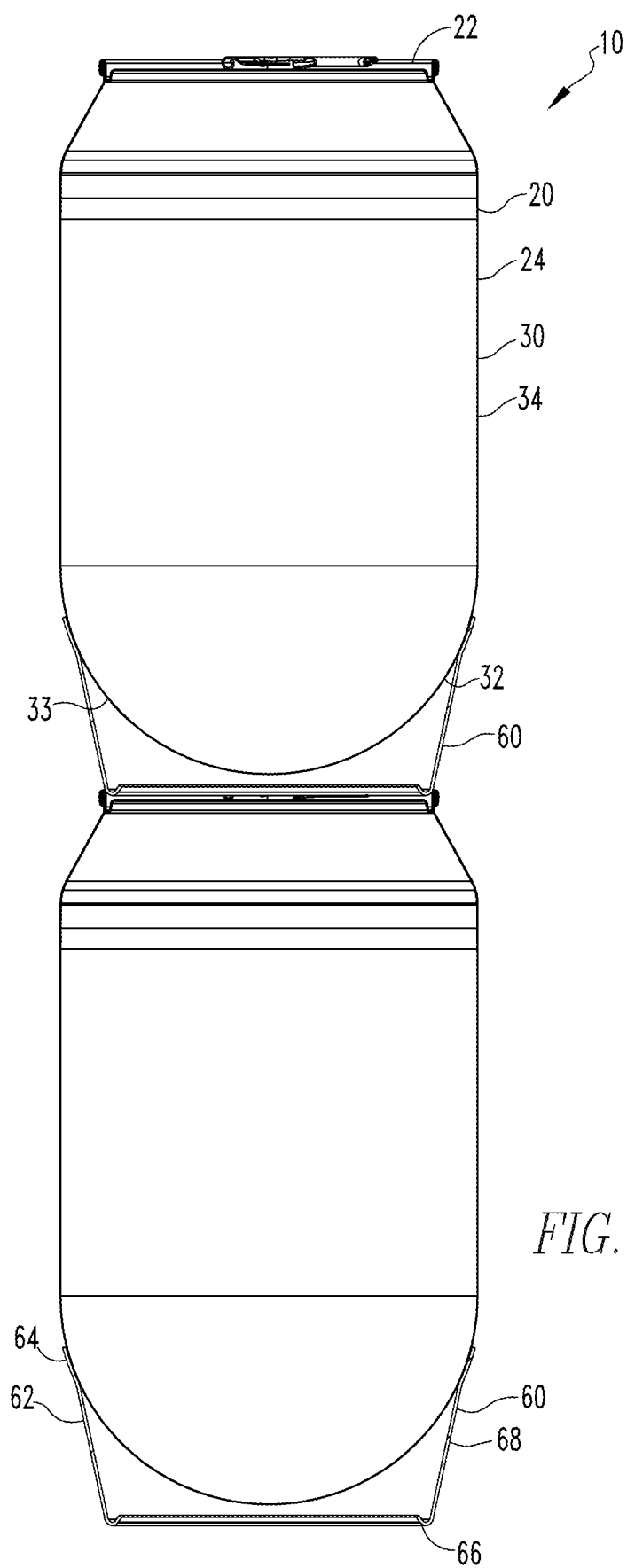


FIG. 4



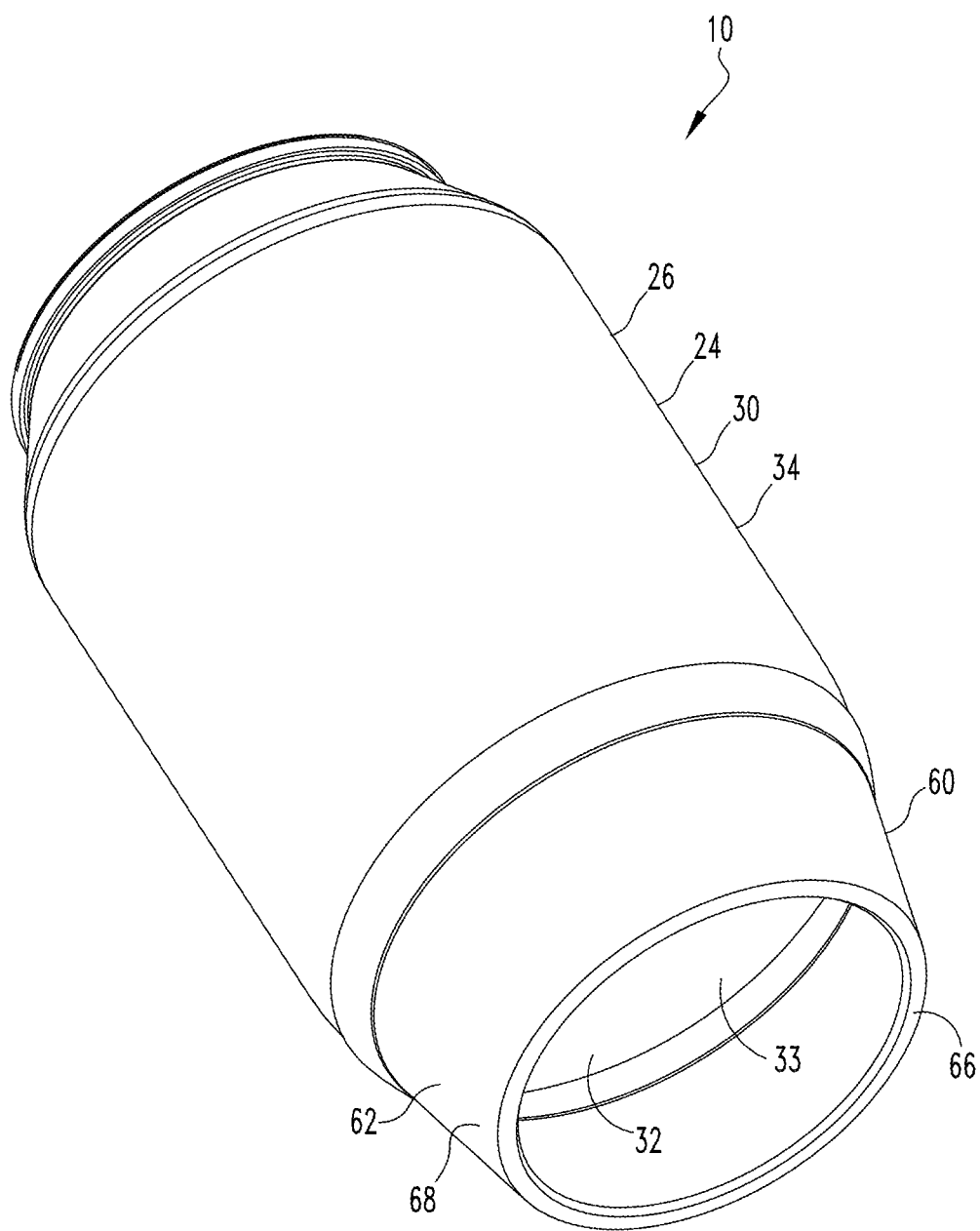


FIG. 6

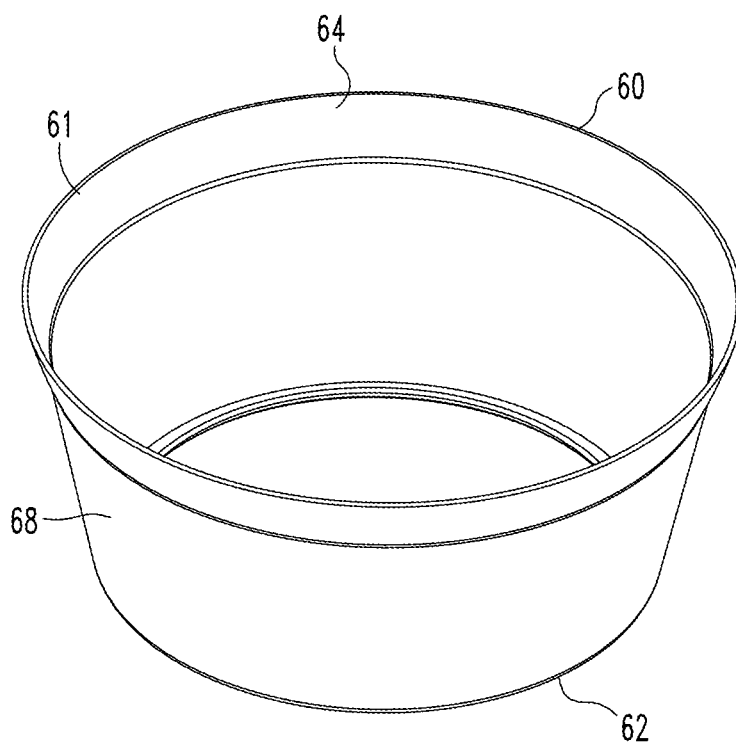


FIG. 7

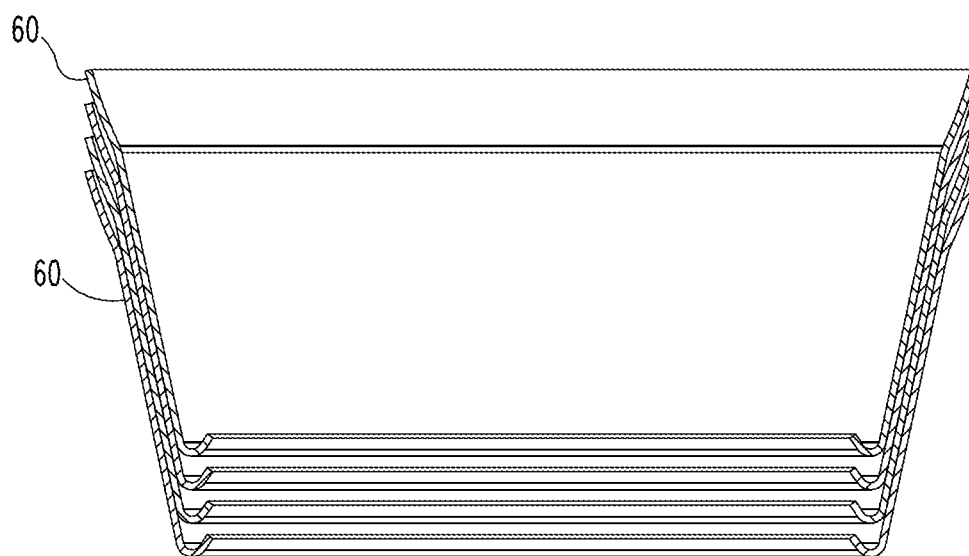


FIG. 8

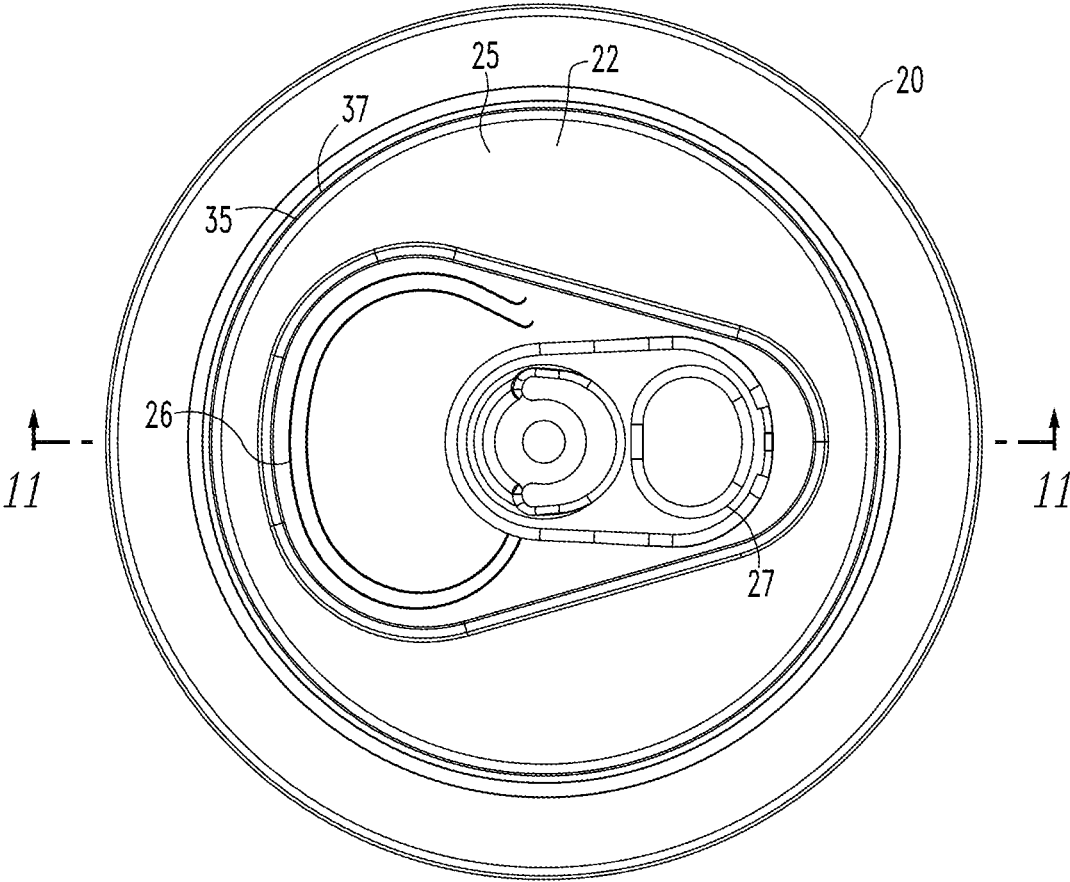


FIG. 9

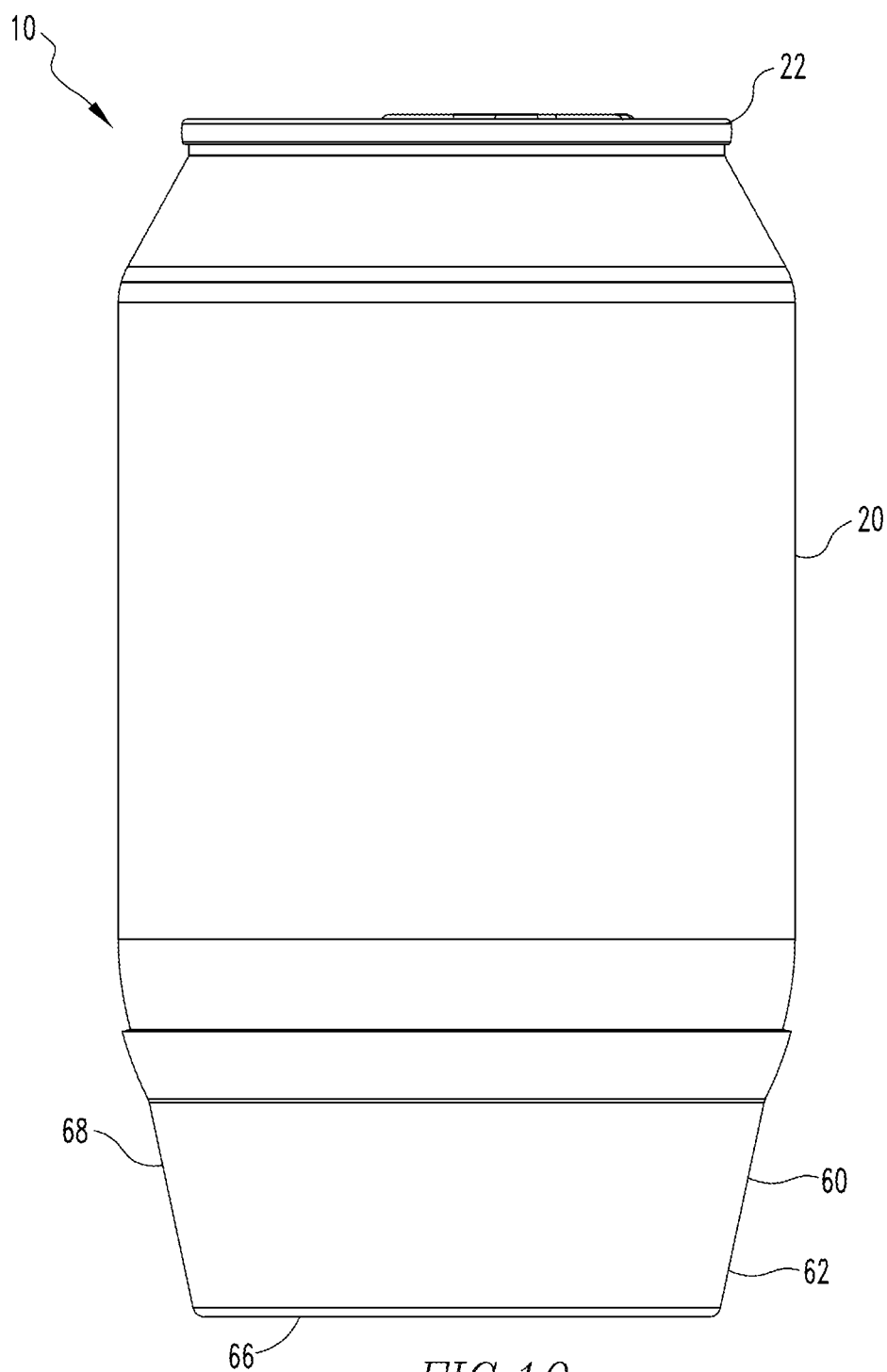


FIG. 10

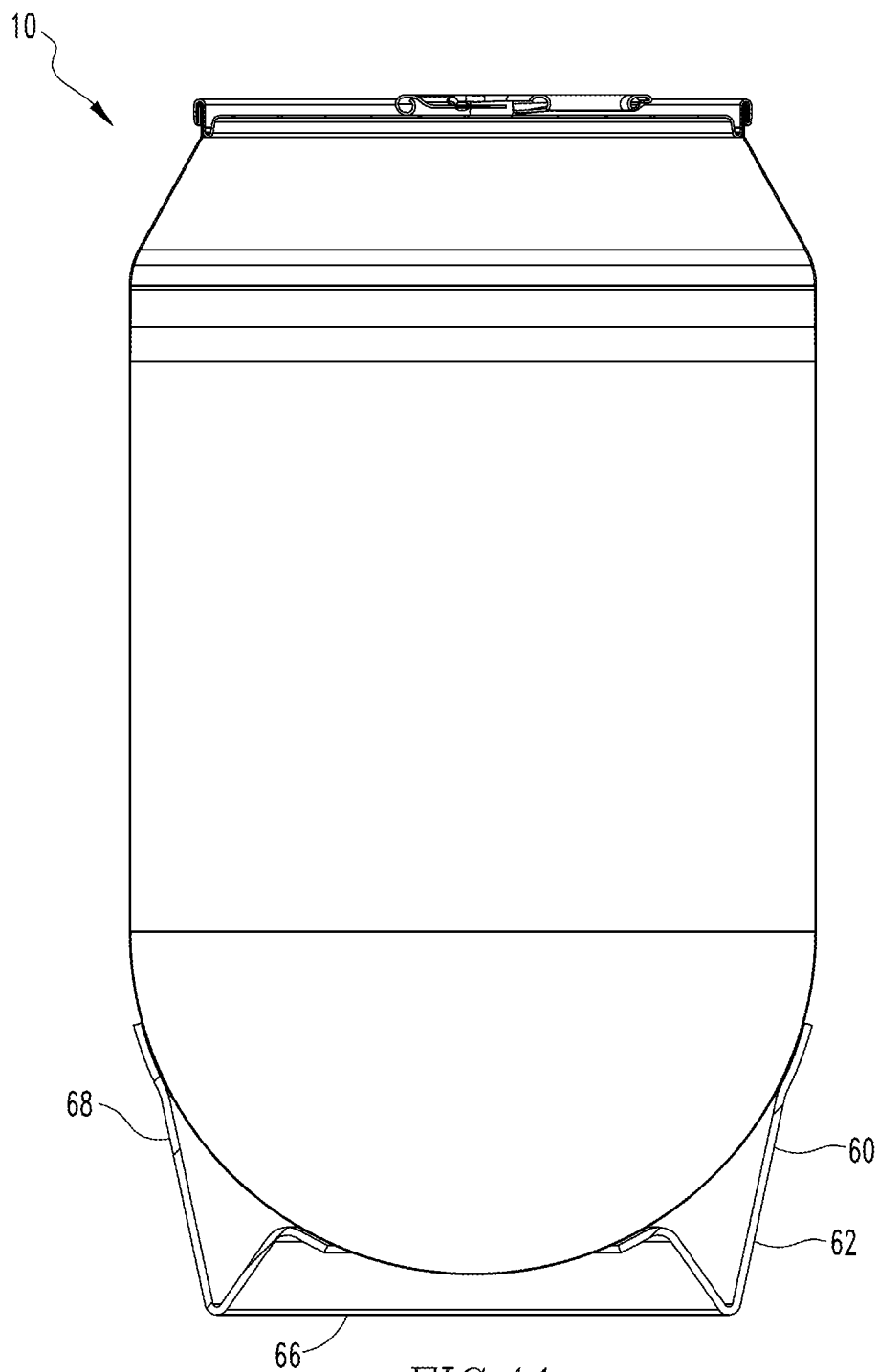
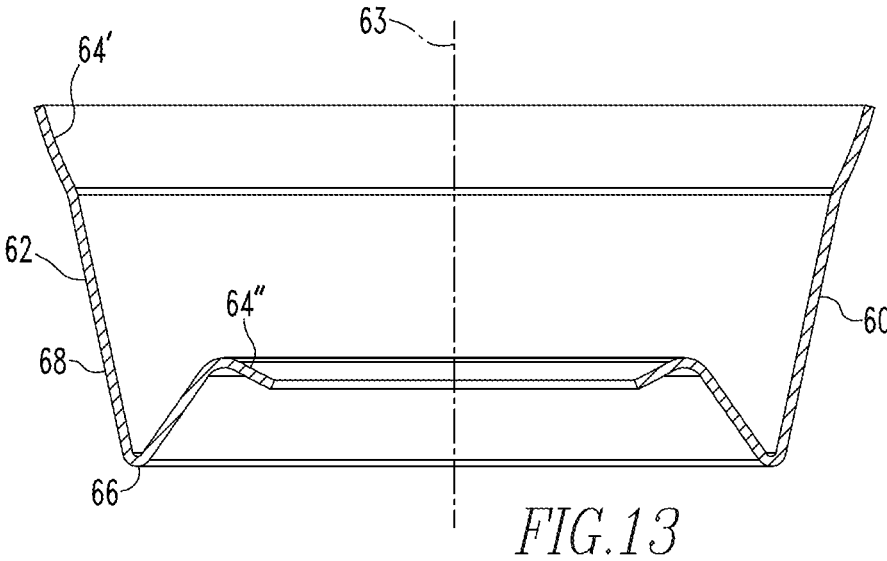
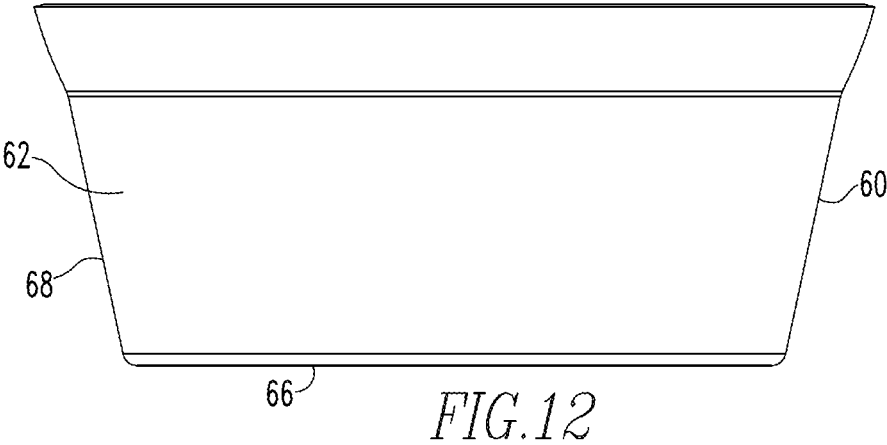


FIG. 11



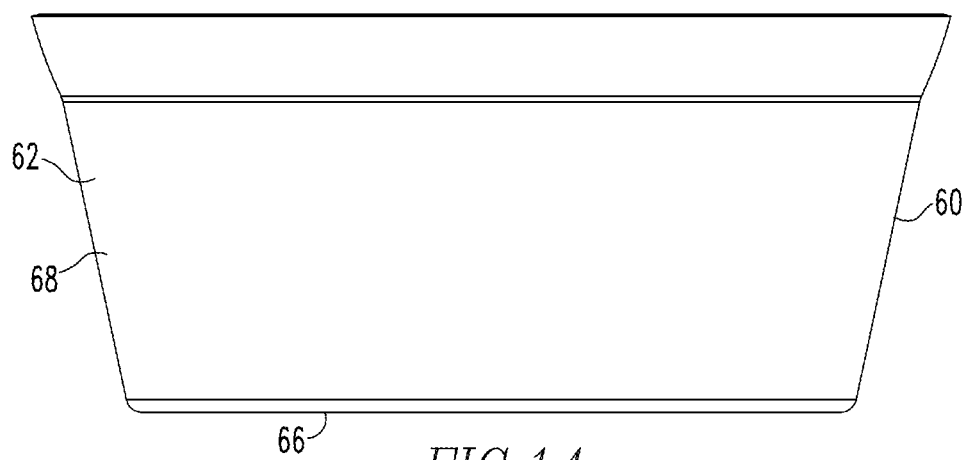


FIG. 14

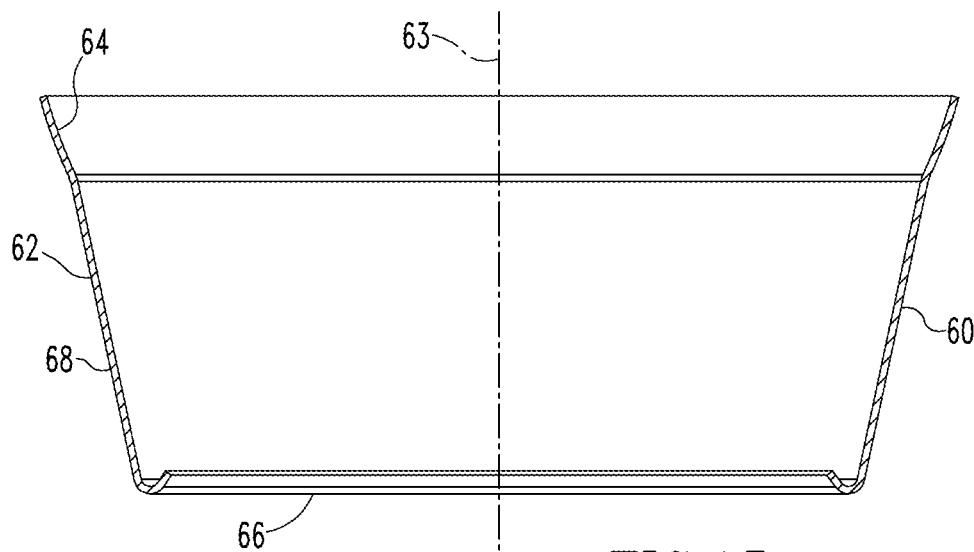


FIG. 15

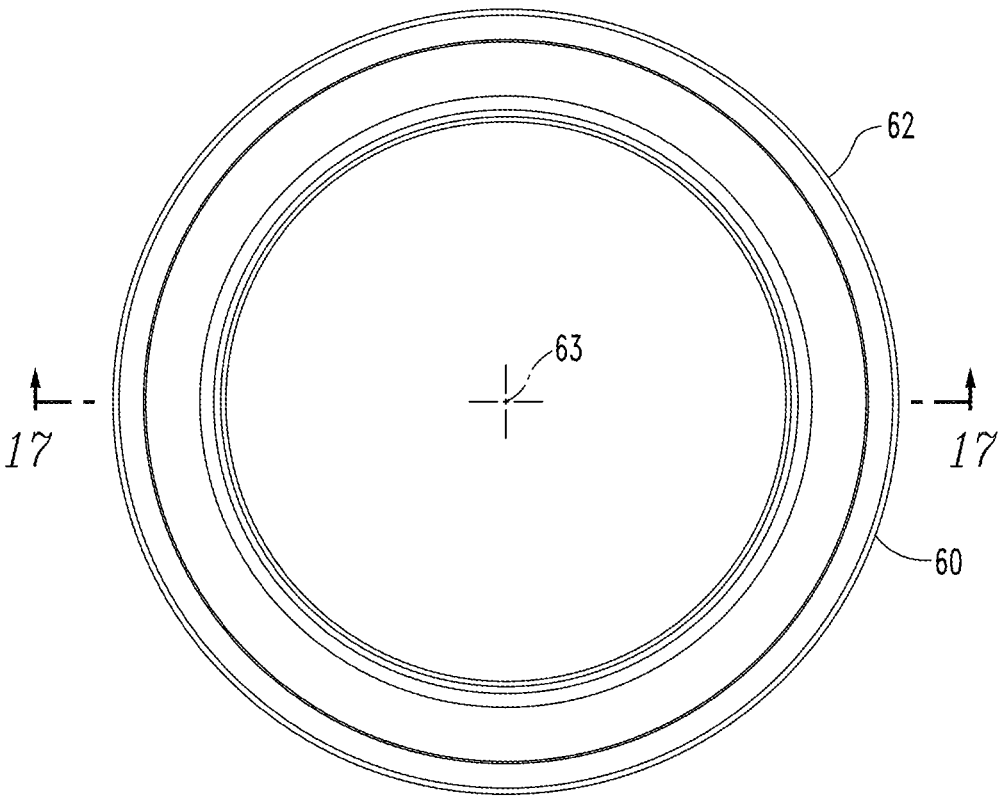


FIG.16

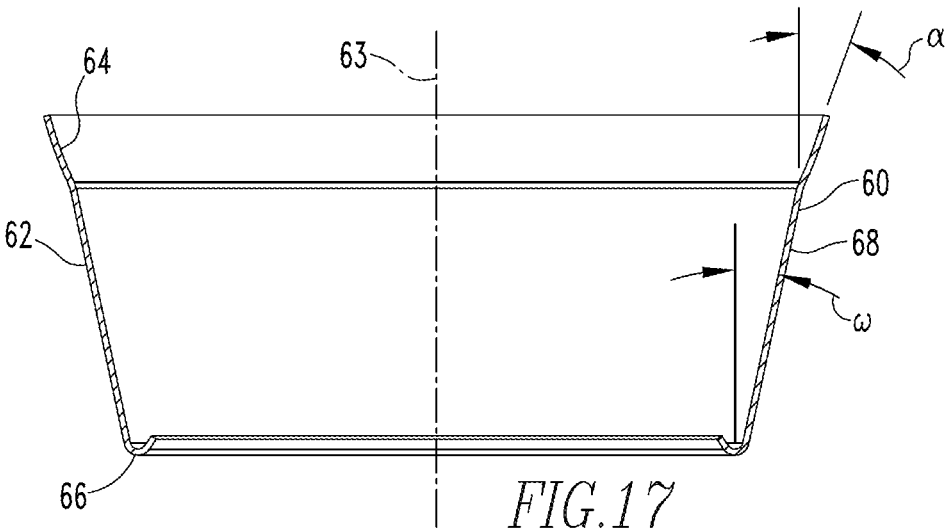
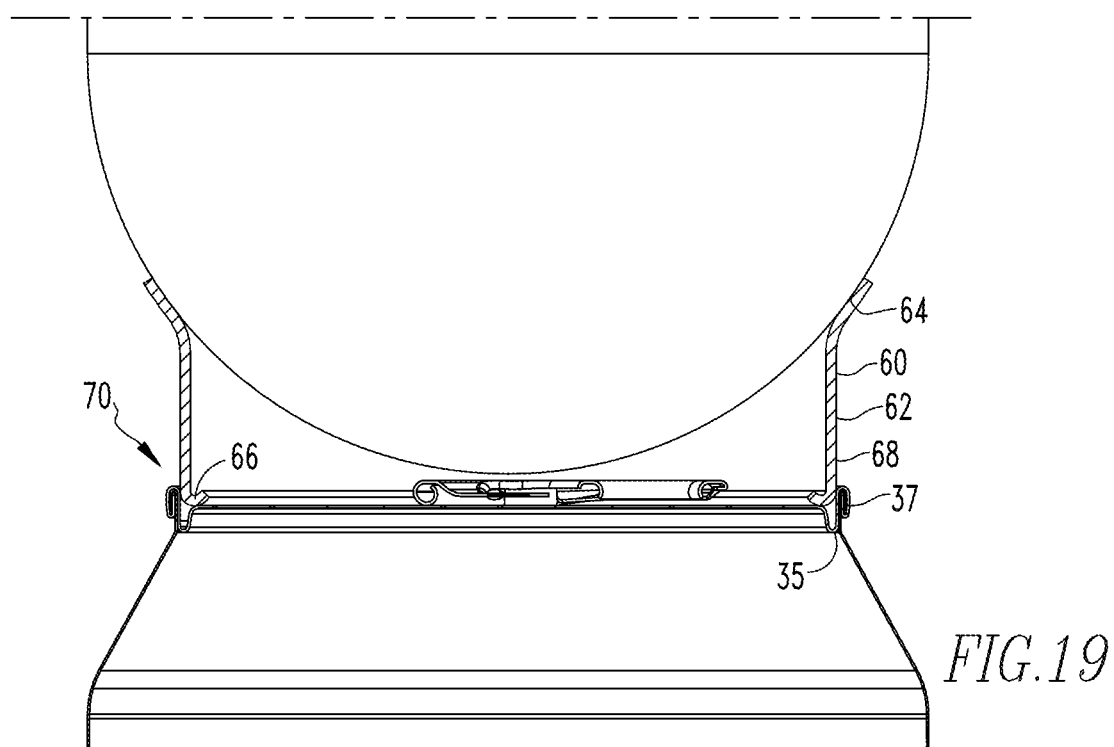
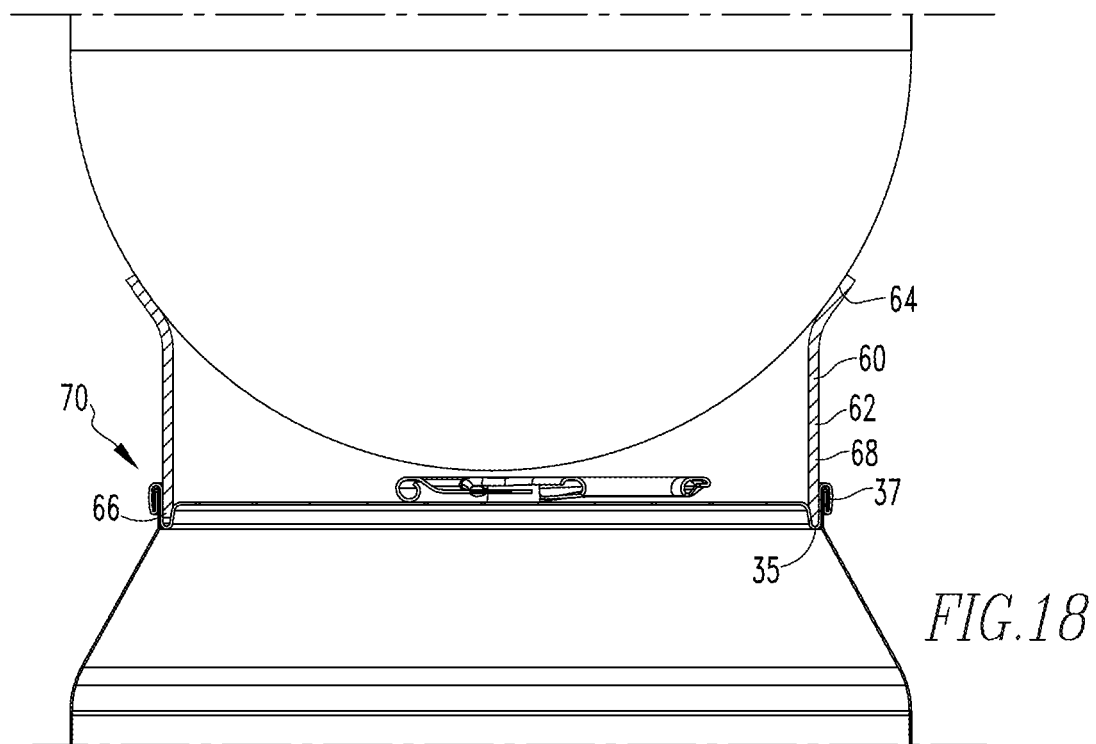
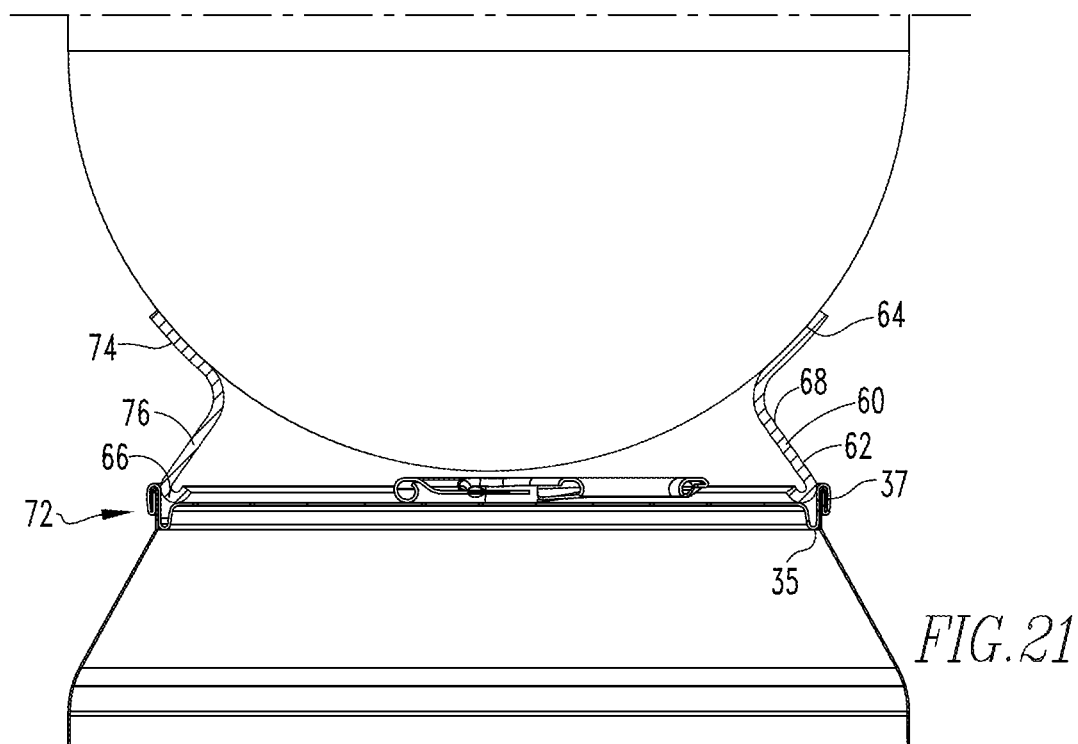
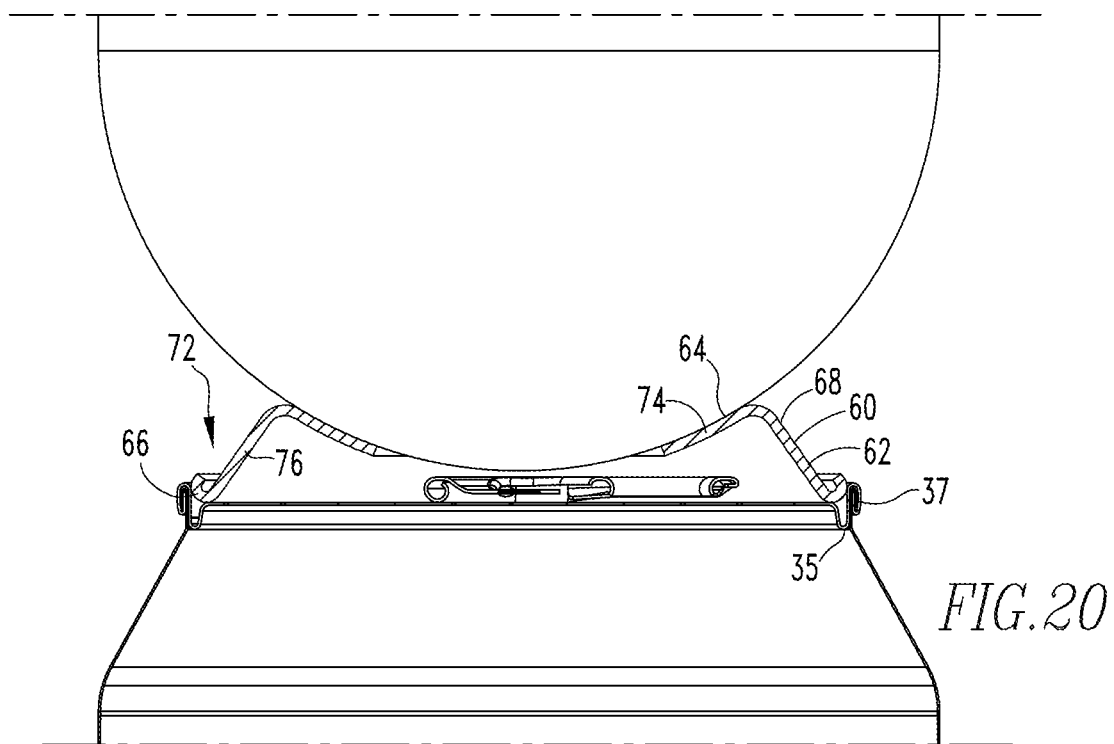


FIG.17





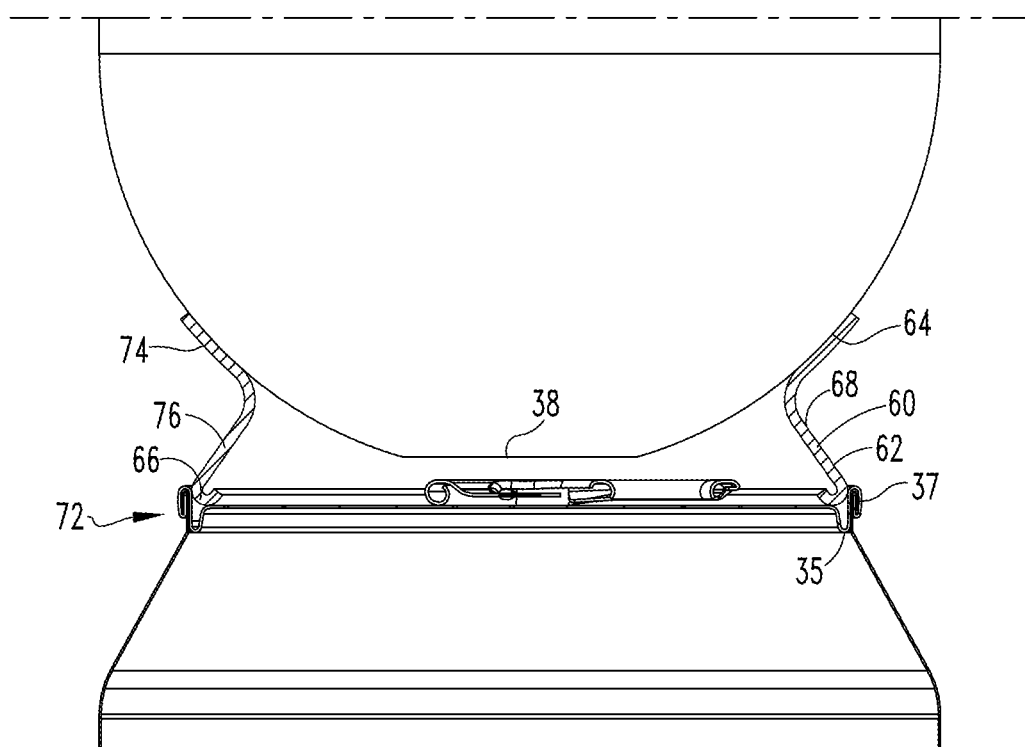


FIG. 22

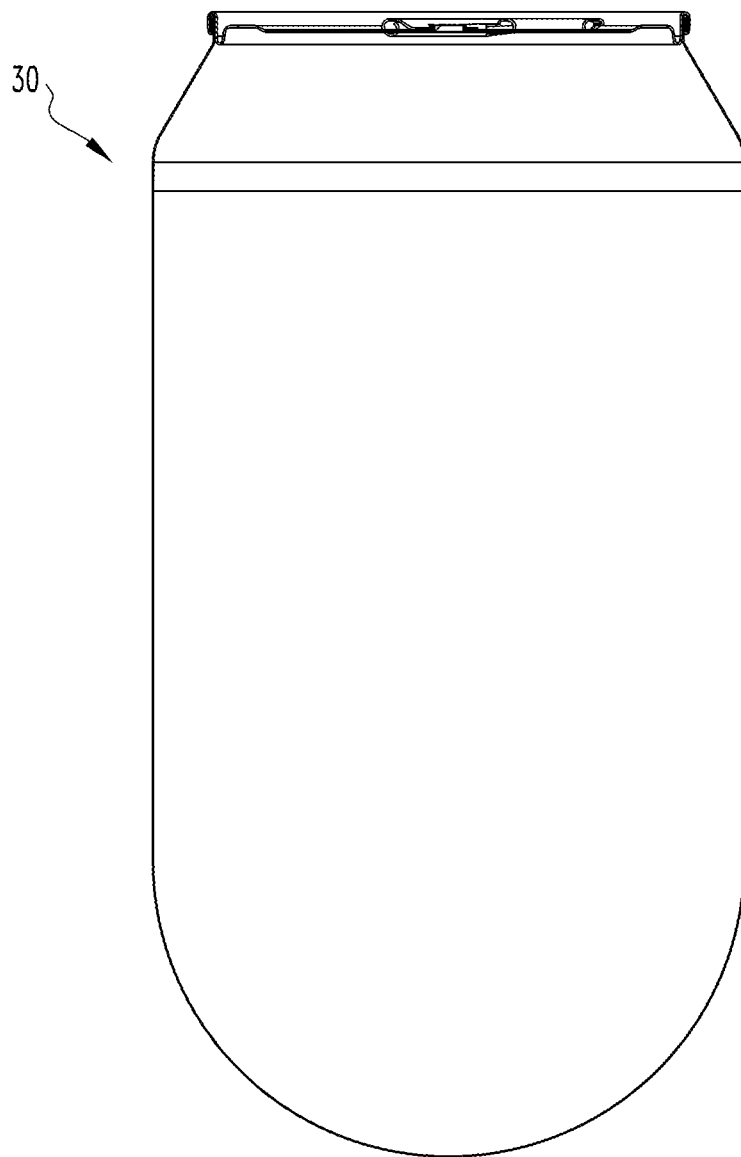


FIG. 23

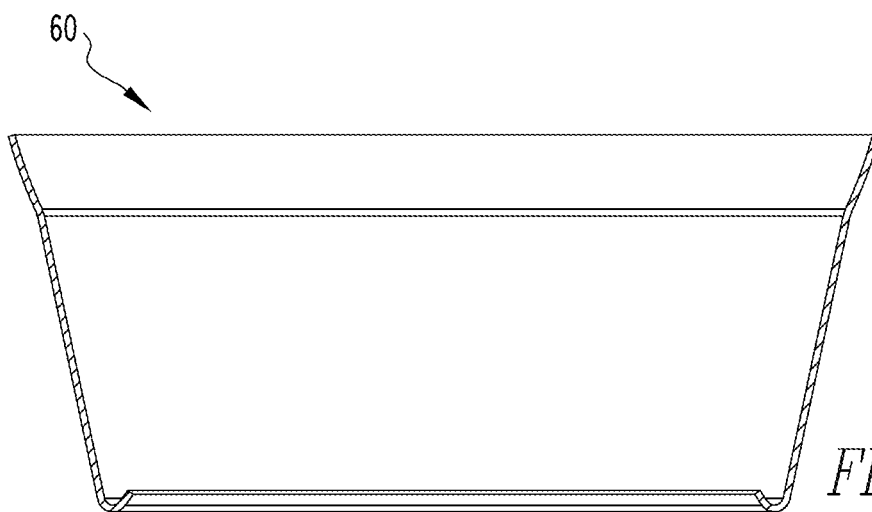


FIG. 24

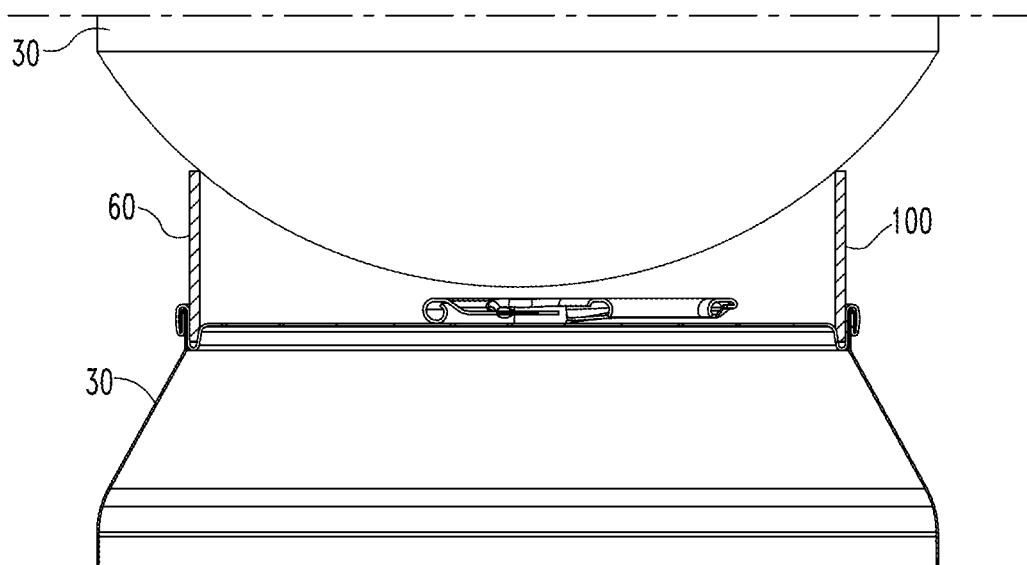


FIG. 25

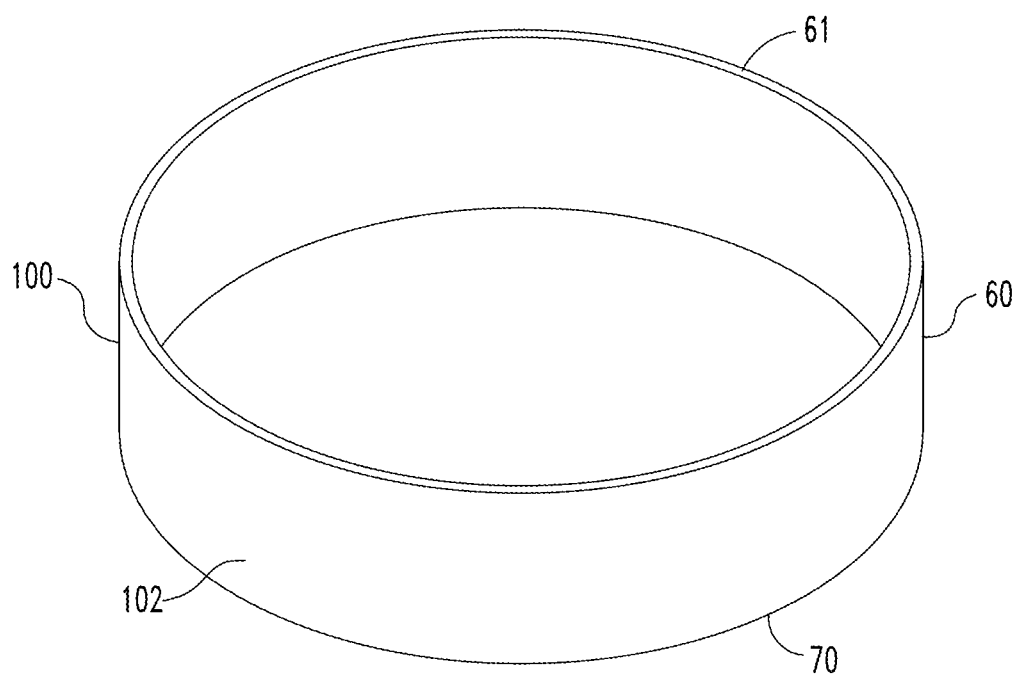


FIG. 26

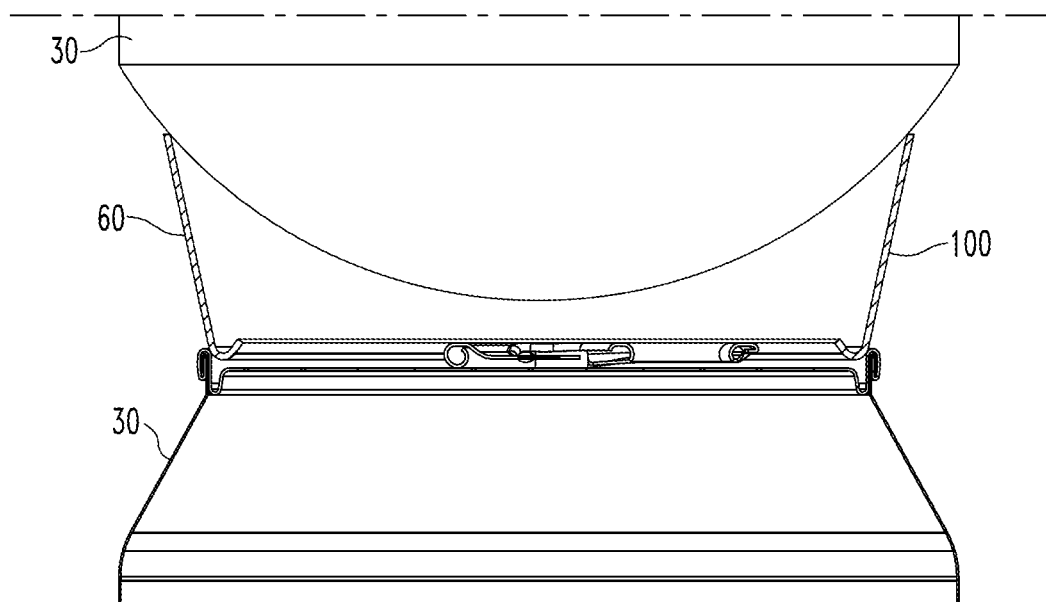


FIG. 27

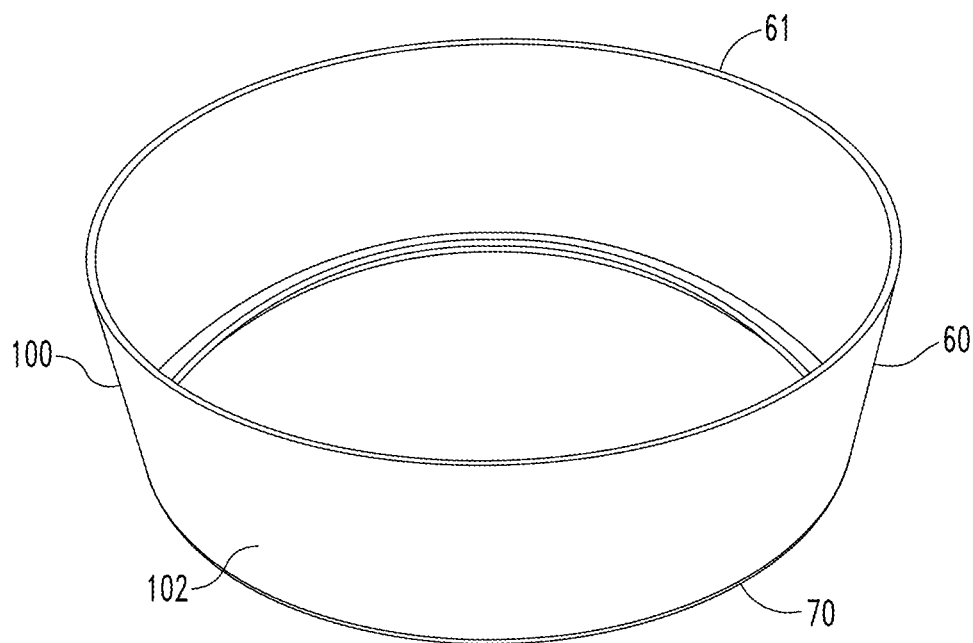


FIG. 28

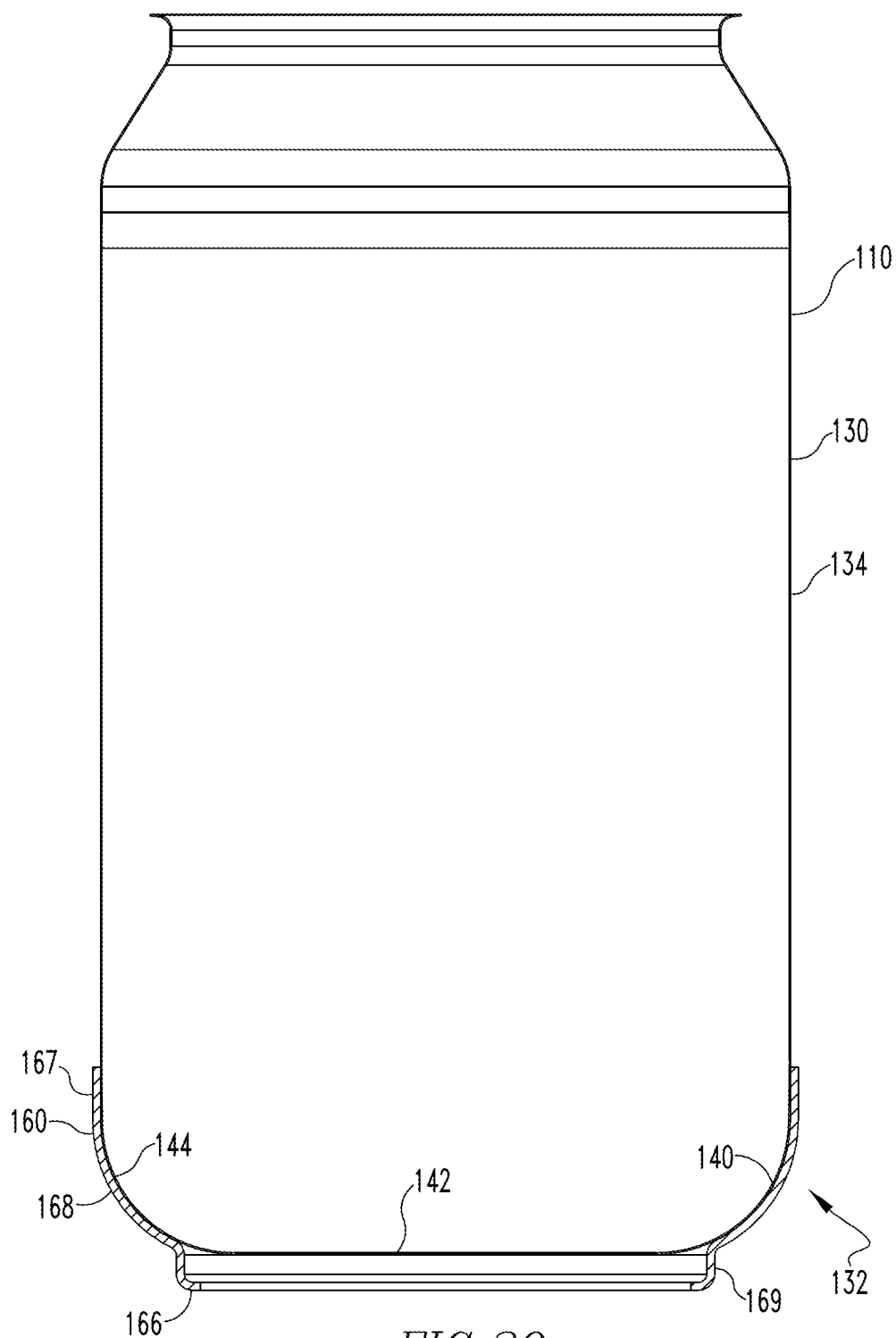
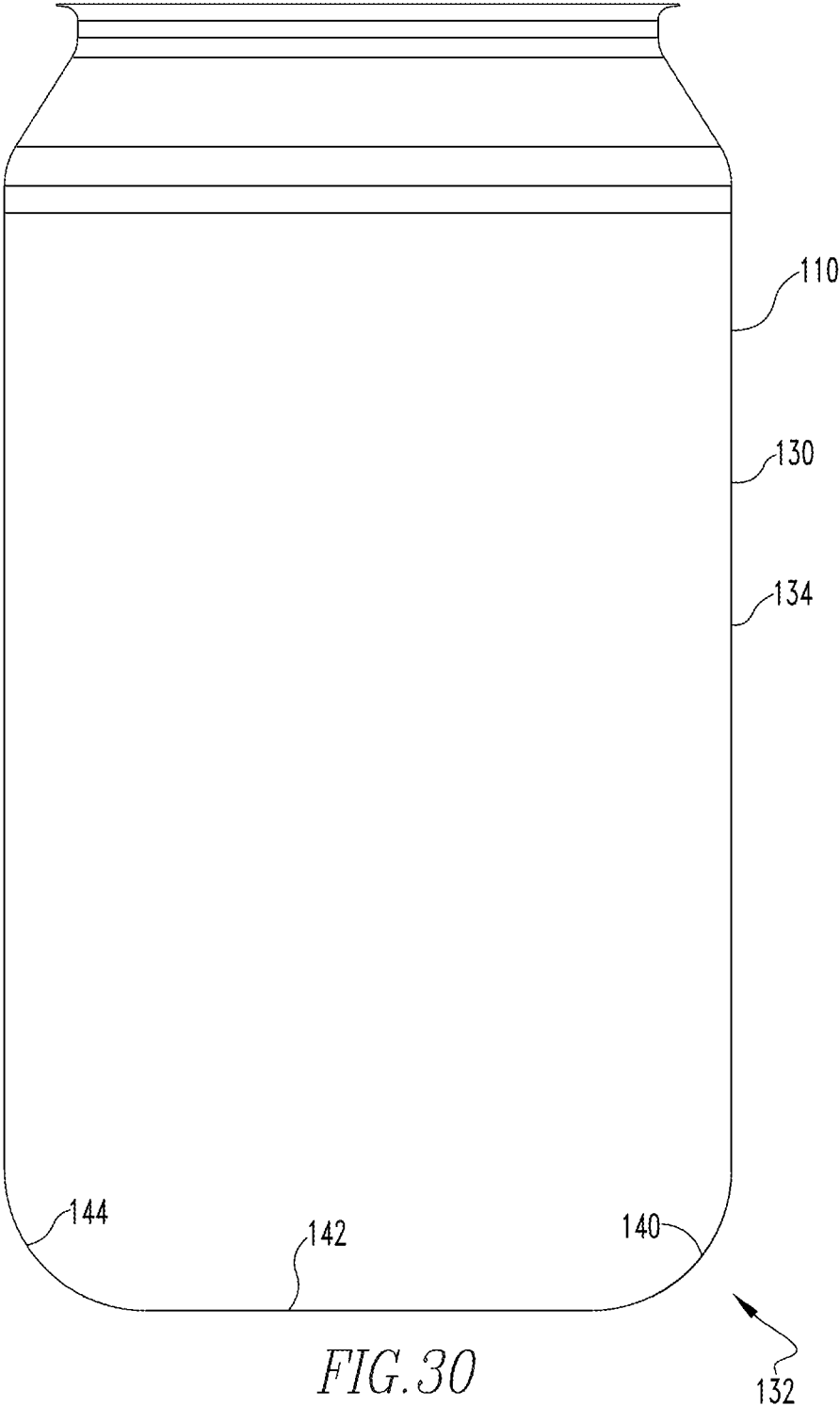


FIG. 29



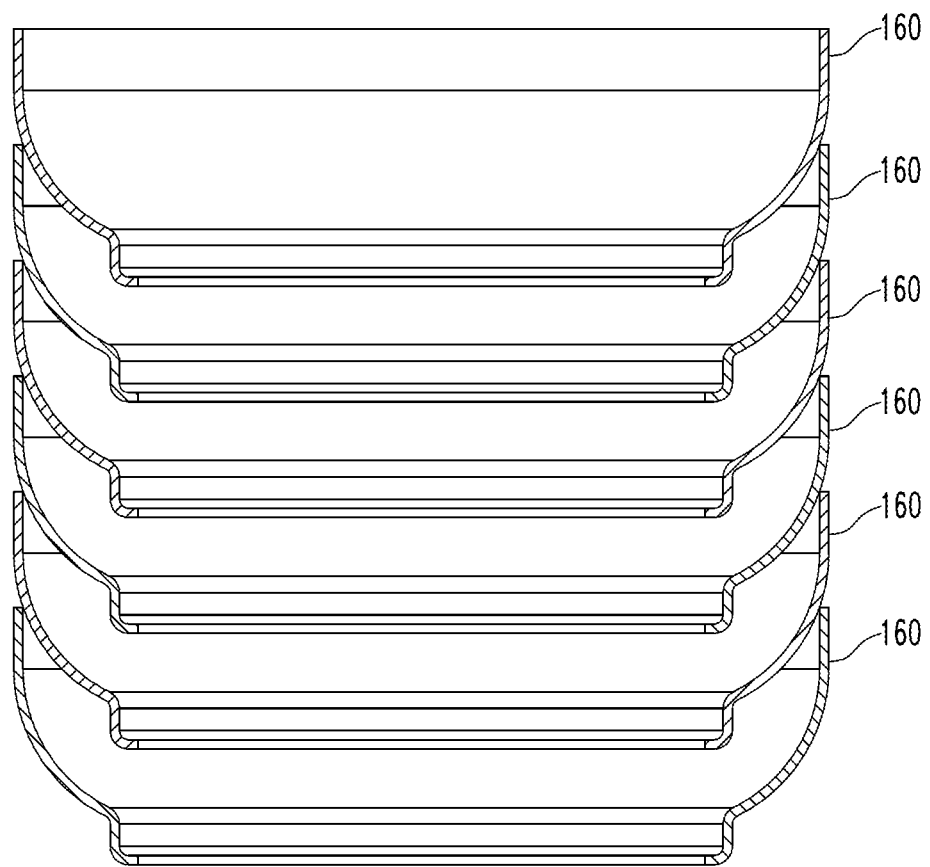
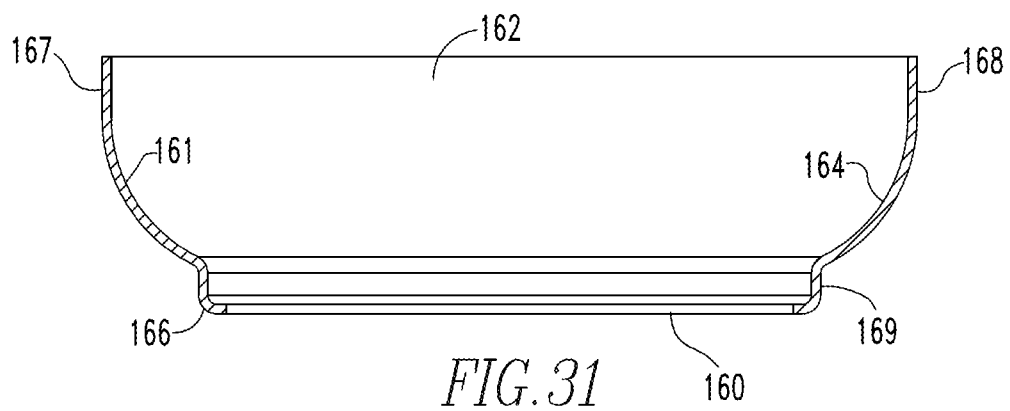


FIG. 32

CONTAINER WITH BOTTOM CRADLE

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application is a traditional utility application of and claims priority to U.S. Provisional Patent Application Ser. No. 62/689,886, filed Jun. 26, 2018, entitled CONTAINER WITH BOTTOM CRADLE.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] The disclosed and claimed concept relates to containers and, more specifically, to a container including a single headed can body and a cradle.

Background Information

[0003] A common disposable container for a beverage such as, but not limited to, a twelve fluid ounce aluminum can, is an assembly that includes a cup-like can body and a closure. Generally, after the container is filled, the two pieces are joined and sealed, thereby completing the container. To reduce the cost of the container, it is desirable to make the components from the least amount of material. That is, the thinner the material used in either, or both, the can body and/or the closure, the less expensive the container.

[0004] The cup-like can body typically begins as a flat material, typically metal, either in sheet or coil form. Blanks, i.e., disks, are cut from the sheet stock and then drawn into a cup. That is, by moving the disk through a series of dies while disposed over a ram or punch, the disk is shaped into a cup having a bottom and a depending sidewall. The cup is then drawn through additional dies to reach a selected length and wall thickness for a can body. One of the last deformations applied to the cup is forming an inwardly extending dome to the bottom of the cup. That is, the cup is moved into engagement with a domer; the domer having a domed end onto which the cup is pressed. When the cup is elongated, thinned, and has a dome, the cup is identified as a can body which is ready to be filled with a product. A can body in this configuration has problems, and, there are problems associated with the method of forming the can body.

[0005] For example, during the formation of the cup, and then the can body, the material that becomes the dome is often reformed. That is, the material is, for example, formed into a concave shape that is then flattened and/or reversed prior to the final formation of the dome. This procedure weakens the material at the dome meaning the material must be thicker so as to resist tears and other undesirable deformations. Further, when the cup is moved into engagement with a domer, the press produces excessive noise, vibration and stress on the press due to the engagement of the ram with the domer. These are all problems. It is, however, noted that a can body with an inwardly extending dome has a generally planar lowest surface. That is, during the formation of the dome, and at the transition between the can body sidewall and the dome, an annular ridge is formed. This annular ridge is the bottom most construct of the can body and is generally planar. This planar bottom is desirable as the can body (and therefore the finished container) has a flat surface upon which to rest. That is, the can body (and therefore the finished container) are stable when placed upon a flat surface such as, but not limited to, a table.

[0006] The closure coupled to the can body is, typically, an easy open can end on which a pull tab is attached (e.g., without limitation, riveted) to a tear strip or severable panel. The severable panel is defined by a scoreline in the exterior surface (e.g., public side) of the can end. The pull tab is structured to be lifted and/or pulled to sever the scoreline and deflect and/or remove the severable panel, thereby creating an opening for dispensing the contents of the can. When the can end is made, it originates as a can end shell, which is formed from a blank cut (e.g., blanked) from a sheet metal product (e.g., without limitation, sheet aluminum; sheet steel). The shell is then conveyed to a conversion press, which has a number of successive tool stations. As the shell advances from one tool station to the next, conversion operations such as, for example and without limitation, rivet forming, paneling, scoring, embossing, tab securing and tab staking, are performed until the shell is fully converted into the desired can end, or closure, and is discharged from the press.

[0007] The can bodies and the can ends are provided to a manufacturer/filler which fills the can body with a product and which couples the can end to the can body, thereby completing the container. The containers are, in some instances, filled with a carbonated product such as, but not limited to beer or soda. Alternatively, or further, the container may be exposed to heat so as to sterilize the product within the container. A container filled with a carbonated beverage and/or one exposed to heat, is exposed to an increased pressure within the container. The dome and the thickness of the metal forming the can body and can end, as well as other features of the container, resist tearing or other deformation of the can body and can end when the container is exposed to the increased pressure.

[0008] Other containers, i.e., containers for liquefied and/or high pressure gas such as, but not limited to, propane, utilize domed heads. Such cylinders are identified herein as "gas cylinders." A gas cylinder includes a generally cylindrical sidewall and one or two domed heads at one end, or both ends. A gas cylinder is structured to resist the high pressure associated with high pressure and/or cryogenic fluids. Such containers, however, have their own problems. For example, such containers are made from material that is considerably thicker than the material used for beverage containers. Further, such containers often have the domed heads coupled, i.e., welded, to a generally cylindrical sidewall. This increases the cost of manufacture. Thus, such containers are not disposable. That is, such containers are structured to be refilled and reused. Such containers are not acceptable as beverage containers due to the cost. Further, gas cylinders are too large to be used efficiently as beverage containers. These are problems that prevent such constructs from being used as disposable containers.

[0009] Further, containers with a domed lower end require an additional construct to be configured to rest on a flat surface without an additional support. That is, the domed lower end is typically disposed in a cylindrical boot having a generally planar bottom. Alternatively, and typically for containers with a diameter of about one foot or more, an annular ring or similar construct is permanently coupled to the bottom of the container. Such an annular ring provides a generally planar surface upon which the container rests. These constructs, i.e., a boot or an annular ring, are permanent and structured to be reused. That is, these constructs are not disposable (as defined below) and are not structured to

be coupled to a disposable container. Further, known boots or annular rings are not nestable. That is, these constructs are not tapered and cannot be stacked and stored in a nested manner. These are also problems with the known art.

[0010] There is, therefore, a need for a container that uses less material in the can body while still being able to resist tearing or deformation. There is a further need for such a container to be stable when resting on a generally flat surface. There is a further need for such a container to be disposable.

SUMMARY OF THE INVENTION

[0011] These needs, and others, are met by at least one embodiment of the disclosed and claimed concept which provides a disposable container including a single headed can body, a closure coupled to the can body and a cradle. The single headed can body includes a generally convex base and a generally cylindrical sidewall defining an open end. The can body convex base and can body sidewall are unitary. The closure is coupled to the can body open end. The disposable cradle is coupled to the can body convex base.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] A full understanding of the invention can be gained from the following description of the preferred embodiments when read in conjunction with the accompanying drawings in which:

[0013] FIG. 1 is a side, partial cross-sectional view of two stacked disposable container assemblies.

[0014] FIG. 2 is an isometric view of a disposable container assembly.

[0015] FIG. 3 is an isometric view of a disposable cradle.

[0016] FIG. 4 is a cross-sectional view of nested disposable cradles.

[0017] FIG. 5 is a side, partial cross-sectional view of another embodiment of two stacked disposable container assemblies.

[0018] FIG. 6 is an isometric view of another embodiment of a disposable container assembly.

[0019] FIG. 7 is an isometric view of another embodiment of a disposable cradle.

[0020] FIG. 8 is a cross-sectional view of another embodiment of nested disposable cradles.

[0021] FIG. 9 is a top view of a disposable container assembly.

[0022] FIG. 10 is a side view of a disposable container assembly.

[0023] FIG. 11 is a partial cross-sectional side view of a stacked disposable container assembly.

[0024] FIG. 12 is a side view of a disposable cradle.

[0025] FIG. 13 is a cross-sectional side view of a disposable cradle.

[0026] FIG. 14 is a side view of another embodiment of a disposable cradle.

[0027] FIG. 15 is a cross-sectional side view of another embodiment of a disposable cradle.

[0028] FIG. 16 is a top view of another embodiment of a disposable cradle.

[0029] FIG. 17 is a cross-sectional side view of another embodiment of a disposable cradle with exemplary dimensions.

[0030] FIG. 18 is a partial cross-sectional detail side view of a stacked disposable container assembly.

[0031] FIG. 19 is a partial cross-sectional detail side view of another embodiment of a stacked disposable container assembly.

[0032] FIG. 20 is a partial cross-sectional detail side view of another embodiment of a stacked disposable container assembly.

[0033] FIG. 21 is a partial cross-sectional detail side view of another embodiment of a stacked disposable container assembly.

[0034] FIG. 22 is a partial cross-sectional detail side view of another embodiment of a stacked disposable container assembly.

[0035] FIG. 23 is a cross-sectional view of a can body including a generally convex base and showing exemplary dimensions.

[0036] FIG. 24 is a cross-sectional side view of one embodiment of a disposable cradle showing exemplary dimensions.

[0037] FIG. 25 is a schematic side view of another embodiment of a disposable container assembly.

[0038] FIG. 26 is a schematic isometric view of a cylindrical collar.

[0039] FIG. 27 is a schematic side view of another embodiment of a disposable container assembly.

[0040] FIG. 28 is a schematic isometric view of a tapered collar.

[0041] FIG. 29 is a cross-sectional side view of another embodiment of a disposable container assembly.

[0042] FIG. 30 is a cross-sectional side view of another embodiment of a can body.

[0043] FIG. 31 is a cross-sectional side view of another embodiment of a cradle.

[0044] FIG. 32 is a cross-sectional side view of nested cradles.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0045] It will be appreciated that the specific elements illustrated in the figures herein and described in the following specification are simply exemplary embodiments of the disclosed concept, which are provided as non-limiting examples solely for the purpose of illustration. Therefore, specific dimensions, orientations, assembly, number of components used, embodiment configurations and other physical characteristics related to the embodiments disclosed herein are not to be considered limiting on the scope of the disclosed concept.

[0046] Directional phrases used herein, such as, for example, clockwise, counterclockwise, left, right, top, bottom, upwards, downwards and derivatives thereof, relate to the orientation of the elements shown in the drawings and are not limiting upon the claims unless expressly recited therein.

[0047] As used herein, the singular form of “a,” “an,” and “the” include plural references unless the context clearly dictates otherwise.

[0048] As used herein, “structured to [verb]” means that the identified element or assembly has a structure that is shaped, sized, disposed, coupled and/or configured to perform the identified verb. For example, a member that is “structured to move” is movably coupled to another element and includes elements that cause the member to move or the

member is otherwise configured to move in response to other elements or assemblies. As such, as used herein, “structured to [verb]” recites structure and not function. Further, as used herein, “structured to [verb]” means that the identified element or assembly is intended to, and is designed to, perform the identified verb. Thus, an element that is merely capable of performing the identified verb but which is not intended to, and is not designed to, perform the identified verb is not “structured to [verb].”

[0049] As used herein, “associated” means that the elements are part of the same assembly and/or operate together, or, act upon/with each other in some manner. For example, an automobile has four tires and four hub caps. While all the elements are coupled as part of the automobile, it is understood that each hubcap is “associated” with a specific tire.

[0050] As used herein, a “coupling assembly” includes two or more couplings or coupling components. The components of a coupling or coupling assembly are generally not part of the same element or other component. As such, the components of a “coupling assembly” may not be described at the same time in the following description.

[0051] As used herein, a “coupling” or “coupling component(s)” is one or more component(s) of a coupling assembly. That is, a coupling assembly includes at least two components that are structured to be coupled together. It is understood that the components of a coupling assembly are compatible with each other. For example, in a coupling assembly, if one coupling component is a snap socket, the other coupling component is a snap plug, or, if one coupling component is a bolt, then the other coupling component is a nut or threaded bore. Further, a passage in an element is part of the “coupling” or “coupling component(s).” For example, in an assembly of two wooden boards coupled together by a nut and a bolt extending through passages in both boards, the nut, the bolt and the two passages are each a “coupling” or “coupling component.”

[0052] As used herein, a “fastener” is a separate component structured to couple two or more elements. Thus, for example, a bolt is a “fastener” but a tongue-and-groove coupling is not a “fastener.” That is, the tongue-and-groove elements are part of the elements being coupled and are not a separate component.

[0053] As used herein, the statement that two or more parts or components are “coupled” shall mean that the parts are joined or operate together either directly or indirectly, i.e., through one or more intermediate parts or components, so long as a link occurs. As used herein, “directly coupled” means that two elements are directly in contact with each other. As used herein, “fixedly coupled” or “fixed” means that two components are coupled so as to move as one while maintaining a constant orientation relative to each other. As used herein, “adjustably fixed” means that two components are coupled so as to move as one while maintaining a constant general orientation or position relative to each other while being able to move in a limited range or about a single axis. For example, a doorknob is “adjustably fixed” to a door in that the doorknob is rotatable, but generally the doorknob remains in a single position relative to the door. Further, a cartridge (nib and ink reservoir) in a retractable pen is “adjustably fixed” relative to the housing in that the cartridge moves between a retracted and extended position, but generally maintains its orientation relative to the housing. Accordingly, when two elements are coupled, all portions of those elements are coupled. A description, however, of a

specific portion of a first element being coupled to a second element, e.g., an axle first end being coupled to a first wheel, means that the specific portion of the first element is disposed closer to the second element than the other portions thereof. Further, an object resting on another object held in place only by gravity is not “coupled” to the lower object unless the upper object is otherwise maintained substantially in place. That is, for example, a book on a table is not coupled thereto, but a book glued to a table is coupled thereto.

[0054] As used herein, the phrase “removably coupled” or “temporarily coupled” means that one component is coupled with another component in an essentially temporary manner. That is, the two components are coupled in such a way that the joining or separation of the components is easy and would not damage the components. For example, two components secured to each other with a limited number of readily accessible fasteners, i.e., fasteners that are not difficult to access, are “removably coupled” whereas two components that are welded together or joined by difficult to access fasteners are not “removably coupled.” A “difficult to access fastener” is one that requires the removal of one or more other components prior to accessing the fastener wherein the “other component” is not an access device such as, but not limited to, a door.

[0055] As used herein, “operatively coupled” means that a number of elements or assemblies, each of which is movable between a first position and a second position, or a first configuration and a second configuration, are coupled so that as the first element moves from one position/configuration to the other, the second element moves between positions/configurations as well. It is noted that a first element may be “operatively coupled” to another without the opposite being true.

[0056] As used herein, “temporarily disposed” means that a first element(s) or assembly(ies) is resting on a second element(s) or assembly(ies) in a manner that allows the first element/assembly to be moved without having to decouple or otherwise manipulate the first element. For example, a book simply resting on a table, i.e., the book is not glued or fastened to the table, is “temporarily disposed” on the table.

[0057] As used herein, the statement that two or more parts or components “engage” one another means that the elements exert a force or bias against one another either directly or through one or more intermediate elements or components. Further, as used herein with regard to moving parts, a moving part may “engage” another element during the motion from one position to another and/or may “engage” another element once in the described position. Thus, it is understood that the statements, “when element A moves to element A first position, element A engages element B,” and “when element A is in element A first position, element A engages element B” are equivalent statements and mean that element A either engages element B while moving to element A first position and/or element A either engages element B while in element A first position.

[0058] As used herein, “operatively engage” means “engage and move.” That is, “operatively engage” when used in relation to a first component that is structured to move a movable or rotatable second component means that the first component applies a force sufficient to cause the second component to move. For example, a screwdriver may be placed into contact with a screw. When no force is applied to the screwdriver, the screwdriver is merely “temporarily

coupled” to the screw. If an axial force is applied to the screwdriver, the screwdriver is pressed against the screw and “engages” the screw. However, when a rotational force is applied to the screwdriver, the screwdriver “operatively engages” the screw and causes the screw to rotate. Further, with electronic components, “operatively engage” means that one component controls another component by a control signal or current.

[0059] As used herein, “correspond” indicates that two structural components are sized and shaped to be similar to each other and may be coupled with a minimum amount of friction. Thus, an opening which “corresponds” to a member is sized slightly larger than the member so that the member may pass through the opening with a minimum amount of friction. This definition is modified if the two components are to fit “snugly” together. In that situation, the difference between the size of the components is even smaller whereby the amount of friction increases. If the element defining the opening and/or the component inserted into the opening are made from a deformable or compressible material, the opening may even be slightly smaller than the component being inserted into the opening. With regard to surfaces, shapes, and lines, two, or more, “corresponding” surfaces, shapes, or lines have generally the same size, shape, and contours.

[0060] As used herein, a “path of travel” or “path,” when used in association with an element that moves, includes the space an element moves through when in motion. As such, any element that moves inherently has a “path of travel” or “path.” Further, a “path of travel” or “path” relates to a motion of one identifiable construct as a whole relative to another object. For example, assuming a perfectly smooth road, a rotating wheel (an identifiable construct) on an automobile generally does not move relative to the body (another object) of the automobile. That is, the wheel, as a whole, does not change its position relative to, for example, the adjacent fender. Thus, a rotating wheel does not have a “path of travel” or “path” relative to the body of the automobile. Conversely, the air inlet valve on that wheel (an identifiable construct) does have a “path of travel” or “path” relative to the body of the automobile. That is, while the wheel rotates and is in motion, the air inlet valve, as a whole, moves relative to the body of the automobile.

[0061] As used herein, the word “unitary” means a component that is created as a single piece or unit. That is, a component that includes pieces that are created separately and then coupled together as a unit is not a “unitary” component or body.

[0062] As used herein, the term “number” shall mean one or an integer greater than one (i.e., a plurality). That is, for example, the phrase “a number of elements” means one element or a plurality of elements. It is specifically noted that the term “a ‘number’ of [X]” includes a single [X].

[0063] As used herein, in the phrase “[x] moves between its first position and second position,” or, “[y] is structured to move [x] between its first position and second position,” “[x]” is the name of an element or assembly. Further, when [x] is an element or assembly that moves between a number of positions, the pronoun “its” means “[x],” i.e., the named element or assembly that precedes the pronoun “its.”

[0064] As used herein, a “radial side/surface” for a circular or cylindrical body is a side/surface that extends about, or encircles, the center thereof or a height line passing through the center thereof. As used herein, an “axial side/surface” for

a circular or cylindrical body is a side that extends in a plane extending generally perpendicular to a height line passing through the center of the cylinder. That is, generally, for a cylindrical soup can, the “radial side/surface” is the generally circular sidewall and the “axial side(s)/surface(s)” are the top and bottom of the soup can. Further, as used herein, “radially extending” means extending in a radial direction or along a radial line. That is, for example, a “radially extending” line extends from the center of the circle or cylinder toward the radial side/surface. Further, as used herein, “axially extending” means extending in the axial direction or along an axial line. That is, for example, an “axially extending” line extends from the bottom of a cylinder toward the top of the cylinder and substantially parallel to a central longitudinal axis of the cylinder.

[0065] As used herein, “generally curvilinear” includes elements having multiple curved portions, combinations of curved portions and planar portions, and a plurality of planar portions or segments disposed at angles relative to each other thereby forming a curve.

[0066] As used herein, a “planar body” or “planar member” is a generally thin element including opposed, wide, generally parallel surfaces, i.e., the planar surfaces of the planar member, as well as a thinner edge surface extending between the wide parallel surfaces. That is, as used herein, it is inherent that a “planar” element has two opposed planar surfaces. The perimeter, and therefore the edge surface, may include generally straight portions, e.g., as on a rectangular planar member, or be curved, as on a disk, or have any other shape.

[0067] As used herein, for any adjacent ranges that share a limit, e.g., 0%-5% and 5%-10, or, 0.05 inch-0.10 inch and 0.001 inch-0.05 inch, the upper limit of the lower range, i.e., 5% and 0.05 inch in the examples above, means slightly less than the identified limit. That is, in the example above, the range 0%-5% means 0%-4.999999% and the range 0.001 inch-0.05 inch means 0.001 inch-0.04999999 inch.

[0068] As used herein, “upwardly depending” means an element that extends upwardly and generally perpendicular from another element.

[0069] As employed herein, the terms “can” and “container” are used substantially interchangeably to refer to any known or suitable container, which is structured to contain a substance (e.g., without limitation, liquid; food; any other suitable substance), and expressly includes, but is not limited to, beverage cans, such as beer and beverage cans, as well as food cans.

[0070] As used herein, “about” in a phrase such as “disposed about [an element, point or axis]” or “extend about [an element, point or axis]” or “[X] degrees about an [an element, point or axis],” means encircle, extend around, or measured around. When used in reference to a measurement or in a similar manner, “about” means “approximately,” i.e., in an approximate range relevant to the measurement as would be understood by one of ordinary skill in the art.

[0071] As used herein, to “nest,” or “nested” means that two bodies having a corresponding shape are disposed with one body disposed substantially in and adjacent the other body with the corresponding contours aligned, i.e., wherein the adjacent surfaces of the bodies at a small localized area are generally parallel. It is understood that, when nesting bodies include a tapered portion, the tapered portions of the nesting bodies contact each other while other portions of the nesting bodies do not contact each other.

[0072] As used herein, an “elongated” element inherently includes a longitudinal axis and/or longitudinal line extending in the direction of the elongation.

[0073] As used herein, “generally” means “in a general manner” relevant to the term being modified as would be understood by one of ordinary skill in the art.

[0074] As used herein, “substantially” means “for the most part” relevant to the term being modified as would be understood by one of ordinary skill in the art.

[0075] As used herein, “at” means on and/or near relevant to the term being modified as would be understood by one of ordinary skill in the art.

[0076] As used herein, a “standard beverage” can body or container means a can body or container structured to hold about twelve fluid ounces.

[0077] As used herein, a “head” on a container means a convex end on a generally cylindrical can body.

[0078] As used herein, a “convex base” on a can body or container includes, but is not limited to, hemispherical ends and torispherical ends. Further, as used herein, a “convex base” on a can body or container has a radius, when viewed laterally in cross-section, that is generally similar to the cylindrical portion of the can body, or, a radius of less than 3.00 inches. That is, a curved can end wherein the radius of curvature is substantially greater than the radius of the associated can body radius is not, as used herein, a “convex base.” For example, “can end 10” as shown in FIG. 6 of U.S. Pat. No. 4,426,013, is not, as used herein, a “convex base.” Further, a “convex base” means that the overall shape of the end is convex. That is, a can body (or container) end that includes convex protrusions such as, but not limited to, elements 15 and 16 in FIG. 8 of U.S. Pat. No. 4,426,013, is not a “convex base.” That is, a convex element on a can end does not make the can end a “convex base.” As used herein, a “single headed” container means a container with one head, i.e., a hemispherical/torispherical end, and one generally planar end. As used herein, a closure for a can body such as, but not limited to a twelve ounce beverage can body for a carbonated beverage, is “generally planar.”

[0079] As used herein, “disposable” means a construct that is intended for a single use after which it is thrown away, as would be understood in the art. Disposable articles include, but are not limited to, beverage containers for carbonated beverages. Containers that are intended to be refilled such as, but not limited to, propane tanks, are not “disposable.” Further, the term “disposable” relates to the physical characteristics of a construct such as, but not limited to, the amount and type of material used to make the construct, the internal and external configuration of the construct and other characteristics. The term “disposable” is not related to how the construct is used or could potentially be used. For example, a wooden toothpick is a disposable product. A solid gold toothpick, which could be used once and thrown away, is not a “disposable” construct. That is, a solid gold toothpick does not have the same physical characteristics that make a wooden toothpick disposable.

[0080] As used herein, a “cradle” or a “cradle body” means a construct structured to be coupled to a container body with a convex head and which does not enclose, or substantially enclose, the container. For example, a plastic or metal housing that encloses a glass vacuum chamber of a thermos or Dewar flask is not a “cradle” or a “cradle body.”

[0081] As used herein, a “convex base holder” means a construct that is structured to, and does, enclose or support

a “convex base” of a can body (or container). That is, a “convex base holder” includes one of a “convex base enclosure” or a “convex base support device.”

[0082] As used herein, a “convex base enclosure” means a construct that is structured to, and does, enclose a “convex base” of a can body (or container) without contacting a “convex base” of a can body (or container). That is, a “convex base enclosure” is directly coupled or fixed to the can body, but only indirectly coupled to a “convex base” of a can body (or container). The “convex base enclosure” does not have to substantially enclose the “convex base” of a can body (or container). That is, a “convex base enclosure” includes frames and frame like constructs that have openings therethrough.

[0083] A “convex base support device” is directly coupled or fixed to a “convex base” of a can body (or container) and includes a “convex interface surface.”

[0084] As used herein, a “convex interface surface” means a surface that is structured to, and does, correspond to the convex surface of a “convex base” of a can body (or container). That is, a “convex interface surface” includes a concave surface or a surface including a concave portion, or portions that correspond(s) to a convex base.

[0085] As used herein, a “limited formed” body means a can body (or container) wherein the base thereof has not been reformed. That is, the material that forms the base of the can body is formed from a generally planar element into a convex element and is not otherwise formed into another configuration. Further, the term “limited formed” body relates to the physical characteristics (including internal characteristics) of the body that are, in an exemplary embodiment, created/exist when a body is formed from a generally planar element into a convex element and is not otherwise formed into another configuration. These characteristics, however, are not exclusively created/exist when a body is formed from a generally planar element into a convex element and is not otherwise formed into another configuration. Thus, a “limited formed” body does not relate to a product by process. Further, as used herein, when the base of the can body is formed from a generally planar element into a convex element and is then otherwise formed into another configuration, the characteristics of a “limited formed” body do not exist.

[0086] As used herein, a “recycling fuel” means a material that, when burned, adds heat but no, or an acceptably small amount of, contaminates to the recycling process. Such a material is structured to be consumed during a recycling process without contaminating the recycled material.

[0087] As shown in FIGS. 1-11, a disposable container assembly 10 includes a disposable container 20 and a disposable cradle 60. The container 20 includes a closure 22 and a can body 30. The closure 22 (or “can end”) includes a generally planar body 24 defining a center panel 25 and a tear panel 26. Further, an actuator 27 is coupled to the center panel 25. The actuator 27 is structured to separate, or partially separate, the tear panel 26 from the center panel 25 as is known. Further, as is known, when the closure 22 is coupled to a can body 30, the closure 22 and the can body sidewall 34 (discussed below) form a toroid extension 28, or axially extending torus, that defines a generally enclosed space.

[0088] The can body 30 includes a generally convex base 32 and a generally cylindrical sidewall 34. Opposite the can body convex base 32, the can body sidewall 34 defines an

open end 36. The can body convex base 32 is structured to, and does, resist deformation due to an internal pressure better than other configurations or contours such as, but not limited to, a generally planar base. The improved resistance to deformation from an internal pressure all related to the can body convex base 32 allows the material of the can body 30, i.e., the convex base 32 and the sidewall 34, to be made from a thinner material compared to can bodies with a base having other configurations or contours. Thus, the can body convex base 32 solves the problems stated above. In an exemplary embodiment, the can body convex base 32 is a generally hemispherical base 33. A can body hemispherical base 33 is structured to, and does, resist deformation from an internal pressure better than other convex contours and allows for the material of the can body 30 to be made from a thinner material compared to can bodies with a base having other configurations or contours. Thus, the can body hemispherical base 33 solves the problems stated above.

[0089] In an exemplary embodiment, the can body 30 is formed from a generally planar blank (not shown) that is initially formed into a cup (not shown) as described above. The cup is disposed on a punch (not shown) coupled to a ram (not shown) and moved through a number of dies (not shown) that are structured to, and do, thin and elongate the cup to be in the shape of the can body 30. The punch includes a convex distal surface which, in an exemplary embodiment, is hemispherical. In this configuration, the blank is not reformed. That is, the can body 30 is a “limited formed” body as defined above. This solves the problems noted above.

[0090] The can body 30 is, in an exemplary embodiment, made from an inexpensive material such as, but not limited to, aluminum, steel or alloys of either material. In an exemplary embodiment, the can body 30 is made from a generally thin material. That is, in an exemplary embodiment, the blank is initially made from an aluminum sheet material having a thickness of between about 0.0030 inch and about 0.0085 inch, or about 0.0070 inch. In another exemplary embodiment, the thickness is about 0.0063 inch. In an exemplary embodiment, as the blank is formed into the can body 30 the material that forms the can body convex base 32 (or can body hemispherical base 33) is thinned by about 0.0010 inch. That is, a material that started as 0.0070 inch would be thinned to 0.0060 inch. In another embodiment, the material is not thinned and is kept at the base thickness. As used herein, a can body convex base 32 (or can body hemispherical base 33) with a thickness of between about 0.0030 inch and about 0.0085 inch, or about 0.0070 inch is a “generally thin base.” The material that forms the can body sidewall 34 is thinned to a thickness of between about 0.0030 inch and about 0.0050 inch, or about 0.0040 inch. As used herein, a can body sidewall 34 with a thickness of between about 0.0030 inch and about 0.0050 inch is a “generally thin sidewall.” When the can body 30 (or container 20) is a standard beverage can body 30, the can body sidewall 34 has a radius of between about 0.80 inch and about 1.50 inches, and, the can body convex base 32 (or can body hemispherical base 33) has a radius of between about 0.80 inch and about 1.50 inches, or about 1.00 inch. In another embodiment, the cradle body 62 has a maximum radius of about 1.3 inches. For a standard twelve ounce beverage container with a maximum diameter of about 2.60 inches, i.e., the can body sidewall 34 has a radius of about 1.3 inches, a domed end, including, but not limited to, a

hemispherical end or a torispherical end, is as used herein a “convex base” (as defined above). Further, as is known, a closure 22 is coupled, directly coupled, or fixed to the can body open end 36. As is known, the closure 22 includes an annular countersink 35 and/or an upwardly depending sidewall 37 (sometimes identified as a chuck wall). A can body 30 in this configuration solves the problems noted above. For example, a container with these dimensions can be used efficiently as beverage container. This solves a problem identified above. Further, as used herein, a can body 30 in this configuration is “disposable” as defined above.

[0091] In an exemplary embodiment, the can body convex base 32 includes a pressure relief panel 38, as shown in FIG. 22. The pressure relief panel 38 is a generally circular area disposed at the vertex of the can body convex base 32. The pressure relief panel 38 is, in one embodiment, generally planar. A can body convex base 32 with a generally planar pressure relief panel 38 is, as used herein, still “generally convex.” The pressure relief panel 38 is structured to, and does, deform outwardly when the contents of the container 20 is pressurized and/or exposed to heat. Thus, for example, the pressure relief panel 38 is generally planar prior to the container 20 being filled. When the container 20 is filled and sterilized by heat, the pressure relief panel 38 deforms to be generally convex. After the container 20 cools, the pressure relief panel 38 returns to the generally planar configuration in one embodiment, or, is maintained in a generally convex configuration in another embodiment.

[0092] It is noted that the center of gravity for a container 20 in the configuration disclosed above is located above the can body convex base 32. Thus, a container 20 with a can body convex base 32 is likely to tip over. That is, the can body convex base 32 cannot provide a stable base of the container 20 due to the spherical contour. The disposable cradle 60 is structured to, and does, provide a stable support for the container 20 and, in particular, for the can body convex base 32. That is, it is understood that a container 20 will, very often, be positioned on a generally planar surface such as, but not limited to, a table top (not shown). It is further understood that a construct with a convex base and a center of gravity disposed above such a convex base is likely to tip over. Thus, it is desirable to provide a construct having a generally planar lower surface to support the construct with a convex base. The disposable cradle 60 includes a generally planar lower surface. Further, a cradle 60 is structured to provide, and does provide, separation between the can body convex base 32 of an “upper” container assembly 10 and the actuator 27 of a “lower” container assembly 10 when the container assemblies are stacked. That is, the terms “upper” and “lower” are relative terms; it is understood that the two container assemblies 10 are substantially similar.

[0093] The disposable cradle 60 (or the cradle body 62, discussed below) is a convex base holder 50, as defined above. In one embodiment, not shown, the disposable cradle 60 includes elongated members that form a frame assembly that is disposed about the can body convex base 32. Such a frame assembly includes, but is not limited to, a tripod or three-legged frame assembly. In another embodiment, not shown, the disposable cradle 60 is a convex base enclosure such as, but not limited to, a generally cylindrical sheath having a diameter about the same as the diameter of the can body 30. That is, the generally cylindrical sheath has, in one embodiment, a diameter that is substantially the same, or

slightly larger than, the can body 30 and the generally cylindrical sheath is structured to, and does, contact the can body sidewall 34 while enclosing the can body convex base 32. In another embodiment, discussed below, the generally cylindrical sheath is structured to, and does, contact the can body convex base 32. That is, as shown in FIGS. 1-8 and 10-22, the disposable cradle 60 includes a body 62 with an upper support surface 61, a lower support surface 66 and a sidewall 68 therebetween. In an exemplary embodiment, the upper support surface 61, includes a number of convex interface surfaces 64. The cradle body 62 is, in an exemplary embodiment as shown, a generally toroid body. Thus, the cradle body 62 has an axis 63 about which a cross-sectional shape is rotated so as to define the cradle body 62. In another embodiment, not shown, the cradle body 62 is an incomplete generally toroid body. That is, portions of the cradle body 62 define openings (not shown). In this embodiment, the amount of material required to form the cradle body 62 is reduced. In an exemplary embodiment, the cradle body 62 has a smaller radius than the can body 30, or, is about the same as the radius of the can body 30. That is, the cradle body 62 has a maximum radius of between about 0.80 inch and about 1.50 inches, or about 1.00 inch. The cradle body 62 has a height of about 1.5 inches. In another embodiment, the cradle body 62 has a maximum radius of about 1.3 inches. Further, the cradle body 62 is made from a disposable material such as, but not limited to a plastic or cellulose (wood/paper based) material. In an exemplary embodiment, the cradle body 62 is made from a recycling fuel such as, but not limited to polyurethane or polypropylene.

[0094] The cradle body convex interface surface 64 is structured to, and does, generally correspond to the can body convex base 32. In one embodiment, as shown, the cradle body convex interface surface 64 is generally circular and extends over a loop of 360°. In another embodiment, not shown, the cradle body convex interface surface 64 is an intermittent surface including discrete locations. As shown in FIGS. 1 and 17, in one embodiment, the cradle body convex interface surface 64 has a generally limited height (when viewed in cross-section as shown in FIGS. 1 and 17) and is flared relative to the cradle body sidewall 68. That is, the cradle body sidewall 68, when viewed in vertical cross-section, extends parallel to a vertical axis, or, at an angle relative to the cradle body axis 63. As used herein, this angle is the “sidewall angle” identified by the “ α ” in FIG. 17. The cradle body convex interface surface 64 extends at an angle (ω) that is greater than the sidewall angle, as shown. It is understood that the cradle body convex interface surface 64 is a curved surface (so as to correspond to the can body convex base 32) but, when the cradle body convex interface surface 64 has a limited height, the curvature of the cradle body convex interface surface 64 when viewed in vertical cross-section is sufficiently limited that the cradle body convex interface surface 64 is also generally planar. As used herein, a cradle body convex interface surface 64 with this contour is identified as a “flared convex interface surface.”

[0095] In another embodiment, the cradle body convex interface surface 64 is an “inwardly extending convex interface surface” 64. As shown in FIG. 20, an inwardly extending convex interface surface 64 extends toward the cradle body axis 63 from the cradle body sidewall 68. As shown, the inwardly extending convex interface surface 64 (being closer to the cradle body axis 63) interfaces with the can body convex base 32 closer to the center of the can body

convex base 32. In this configuration, and relative to a vertical axis, the inwardly extending convex interface surface 64 appears as a platform for the can body convex base 32.

[0096] The cradle body lower support surface 66 defines a plane, generally. That is, in an exemplary embodiment, the cradle body lower support surface 66 is not planar, but exists generally in the same plane. The cradle body lower support surface 66 is one of an insertion rim 70 (FIG. 18) or a rounded rim 72 (FIGS. 1 and 19-22). The cradle body lower support surface 66 is, in an exemplary embodiment, structured to be disposed within, and in contact with, a can end sidewall 37. That is, it is known that container assemblies 10 are often stacked. Thus, it is desirable for the bottom end of one container to correspond to the upper end of another container. In the prior art, this is accomplished by tapering the lower end of the can body. When a can body 30 includes a convex base 32 and is coupled to a cradle 60, the cradle body lower support surface 66 is structured to correspond to the can end countersink 35 and/or an upwardly depending sidewall 37.

[0097] A cradle body lower support surface insertion rim 70 is structured to fit within the can end countersink 35. In this embodiment, the cradle body lower support surface 66 is generally toroid and the cradle body sidewall 68 is generally cylindrical. Thus, the cradle body 62 is structured to be moved axially relative to another container assembly 10 until the cradle body lower support surface 66, i.e., the cradle body lower support surface insertion rim 70, is inserted into the can end countersink 35.

[0098] A cradle body lower support surface rounded rim 72 is structured to abut, i.e., contact, the can end sidewall 37. That is, at the lower end of the cradle body 62, the cradle body sidewall 68 curls inwardly (FIGS. 19, 21, 22) or outwardly (FIG. 20) thereby defining the cradle body lower support surface 66 and the cradle body lower support surface rounded rim 72. In either configuration, the cradle body lower support surface 66 is structured to, and does, correspond to the closure 22 of another container assembly 10. In an exemplary embodiment, the cradle body lower support surface rounded rim 72 fits snugly within the generally enclosed space defined by the closure 22 of another container assembly 10.

[0099] The cradle body sidewall 68 can have any cross-sectional shape. As shown in FIGS. 18 and 19, the cradle body sidewall 68 is generally cylindrical/conical (FIGS. 1, 5, 18 and 19), generally L-shaped (FIGS. 20-22), or a combination of the two cross-sectional shapes. That is, as shown in FIGS. 18 and 19, the cradle body sidewall 68 is generally cylindrical and extends generally parallel to the cradle body axis 63. It is understood that the cradle body sidewall 68 could also be generally conical (i.e., a truncated cone, not shown) wherein the cradle body sidewall 68 is generally planar when viewed in cross-section and is tilted relative to the cradle body axis 63.

[0100] As shown in FIGS. 20-22, the cradle body sidewall 68 is generally L-shaped with a curvilinear vertex or an arcuate vertex. That is, the cradle body sidewall 68 includes a generally planar first portion 74 (when viewed in cross-section, as shown) and a generally planar second portion 76 (when viewed in cross-section, as shown). The generally L-shaped cradle body sidewall 68 is, in one embodiment (FIGS. 21-22), outwardly open, i.e., the non-reflex angle formed by the first and second planar portion 74, 76 faces

outwardly. In another embodiment, the generally L-shaped cradle body sidewall **68** is inwardly (or downwardly) open (FIG. 20).

[0101] In another embodiment, as shown in FIG. 1, the cradle body sidewall **68** includes an outer portion **80** and an inner portion **82**. As shown, the cradle body sidewall outer portion **80** is generally conical and defines a first cradle body convex interface surface **64'** which is a flared convex interface surface **64**. The cradle body inner portion **82** is an inwardly opening, generally L-shaped portion that includes a second cradle body convex interface surface **64''**. Further, in this configuration, the inner end of the cradle body inner portion **82** defines a second convex interface surface **64**, i.e., an inwardly extending convex interface surface **64**. The first and second cradle body sidewall portions **80**, **82** meet at a vertex **84** which defines the cradle body lower support surface rounded rim **72**.

[0102] It is understood that the disposable cradle **60** shown in FIGS. 1-22 are exemplary embodiments and that the disposable cradle **60** has, in other exemplary embodiments, a different height. As shown in FIGS. 25 and 26, the disposable cradle **60** is similar to the embodiment shown in FIG. 18 and described above, but in this embodiment, the disposable cradle **60** is generally cylindrical and has a limited height. This embodiment, i.e., wherein the disposable cradle **60** has a height (i.e., axial length) of between about 0.25 inch and 1.0 inch or about 0.5 inch, the disposable cradle **60** is also identified as a “collar” **100**. A collar **100**, in an exemplary embodiment, includes a body **102** that is generally cylindrical. Further, the collar body **102** has an insertion rim **70** at the cradle body lower support surface **66**. Further, the cradle body upper support surface **61** is structured to, and does, contact a can body convex base **32**, but is not a convex interface surface **64**. That is, the cradle body upper support surface **61** does not include a concave surface or a surface including a concave portion. In this embodiment, the cradle body upper support surface **61** is generally planar. As shown in FIGS. 27 and 28, in another embodiment, the collar body **102** is tapered. That is, the collar body **102** is generally a truncated cone as opposed to a cylinder. With this simplified configuration, the collar body **102** is, in an exemplary embodiment, made from a material such as, but not limited to, paper or cardboard.

[0103] The disposable container assembly **10** includes the disposable container **20** and a disposable cradle **60** which are coupled, directly coupled, or fixed to each other. That is, in one embodiment, the convex base holder **50** is coupled, directly coupled, or fixed to the can body **30**. In another embodiment, the can body convex base **32** is coupled, directly coupled, or fixed to the cradle body convex interface surface **64**. This is accomplished by any known coupling such as, but not limited to, a friction fit or an adhesive (not shown). Further, because both the can body **30** and the cradle body **62** are made from a disposable material, the disposable container assembly **10** is disposable. This solves the problems noted above. It is noted that a desirable aspect of this shape is that the cradle bodies **62** are structured to be nested prior to being coupled to a can body **30**.

[0104] As is known, during the processing of a disposable container assembly **10**, such as, but not limited to, decorating and filling the disposable container assembly **10**, the disposable container assembly **10** is transported by a conveyor. It is known to temporarily couple a container to the conveyor by suction. That is, a negative pressure assembly

is coupled to a nozzle on the conveyor and a can body is disposed over the nozzle. In the prior art, and with a concave can body base, the negative pressure in the volume defined by the conveyor and the concave can body base temporarily coupled the can body to the conveyor. As noted above, the cradle body **62** is, in an exemplary embodiment, a generally toroid body. Such a toroid body is structured to, and does, define a negative pressure plenum **90**. As used herein, a “negative pressure plenum” means a generally enclosed space that is structured to be, and is, exposed to a negative pressure, i.e., a pressure less than atmospheric pressure. It is understood that the “negative pressure plenum” is, in an exemplary embodiment, defined by a number of additional constructs such as, but not limited to, a conveyor belt or similar construct and/or a can body **30**. Thus, once the convex base holder **50** is coupled, directly coupled, or fixed to the can body **30**, the negative pressure plenum **90** defined by the cradle body **62** (as well as the can body **30** and a conveyor (not shown)), is structured to have air drawn therefrom thereby temporarily coupling the container assembly **10**.

[0105] FIGS. 23 and 24 show cross-sectional views and dimensions of one embodiment of a disposable container **20** and a disposable cradle **60**, respectively. The disposable container **20** and the disposable cradle **60** shown in FIGS. 23 and 24 are complimentary, i.e., these embodiments are structured to be coupled to each other as a disposable container assembly **10**. The dimensions in FIGS. 23 and 24 are provided in inches. Further, it is understood that the measurements are approximate. That is, the measurements on FIGS. 23 and 24 are read as if preceded by the term “about,” as defined above. The “Full Radius” of the can body convex base **32** in FIG. 23 is about 1.3 inches, i.e., about half the outside diameter of the can body sidewall **34**. As described above, in an exemplary embodiment, the can body **22** is made from an inexpensive material such as, but not limited to, aluminum. The can body **22** shown in FIG. 23 is structured to, and does, hold about twelve ounces of liquid. In an exemplary embodiment, the disposable cradle **60** is made from a recycling fuel such as, but not limited to polyurethane or polypropylene.

[0106] In another embodiment, shown in FIGS. 29 and 30, a container **110**, i.e., a can body **130**, includes a convex base **132** and a generally cylindrical sidewall **134**. The can body convex base **132** in this embodiment, however, is truncated and is identified hereinafter, and as used herein, a “truncated convex base” **132**. As used herein, a “truncated convex base” means a base on a can body or container wherein the annular, upper portion of the base (which is unitary with the can body sidewall **134**) is convex and the center, lower portion of the base is generally planar. In a “truncated convex base,” the radius of the convex portion, i.e., the annular, upper portion of the base, when viewed laterally in cross-section, is less than the 3.00 inches; thus, this embodiment is also a “convex base” (as defined above). That is, the radius of the curvature of the convex portion is less than the 3.00 inches. It is understood that the radius of the upper end of the “truncated convex base,” i.e., where the “truncated convex base” is unitary with the can body, and when viewed axially in cross-section, is the same as the radius of the can body.

[0107] In another embodiment, not shown, the convex base includes a “truncated convex base with a dome.” As used herein, a “truncated convex base with a dome” means

a base on a can body or container wherein the annular, upper portion is convex and the center, lower portion of the base is domed inwardly into the can body. As used herein, a truncated convex base is “generally convex.”

[0108] In an exemplary embodiment, the can body **130** is formed from a blank wherein the blank is initially made from an aluminum sheet material having a thickness of between about 0.0030 inch and about 0.0085 inch, or about 0.0070 inch. In another exemplary embodiment, the thickness is about 0.0062 inch. During the forming of the can body **130**, the can body sidewall is thinned, e.g., drawn and/or ironed, so as to have a thickness of between about 0.0028 inch and about 0.0048 inch, or about 0.0038 inch. The can body truncated convex base **132** is thinned to have a thickness of between about 0.0030 inch and about 0.0078 inch, or about 0.0062 inch. As such, the can body truncated convex base **132** in this embodiment is also a “generally thin base” as defined above.

[0109] Further, and as with the embodiment above, the can body **130** has a radius between about 0.80 inch and about 1.50 inches, and, the can body convex base **32** (or can body hemispherical base **33**) has a radius of between about 0.80 inch and about 1.50 inches, or about 1.00 inch. Also as in the embodiment above, and for a standard twelve ounce beverage container, the can body **130** has a maximum diameter of about 2.60 inches, i.e., the can body sidewall **34** has a radius of about 1.3 inches. Further, in an exemplary embodiment, the can body **130** has a height of between about 3.5 inches and 5.5 inches, or about 4.677 inches.

[0110] In this embodiment, the convex base **132** includes an annular, upper portion **140** (which is unitary with the can body sidewall **34**) and a center, lower portion **142**. The can body convex base upper portion **140** defines a curved sidewall **144** (as viewed in cross-section as in FIG. 30) with a curvature radius of between about 0.450 inch and 0.550 inch, or about 0.500 inch. The can body convex base lower portion **142** is generally planar and has a radius of between about 1.400 inch and 1.800, or about 1.600 inch. For a standard twelve ounce beverage container, the can body convex base lower portion **142** has a radius of about 1.600 inch.

[0111] It is noted that the generally planar can body convex base lower portion **142** is not structured to deform outwardly when the contents of the container **20** is pressurized and/or exposed to heat. Thus, in one exemplary embodiment, the can body convex base lower portion **142** is not a pressure relief panel **38** as discussed above. In another exemplary embodiment, the generally planar can body convex base lower portion **142** is structured to deform outwardly when the contents of the container **20** is pressurized and/or exposed to heat. Thus, in this exemplary embodiment, the can body convex base lower portion **142** is a pressure relief panel **38** as discussed above.

[0112] The can body **130** with a truncated convex base **132** is, in one embodiment, structured to rest on the convex base **132**, i.e., on the can body convex base lower portion **142** which is generally planar. Thus, the can body **130** does not require a cradle. Nonetheless, a can body **130** in the configuration above is able to tip and, as such, a disposable cradle **160** is structured to, and does, provide a stable support for the container **110** and, in particular, for the can body truncated convex base **132**. As shown in FIG. 31, the cradle **160** includes a body **162** with an upper support surface **161**, a lower support surface **166** and a sidewall **168** therebe-

tween. As before, the cradle body lower support surface **166** is generally planar and is structured to rest on a generally planar surface such as, but not limited to, a generally planar table top (not shown). In this embodiment, and unlike the embodiment described above, substantially all of the cradle body sidewall **168** defines a cradle body convex interface surface **164**. The cradle body convex interface surface **164**, and therefore the cradle body sidewall **168**, is sized and shaped to, i.e., is structured to (and does), substantially correspond to the can body convex base upper portion **140**. That is, the cradle body convex interface surface **164**, and therefore the cradle body sidewall **168**, has a curvature radius of between about 0.450 inch and 0.550 inch, or about 0.500 inch. As before, the cradle body **162** is a convex base holder.

[0113] In an exemplary embodiment, the cradle body **162** further includes both an axially extending upper collar **167** and an axially extending lower collar **169**. The cradle body upper collar **167** is generally toroidal and is sized and shaped to, i.e., is structured to (and does), substantially correspond to the can body **130**. Thus, the cradle body upper collar **167**, in an exemplary embodiment, has an inner radius between about 0.80 inch and about 1.50 inches. For a standard twelve ounce beverage container, the cradle body upper collar **167** has a maximum diameter of about 2.60 inches, i.e., the cradle body upper collar **167** has a radius of about 1.3 inches. In an exemplary embodiment, the cradle body upper collar **167** has an axial height of between about 0.15 inch and about 0.25 inch, or about 0.20 inch.

[0114] The cradle body lower collar **169** is disposed below the cradle body convex interface surface **164**. The cradle body lower collar **169** is generally toroid. The cradle body lower collar **169** defines the cradle body lower support surface **166**. For a standard twelve ounce beverage container, the cradle body lower collar **169** has an outer diameter of about 2.030 inches and an inner diameter of about 1.850 inches. In an exemplary embodiment, the cradle body sidewall **168** is unitary with both the cradle body upper collar **167** and the cradle body collar **169**. Thus, the cradle body **162** is a unitary body. It is further noted that, in this embodiment, the collar body **162** is a “negative pressure plenum” as defined above.

[0115] In this embodiment, the cradle body **162** has a height of between about 0.640 inch and about 1.04, or about 0.840 inch. Further, and as described above, the cradle body **162** is made from a disposable material such as, but not limited to a plastic or cellulose (wood/paper based) material. In another exemplary embodiment, the cradle body **162** is made from a recycling fuel such as, but not limited to polyurethane or polypropylene. Further, the cradle body **162** is structured to be stored in a nested configuration, as shown in FIG. 32. It is noted that because the cradle body sidewall **168** is shaped to correspond to the can body convex base upper portion **140**, the cradle body sidewall **168** is not tapered.

[0116] While specific embodiments of the invention have been described in detail, it will be appreciated by those skilled in the art that various modifications and alternatives to those details could be developed in light of the overall teachings of the disclosure. Accordingly, the particular arrangements disclosed are meant to be illustrative only and not limiting as to the scope of invention which is to be given the full breadth of the claims appended and any and all equivalents thereof.

What is claimed is:

1. A single headed can body comprising:
a generally convex base;
a generally cylindrical sidewall; and
wherein said convex base and said sidewall are unitary.
2. The can body of claim 1 wherein said convex base is a truncated convex base.
3. The can body of claim 2 wherein said base and said sidewall are limited formed bodies.
4. The can body of claim 2 wherein:
said base is a generally thin base.
5. The can body of claim 2 wherein:
said sidewall is generally cylindrical with a radius of about 1.3 inches; and
said convex base is generally hemispherical with a radius of about 1.3 inches.
6. A container comprising:
a single headed can body including a generally convex base and a generally cylindrical sidewall;
wherein said convex base is a truncated convex base;
wherein said truncated convex base and said sidewall are unitary;
said can body defining an open end; and
a closure coupled to said can body open end.
7. A disposable cradle for a disposable container with a convex bottom, said cradle comprising:
a cradle body made from a disposable material; and
wherein said cradle body is a convex base holder.
8. The cradle of claim 7 wherein said cradle body includes a convex interface surface, a lower support surface and a sidewall therebetween.
9. The cradle of claim 8 wherein said cradle body includes an upper collar and a lower collar.
10. The cradle of claim 8 wherein said cradle body is a recycling fuel.
11. The cradle of claim 8 wherein said can body has a sidewall with a radius of about 1.3 inches and said can body convex base is a truncated convex base, and, wherein:

said cradle body is generally toroid with a maximum radius of about 1.3 inches; and

said cradle body has a height of about 0.84 inches.

12. A disposable container assembly comprising:
a single headed can body including a generally convex base and a generally cylindrical sidewall;
wherein said convex base and said sidewall are unitary;
wherein said convex base is a truncated convex base;
said can body defining an open end;
a closure coupled to said can body open end; and
a disposable cradle coupled to said can body truncated convex base.

13. The disposable container assembly of claim 12 wherein said can body is a limited formed construct.

14. The disposable container assembly of claim 12 wherein
said can body base is generally thin.

15. The disposable container assembly of claim 12 wherein:
a cradle body is made from a disposable material; and
wherein said cradle body is a convex base holder.

16. The disposable container assembly of claim 14 wherein said cradle body includes a convex interface surface, a lower support surface and a sidewall therebetween.

17. The disposable container assembly of claim 16 wherein said cradle body includes an upper collar and a lower collar.

18. The disposable container assembly of claim 16 wherein said cradle body is a solid fuel.

19. The disposable container assembly of claim 16 wherein said cradle body defines a negative pressure plenum.

20. The disposable container assembly of claim 12 wherein:

said sidewall is generally cylindrical with a radius of about 1.3 inches;

said cradle body is generally toroid with a maximum radius of about 1.3 inches; and

said cradle body has a height of about 0.84 inches.

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