INVERTIBLE SEGMENTED CONSUMPTION CONTAINER

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ABSTRACT
An invertible segmented consumption container that inverts to allow for facilitated cleaning of an inner surface. A top section of the container comprises of a rigid material that separates from a bottom section. The top section is operable to engage a lid for containing a liquid. The bottom section is operable to retain the liquid for consumption. The bottom section is comprised of a flexible material. The invertibility of the bottom section creates access to the inner surface for facilitated cleaning. When the rigid top section separates from the flexible bottom section, the bottom section may invert into itself. A rigid collar joins the top section with the bottom section, and provides a perimeter framework for drinking the liquid. The bottom section is also collapsible to provide compact storage and portability. A seal facilitating structure, receiver and notch forms to provide a leak resistant sealed container.
FIG. 5

Upper cap

Collar

Tube

Collar

Bottom cap

FIG. 5
INVERTIBLE SEGMENTED CONSUMPTION CONTAINER

CROSS-REFERENCE TO RELATED APPLICATIONS


FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not applicable.

REFERENCE TO SEQUENCE LISTING, A TABLE, OR A COMPUTER LISTING APPENDIX

[0003] Not applicable.

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FIELD OF THE INVENTION

[0005] One or more embodiments of the invention generally relate to bottles. More particularly, one or more embodiments of the invention relate to segmented invertible drinking bottles.

BACKGROUND OF THE INVENTION

[0006] The following background information may present examples of specific aspects of the prior art (e.g., without limitation, approaches, facts, or common wisdom) that, while expected to be helpful to further educate the reader as to additional aspects of the prior art, is not to be construed as limiting the present invention, or any embodiments thereof, to anything stated or implied therein or inferred thereupon.

[0007] The following is an example of a specific aspect in the prior art that, while expected to be helpful to further educate the reader as to additional aspects of the prior art, is not to be construed as limiting the present invention, or any embodiments thereof, to anything stated or implied therein or inferred thereupon. By way of educational background, another aspect of the prior art generally useful for inverted containers provides a cup holder with dividers that invert. The dividers receive cups, bowls, and glasses. However, the cups, bowls, and glasses within the divider do not invert themselves.

[0008] In view of the foregoing, it is clear that these traditional techniques are not perfect and leave room for more optimal approaches.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The present invention is illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings and in which like reference numerals refer to similar elements and in which:

[0010] FIG. 1 illustrates a side view of an exemplary invertible segmented consumption container according to an embodiment of the present invention;

[0011] FIG. 2 illustrates a schematic side view of an exemplary invertible segmented consumption container showing the invertibility of an embodiment of the present invention;

[0012] FIG. 3a illustrates a perspective view of an exemplary invertible segmented consumption container according to an embodiment of the present invention;

[0013] FIG. 3b illustrates a perspective view of an exemplary invertible segmented consumption container according to an embodiment of the present invention;

[0014] FIG. 3c illustrates a perspective view of an exemplary invertible segmented consumption container according to an embodiment of the present invention;

[0015] FIG. 3d illustrates a perspective view of an exemplary invertible segmented consumption container according to an embodiment of the present invention; and

[0016] FIG. 3e illustrates a perspective view of an exemplary invertible segmented consumption container according to an embodiment of the present invention.

[0017] FIG. 4a illustrates a perspective view of an exemplary invertible, segmented, and self-supporting consumption container sliced in half according to an embodiment of the present invention.

[0018] FIG. 4b illustrates a perspective view of an exemplary invertible, segmented, and self-supporting consumption container according to an embodiment of the present invention.

[0019] FIG. 5 illustrates an exemplary self-supporting consumption container where the top section may include a threaded sleeve to engage a threaded collar joined to the bottom section, according to an embodiment of the present invention; and

[0020] FIG. 6 illustrates a perspective view of an exemplary tube section of the self-supporting consumption container of FIG. 5, according to an embodiment of the present invention.

[0021] Unless otherwise indicated illustrations in the figures are not necessarily drawn to scale.

DETAILED DESCRIPTION OF SOME EMBODIMENTS

[0022] Embodiments of the present invention are best understood by reference to the detailed figures and description set forth herein.

[0023] Embodiments of the invention are discussed below with reference to the Figures. However, those skilled in the art will readily appreciate that the detailed description given herein with respect to these figures is for explanatory purposes as the invention extends beyond these limited embodiments. For example, it should be appreciated that those skilled in the art will, in light of the teachings of the present invention, recognize a multiplicity of alternate and suitable approaches, depending upon the needs of the particular application, to implement the functionality of any given detail described herein, beyond the particular implementation choices in the following embodiments described and shown. That is, there are numerous modifications and variations of
the invention that are too numerous to be listed but that all fit within the scope of the invention. Also, singular words should be read as plural and vice versa and masculine as feminine and vice versa, where appropriate, and alternative embodiments do not necessarily imply that the two are mutually exclusive.

[0024] It is to be further understood that the present invention is not limited to the particular methodology, compounds, materials, manufacturing techniques, uses, and applications, described herein, as these may vary. It is also to be understood that the terminology used herein is used for the purpose of describing particular embodiments only, and is not intended to limit the scope of the present invention. It must be noted that as used herein and in the appended claims, the singular forms “a,” “an,” and “the” include the plural reference unless the context clearly dictates otherwise. Thus, for example, a reference to “an element” is a reference to one or more elements and includes equivalents thereof known to those skilled in the art. Similarly, for another example, a reference to “a step” or “a means” is a reference to one or more steps or means and may include sub-steps and subelement means. All conjunctions used are to be understood in the most inclusive sense possible. Thus, the word “or” should be understood as having the definition of a logical “or” rather than that of a logical “exclusive or,” unless the context clearly necessitates otherwise. Structures described herein are to be understood also to refer to functional equivalents of such structures. Language that may be construed to express approximation should be so understood unless the context clearly dictates otherwise.

[0025] Unless defined otherwise, all technical and scientific terms used herein have the same meanings as commonly understood by one of ordinary skill in the art to which this invention belongs. Preferred methods, techniques, devices, and materials are described, although any methods, techniques, devices, or materials similar or equivalent to those described herein may be used in the practice or testing of the present invention. Structures described herein are to be understood also to refer to functional equivalents of such structures. The present invention will now be described in detail with reference to embodiments thereof as illustrated in the accompanying drawings.

[0026] From reading the present disclosure, other variations and modifications will be apparent to persons skilled in the art. Such variations and modifications may involve equivalent and other features which are already known in the art, and which may be used instead of or in addition to features already described herein.

[0027] Although Claims have been formulated in this Application to particular combinations of features, it should be understood that the scope of the disclosure of the present invention also includes any novel feature or any novel combination of features disclosed herein either explicitly or implicitly or any generalization thereof, whether or not it relates to the same invention as presently claimed in any Claim and whether or not it mitigates any or all of the same technical problems as does the present invention.

[0028] Features which are described in the context of separate embodiments may also be provided in combination in a single embodiment. Conversely, various features which are, for brevity, described in the context of a single embodiment, may also be provided separately or in any suitable subcombination. The Applicants hereby give notice that new Claims may be formulated to such features and/or combinations of such features during the prosecution of the present Application or of any further Application derived therefrom.

[0029] References to “one embodiment,” “an embodiment,” “example embodiment,” “various embodiments,” etc., may indicate that the embodiment(s) of the invention so described may include a particular feature, structure, or characteristic, but not every embodiment necessarily includes the particular feature, structure, or characteristic. Further, repeated use of the phrase “in one embodiment,” or “in an exemplary embodiment,” do not necessarily refer to the same embodiment, although they may.

[0030] As is well known to those skilled in the art many careful considerations and compromises typically must be made when designing for the optimal manufacture of a commercial implementation any system, and in particular, the embodiments of the present invention. A commercial implementation in accordance with the spirit and teachings of the present invention may be configured according to the needs of the particular application, whereby any aspect(s), feature(s), function(s), result(s), component(s), approach(es), or step(s) of the teachings related to any described embodiment of the present invention may be suitably omitted, included, adapted, mixed and matched, or improved and/or optimized by those skilled in the art, using their average skills and known techniques, to achieve the desired implementation that addresses the needs of the particular application.

[0031] It is to be understood that any exact measurements/ dimensions or particular construction materials indicated herein are solely provided as examples of suitable configurations and are not intended to be limiting in any way. Depending on the needs of the particular application, those skilled in the art will readily recognize, in light of the following teachings, a multiplicity of suitable alternative implementation details.

[0032] One embodiment of the present invention presents an invertible segmented container 100 that inverts to allow for facilitated cleaning of an inner surface 125. A top section 110 of the container comprises a rigid material that separates from a bottom section 120. The top section is operable to engage a lid for containing a liquid. The bottom is operable to consume a liquid. The bottom section is comprised of a flexible material. When the rigid top section separates from the flexible bottom section, the bottom section may invert into itself. The invertibility of the bottom section creates access to the inner surface for facilitated cleaning.

[0033] FIG. 1 illustrates a side view of an exemplary invertible segmented container according to an embodiment of the present invention. The bottom section 120 may be flexible so that invertibility is possible. In one embodiment, the flexible bottom section may invert if the rigid top section is removed. In another embodiment of the present invention, the bottom section includes a body constructed of a flexible silicone food grade or surgical semi-rigid material designed to be reversible. A ball-shaped seal-facilitating structure 150 disposed on a top end portion of the bottom section container and a seal-facilitating notch 140 disposed on the collar 130 enables a fluid tight seal when engaging a seal-facilitating receiver top 115 the top section 110. Those skilled in the art can appreciate that the flexible bottom section may separate from the rigid top section through numerous fasteners, including without limitation, snap-on, threaded screws, and adhesives. However, partial invertibility may be possible while the top section is attached to the bottom section. In an alternative embodiment, the bottom section 120 may include a rigid collar 130 to
provide a framework for the top section 110 having a seal-facilitating notch 140 to secure to the bottom section 120, enabling a fluid tight seal of the top section 110 to the bottom section 120, and for a user to close the tube and access for cleaning, a liquid from the bottom container. In further embodiments, the collar may be, but is not limited to, threaded, operable to receive the bull-shaped seal-facilitating structure 150. In alternative embodiments, seal-facilitating structures include, but not limited to, fasteners, and wedges. In one embodiment, the bottom section collapses into a dimension suitable for portability and storage in a confined space such as, but not limited to, a pocket, a travel bag, and a carrying case. Suitable materials for the bottom section include, but are not limited to, a silicone, a polypropylene, a polyvinylchloride, a plastic, and a rubber. The bottom section may also be ecofriendly and recyclable. Those skilled in the art, in light of the present teachings, can recognize that invertible segmented consumption container may be sufficiently dimensioned for use by infants such as, without limitation, around 3 ounces, or a sportsman who might require a larger volume of liquid (e.g., without limitation, one gallon or more). In one alternative embodiment, the invertible segmented container may be a sports bottle dimensioned, without limitation, about 20 oz by 3" diameter by 12" height.

[0034] FIG. 2 demonstrates an embodiment of the present invention wherein the bottom section 120 detaches from the collar 130 and the top section 110 and may invert with one uniform movement. The upper part of the bottom section may be pulled down until the inner surface completely inverts to the outside of the bottom section. Those skilled in the art can appreciate that the invertibility may be accomplished by detaching the top section from the bottom section, holding the bottom section, pushing the lower area of the bottom section out the upper area. Another embodiment for invertibility involves holding the bottom section and rolling back the upper area of the bottom section past the lower area. After invertibility is complete, the inner surface may then be cleaned by hand or washed in a sterile environment, such as, but not limited to a dishwasher. Those skilled in the art, in light of the present teachings, can appreciate that the flexible nature of the bottom section allows for complete collapsibility. The bottom section may thereby be stored and carried in compartments. This feature is efficacious for activities such as, but not limited to, camping, sporting events, traveling, feeding animals, and baby bottles for feeding infants.

[0035] In one alternative embodiment, the bottom section may be segmented with variable thicknesses to create more segmented invertibility. For example, but not limited to, the upper area 127 of the bottom section 120 may comprise of thinner material, creating less resistance to invertibility. A lower area 123 of the bottom section 120 may include a thicker material that provides greater resistance to invertibility. In a further embodiment, thin zones of material positioned at variable intervals along the bottom surface create an effect of invertibility zones. The bottom section inverts in segments that correlate to the interval between each thin zone.

[0036] In an alternative embodiment, the bottom section includes a rigid outer layer 160, and a flexible inner layer. The inner layer may be configured to receive the liquid and position inside the outer layer 160 of the bottom section 120. A collar 130 may join the outer layer and the inner layer. The outer layer 160 and the inner layer may detaches for cleaning. The inner layer may maintain sufficient flexibility to invert. A threaded collar 130, clip, adhesive, or other fastener at the collar joins the top section with the bottom section with seal-facilitating structures. The inner layer may then invert for facilitated cleaning, while the outer layer remains in the same position. The top section may also position onto this embodiment of the present invention.

[0037] FIG. 3a illustrates a perspective view of an exemplary invertible segmented container with a threaded rigid outer shell for outer layer 160 and/or protective purposes collar according to an embodiment of the present invention. FIG. 3b illustrates a perspective view of an exemplary invertible segmented consumption container according to an embodiment of the present invention. FIG. 3c illustrates a perspective view of an exemplary invertible segmented container according to an embodiment of the present invention. The top section may join the bottom section to secure a seal between the top section and the bottom section. The top section may also form a lid for the bottom section. In an alternative embodiment, the top section includes a cap with an aperture for the liquid to pass through. In a further embodiment, the top section may include a threaded collar joined to the bottom section. However further embodiments of the top section provide fasteners such as, but not limited to, bolts, clips, wedges, snap locks, ridges, and nobs to join with the bottom section. The top section may be utilized to secure the seal between the top section and the bottom section. Suitable materials for the top section include, but are not limited to, a silicone, a polypropylene, a polyvinylchloride, a plastic, and a rubber. The top section may be ecofriendly and recyclable. FIG. 3d illustrates a perspective view of an exemplary invertible segmented consumption container with a threaded collar according to an embodiment of the present invention. FIG. 3e illustrates a perspective view of an exemplary invertible segmented consumption container that may include a bottom section 120 and a collar 130 that may be wedged or snap together with a compression fitting 170 on the top section 110 according to an embodiment of the present invention. A top section 110 having a seal facilitating receiver 135 is joined to the bottom section 120 with a collar 130. The bottom section 120 includes a seal facilitating wedge structure 150 disposed on a top end portion of the bottom section. The collar 130 includes a seal facilitating notch 160 for receiving a lower portion of the seal facilitating wedge 150. The seal facilitating receiver 135 being configured to receive the upper portion of the seal facilitating wedge. During an engagement of the top section 110 and the bottom section 120 with the collar 130, the seal facilitating wedge 150 is compressed between the seal facilitating receiver 135 and the seal facilitating notch 160. Thus, joining the top section 110 with the bottom section 120 with the collar 130 enables a fluid tight seal of the top section 110 to the bottom section 120.

[0038] In a typical embodiment, the seal positions between the top section and the collar to prevent leaks. In alternative embodiments of the present invention, the seal may be detachable. When the top section and the collar is detached, the seal container may be removed and stored. The seal collar or protective shell 160 may provide insulation to retain heat or cold. At least one fastener may secure the top section against the bottom section to form a secure unitary container that sandwiches the seal. Suitable materials for the seal include, but are not limited to, a rubber, foam, a plastic, a silicone, a polypropylene, and a polyvinylchloride. The seal may be ecofriendly and recyclable.
In some alternative embodiments, the invertible container may instead have a hardened and optionally removable bottom such that it would be configured to also enable a sleeve to be invertible as in the foregoing embodiments.

FIG. 4a illustrates a perspective view of an exemplary invertible, segmented, and self-supporting consumption container sliced in half, according to an embodiment of the present invention. The container may include, but not limited to, a silicone or elastic container having a concave base (1) for stability. A protruding outer rim (2) at the base or bottom portion of the container may provide more stability. Thinner walls (3) may allow for easier invertibility and thicker walls (4) may add more rigidity and stability when standing alone in an upright position when and during fluid filling. The wall container thickness may vary from, but not limited to, 0.5 mm to 2.5 mm to allow for invertibility. The thicker areas of, but not limited to, 2.5 mm may be added for grip texture or aesthetics. Rigidity may be increased when collars are added since the top of container can’t collapse inward when squeezed. The top portion of the container may include, but not limited to, a built in seal facilitating structure or sealing flange (5). The sealing flange (5) may include, but not limited to, a rim (6) on the underside portion which may be concaved, which further includes, but not limited to, a groove, a notch or a wedge, to allow for a seal facilitating fit when collars said and top sections are attached. The container may hold in place and prevent a top section inward movement when grabbed. The container’s sealing flange (5) groove, notch or wedge, may mate fit with the collar’s and/or top section’s matching seal facilitating receiver groove, notch or wedge. In an alternative embodiment, the rim (6) may hold a removable seal in place when the top section is removed.

FIG. 4b illustrates a perspective view of an exemplary invertible, segmented, and self-supporting consumption container, according to an embodiment of the present invention. The invertible tube or sleeve container (7) may stand alone, support itself, and stable in an upright position. The container (7) may remain upright, intact, to be placed, situated, effective, valid, gain, and maintains its altitude and condition. Invertible tube or sleeve container (7) may have a sealing flange (8) on the bottom portion of the container. It may allow the bottom portion to be removed from a collar or insulating protective shell for ease of cleaning. It may also function as a sleeve/tube being open on both ends and allows the easiest invertibility of container portion.

FIG. 5 illustrates an exemplary self-supporting consumption container where the top section may include a threaded sleeve to engage a threaded collar joined to the bottom section, according to an embodiment of the present invention; and.

FIG. 6 illustrates a perspective view of an exemplary tube section of the self-supporting consumption container of FIG. 5, according to an embodiment of the present invention.

All the features or embodiment components disclosed in this specification, including any accompanying abstract and drawings, unless expressly stated otherwise, may be replaced by alternative features or components serving the same, equivalent or similar purpose as known by those skilled in the art to achieve the same, equivalent, suitable, or similar results by such alternative feature(s) or component(s) providing a similar function by virtue of their having known suitable properties for the intended purpose. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent, or suitable, or similar features known or knowable to those skilled in the art without requiring undue experimentation.

Having fully described at least one embodiment of the present invention, other equivalent or alternative methods of implementing liquid containers according to the present invention will be apparent to those skilled in the art. The invention has been described above by way of illustration, and the specific embodiments disclosed are not intended to limit the invention to the particular forms disclosed. The particular implementation of the liquid containers may vary depending upon the particular context or application. By way of example, and not limitation, the liquid containers described in the foregoing were principally directed to collapsible liquid container implementations; however, similar techniques may instead be applied to containers for gases, gels or solids which implementations of the present invention are contemplated as within the scope of the present invention. The invention is thus to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the following claims.

What is claimed is:

1. A device comprising:
   a bottom section, said bottom section comprises a self-supporting base being configured to contain a liquid, said bottom section being further configured to be operable to be inverted for cleaning, said bottom section comprises;
   a concave base with a protruding outer rim being operable to provide stability;
   a top end portion having a wall thickness; and
   a middle portion having thinner walls than the wall thickness of the top end portion, the thinner walls of the middle portion being configured to facilitate inversion;
   a seal facilitating structure being disposed at the top end portion of said bottom section;
   a top section, said top section being configured to form a cap for said bottom section;
   a seal facilitating receiver being disposed at a proximate inner portion of said top section, said seal facilitating receiver being configured to receive a proximate top portion of said seal facilitating structure;
   a collar, said collar being configured to engage said top section with said bottom section, said collar comprising a seal facilitating notch being configured to receive a proximate bottom portion of said seal facilitating structure;
   wherein said top section and said collar being configured to form a container with said bottom section, in which said seal facilitating receiver and said seal facilitating notch sandwiches said seal facilitating structure being configured to form a leak resistant sealed container.

2. The device of claim 1, wherein said top section comprises a rigid structure.

3. The device of claim 2, in which said top section comprises an aperture being configured for liquid to pass through.

4. The device of claim 3, wherein said top section is operable to form a cap for said bottom section, wherein said top section is a threaded top section.
5. The device of claim 1, further comprising a stiff shell disposed around at least a lower portion of said bottom section, being configured to be capable of providing adequate rigidity to said bottom section during normal use.

6. The device of claim 5, further comprising a semi-flexible shell disposed around at least an upper portion of said bottom section, being configured to enable said bottom section to be reversed for cleaning.

7. The device of claim 4, wherein said collar comprises a threaded surface being configured to engage a threaded surface of said top section.

8. The device of claim 1, wherein said bottom section collapses to a storable position.

9. The device of claim 1, wherein said seal facilitating structure comprises a ball or round shaped seal facilitating structure.

10. The device of claim 1, in which said flexible bottom section comprises an antibacterial material.

11. The device of claim 1, wherein said collar is a removable collar.

12. The device of claim 1, wherein said collar provides a perimeter framework for said top section and said container bottom section.

13. The device of claim 1, wherein said collar is operable to provide a rigid framework.

14. The device of claim 1, wherein said seal facilitating structure comprises a removable seal positioned between the top section and the collar to form a leak proof seal for the container.

15. The device of claim 1, wherein said seal facilitating structure comprises a wedge shaped seal facilitating structure.

16. A device comprising:
   means for containing a liquid;
   means, disposed at a bottom segment of said liquid containing means, for enabling inversion of said containing means;
   means, disposed at a top end portion of said containing means, for facilitating sealing;
   means, disposed at an inner portion of said cap forming means, for receiving a top portion of said seal facilitating means;
   means for engaging said cap forming means;
   means, disposed at said cap engaging means, for receiving a proximate bottom portion of said seal facilitating means; and
   wherein said cap forming means and said cap engaging means being configured to form a container with said liquid containing means, in which said means for receiving a top portion of said seal facilitating means and said means for receiving a proximate bottom portion of said seal facilitating means, sandwiches said seal facilitating means being configured to form a leak resistant sealed container.

17. The device of claim 16, further comprising means for liquid to pass through.

18. A device comprising:
   a bottom section, said bottom section comprises a self-supporting base being configured to contain a liquid, said bottom section being configured to be operable to be inverted for cleaning;
   a detachable seal facilitating structure being disposed at a top end portion of said bottom section;
   a top section, said top section being configured to form a cap for said bottom section;
   a seal facilitating receiver being disposed at a proximate inner portion of said top section, said seal facilitating receiver being configured to receive a proximate top portion of said seal facilitating structure;
   a collar, said collar being configured to engage said top section with said bottom section, said collar comprising a seal facilitating notch being configured to receive a proximate bottom portion of said seal facilitating structure;
   and
   wherein said top section and said collar being configured to form a container with said bottom section, in which said seal facilitating receiver and said seal facilitating notch sandwiches said seal facilitating structure being configured to form a leak resistant sealed container.

19. The device of claim 18, wherein said seal facilitating structure comprises at least one of a rubber, a foam, a plastic, a silicone, a polypropylene, and a polyvinylchloride.

20. The device of claim 18, wherein said bottom section comprises at least one of a silicone, a polypropylene, a polyvinylchloride, a plastic, and a rubber.

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