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(54) **TRAVEL MUG, HAND-HELD FLUID CONTAINER, AND BEVERAGE CUP**

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**Publication Classification**

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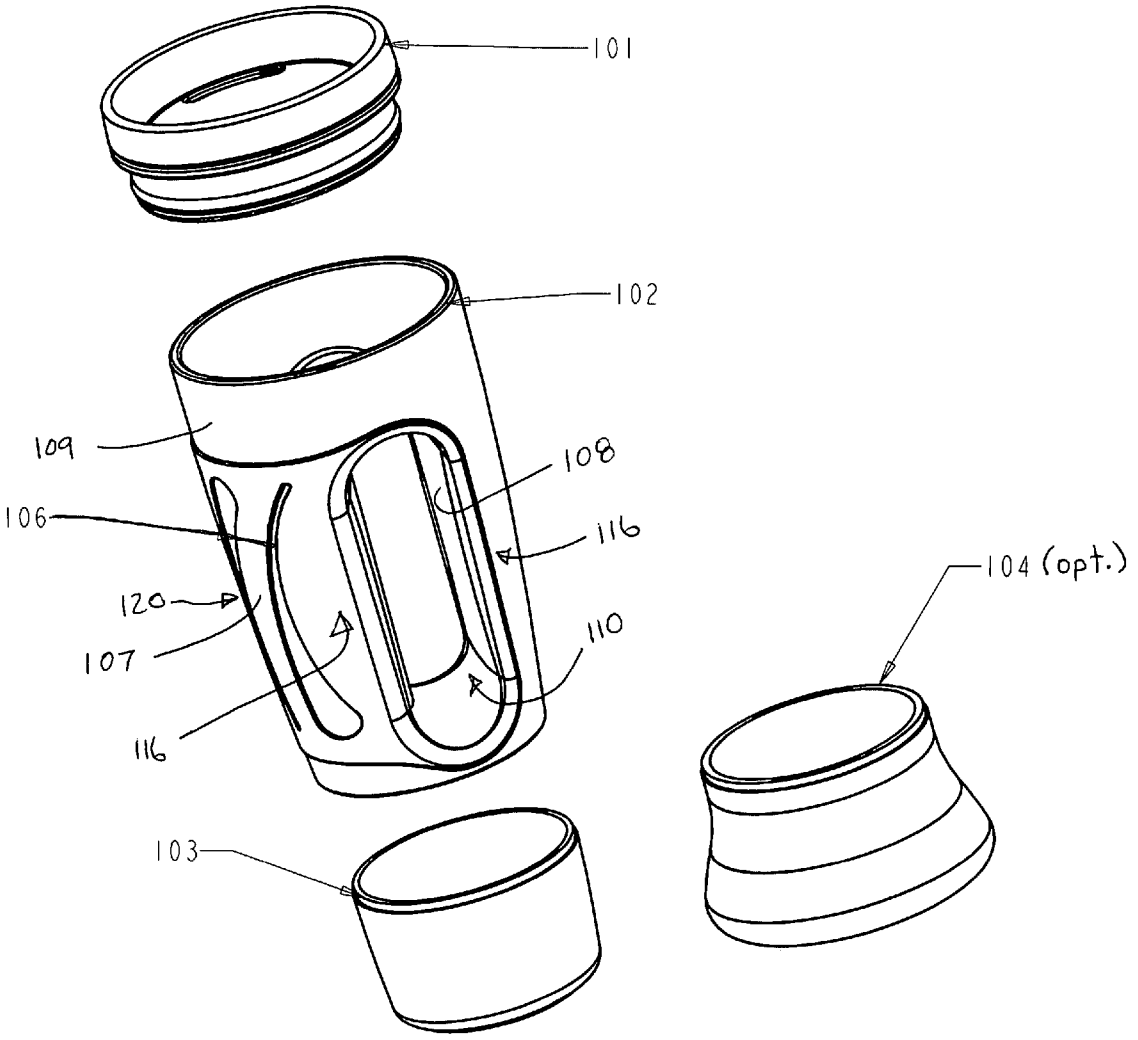
***B65D 25/10*** (2006.01)

(52) **U.S. Cl.** ..... **220/770**

(57) **ABSTRACT**

A travel mug is provided having a base, a wall, and a handle. The wall is configured to extend upwardly from the base having a first portion, a second portion, and a thumb-receiving portion provided between the first portion and the second portion. The handle includes a female receptacle extending through the wall from the first portion to the second, opposed portion.



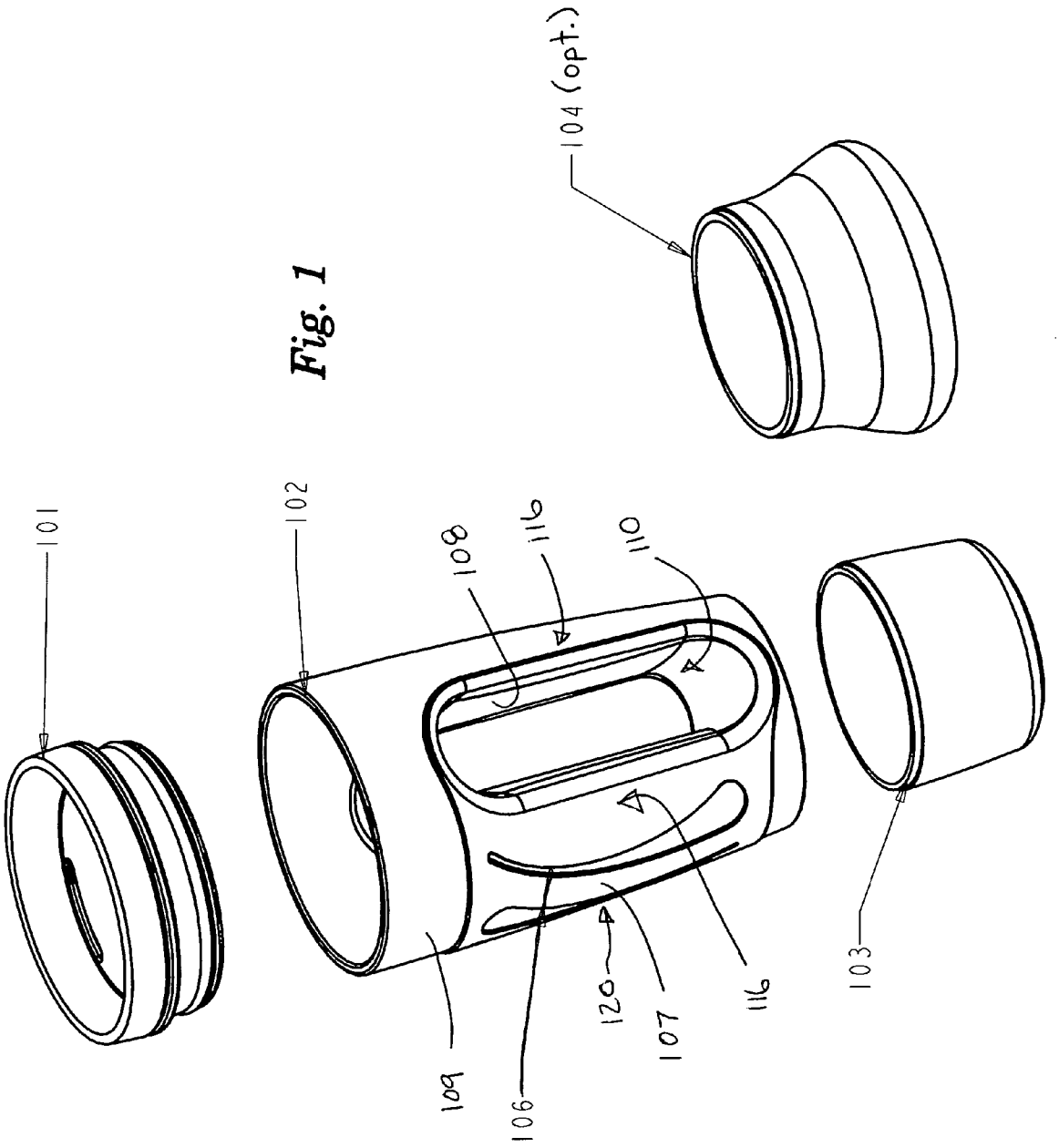
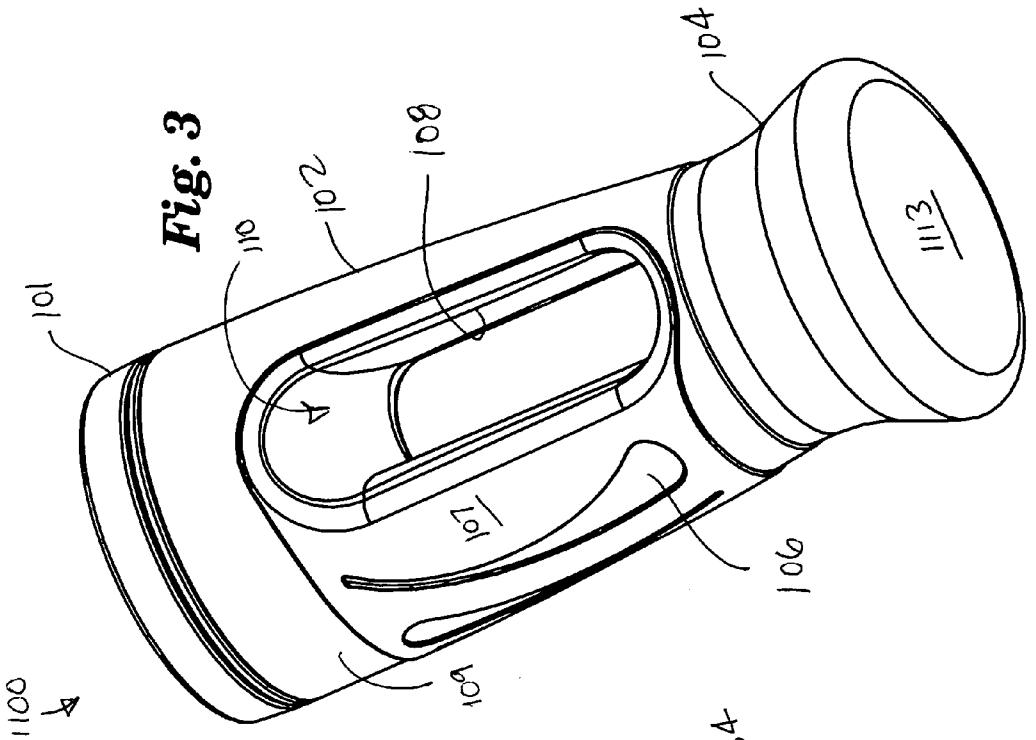



*Fig. 1*


1100
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1113
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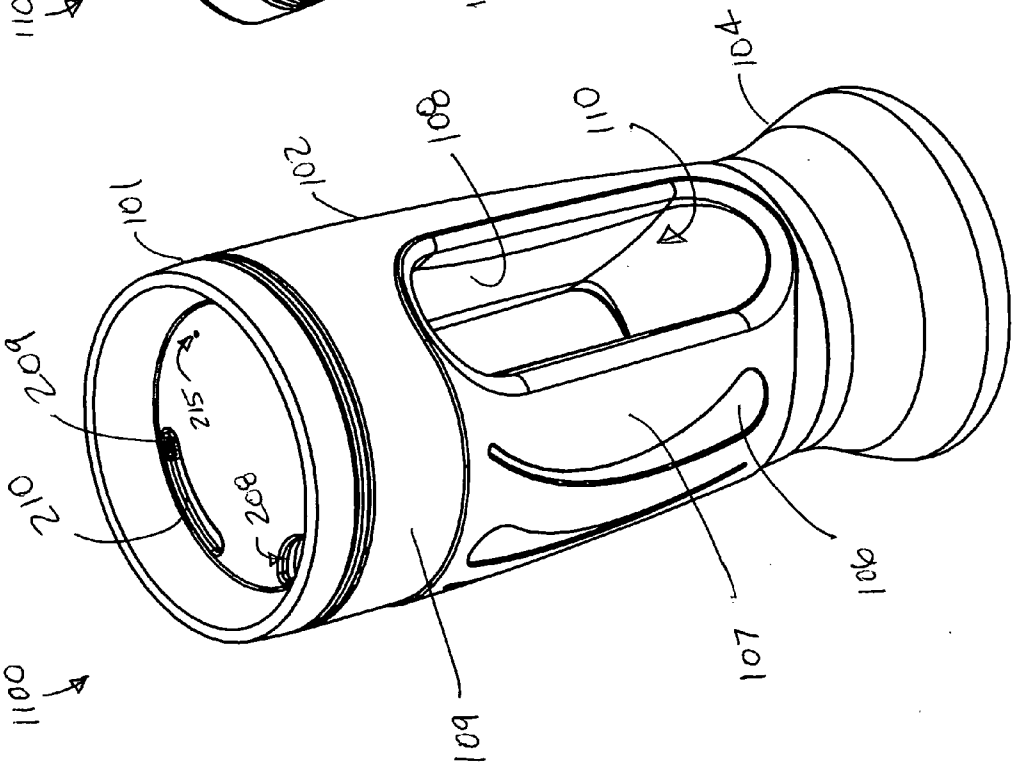
109

Fig. 3


1100
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107
106
109

Fig. 2

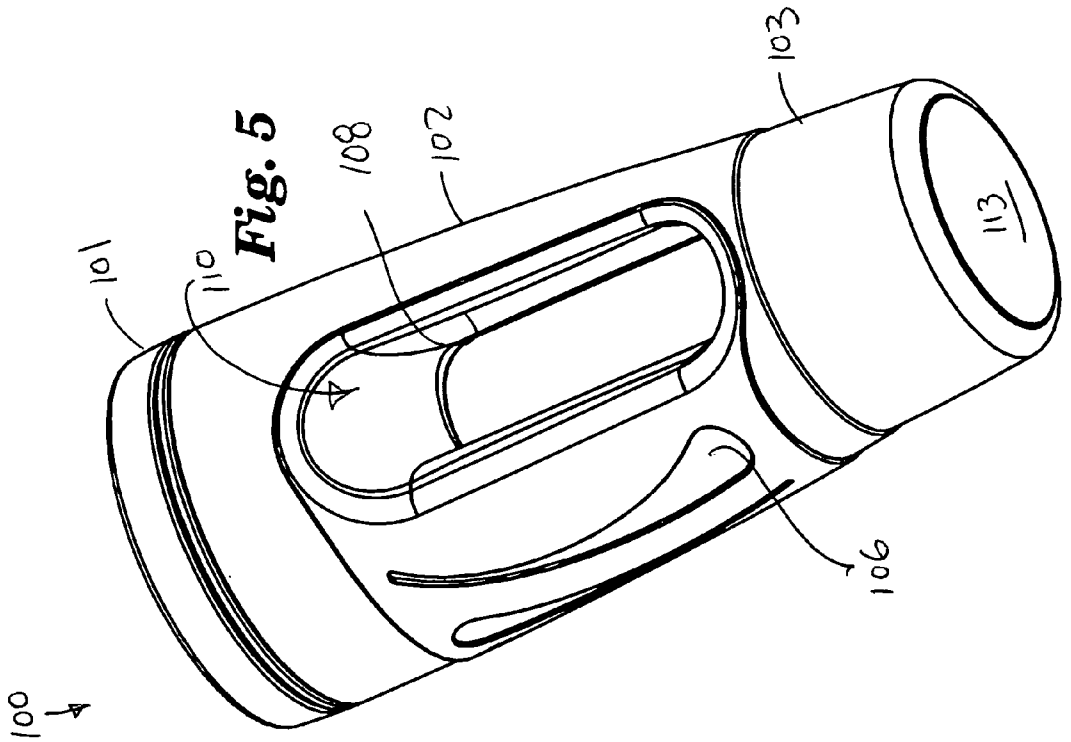
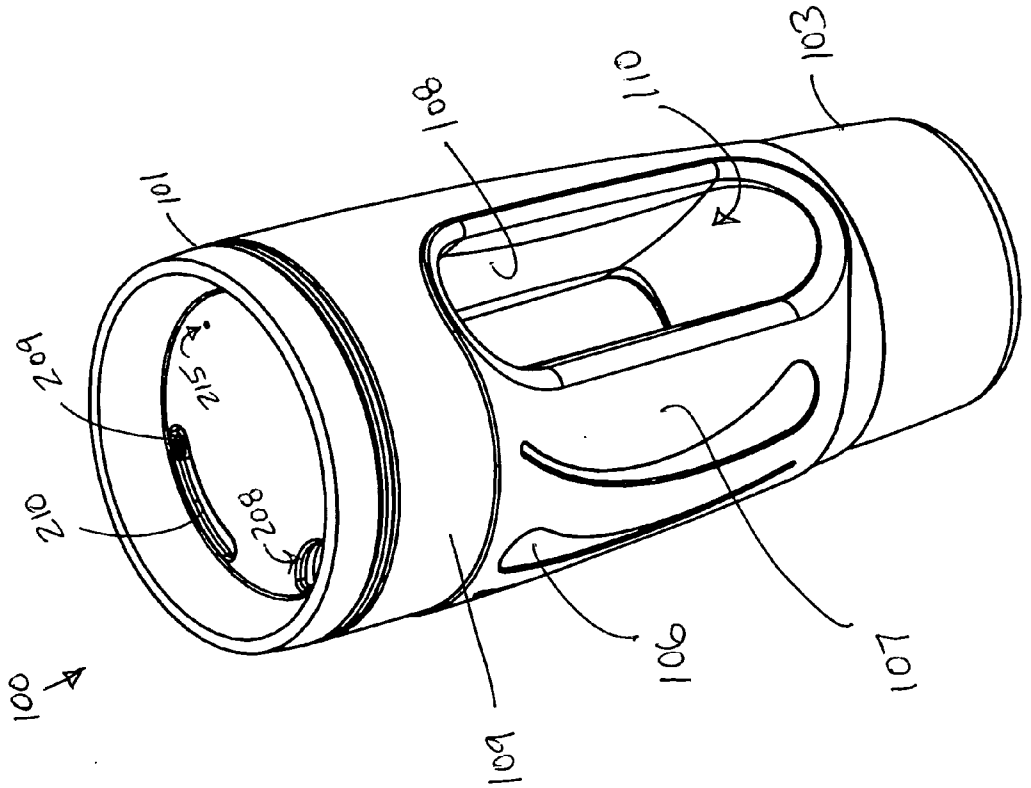

103
108
102
101
110
113
106
100

Fig. 5


108
110
103
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209
215
210
208
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109
106
107

Fig. 4

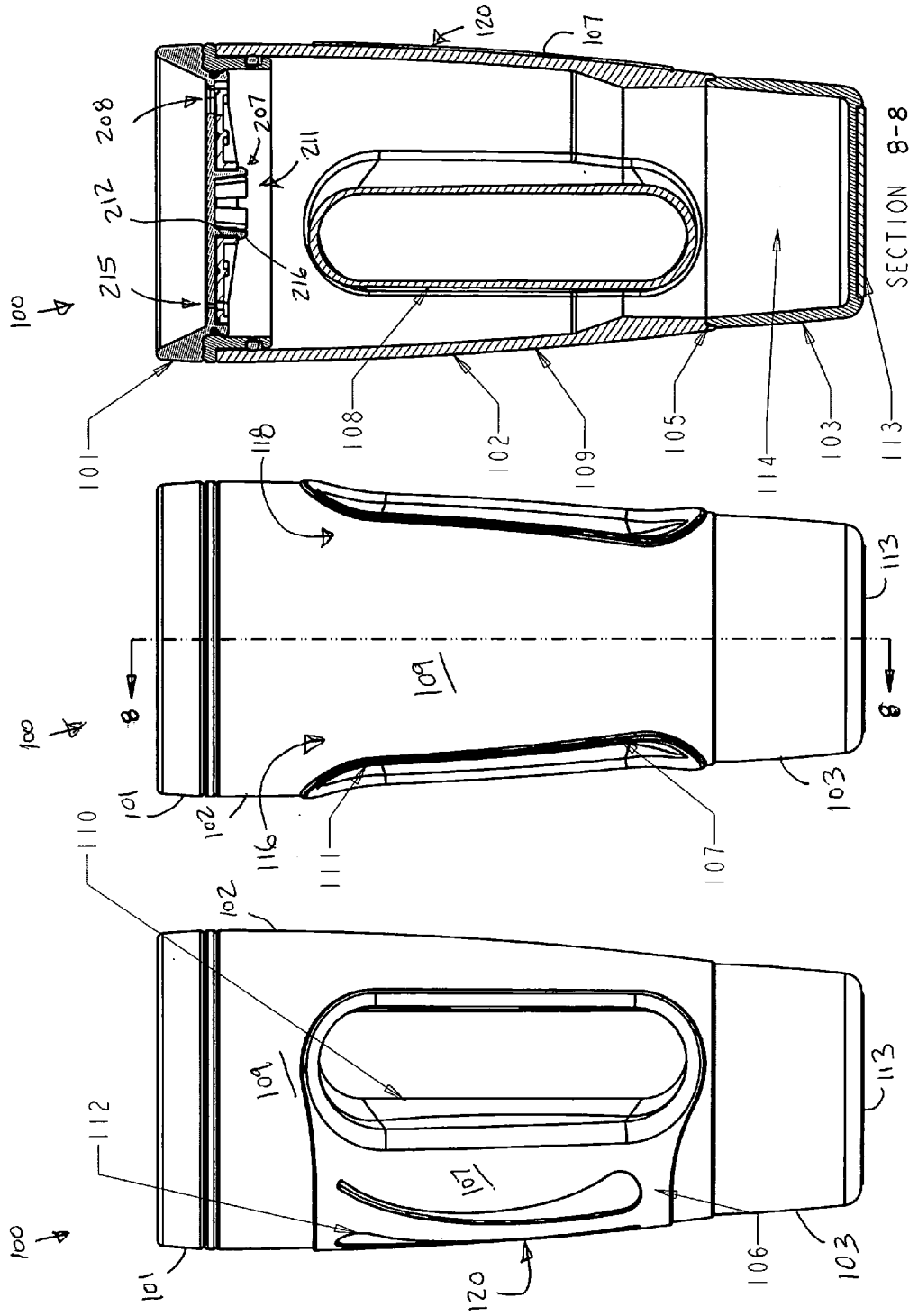
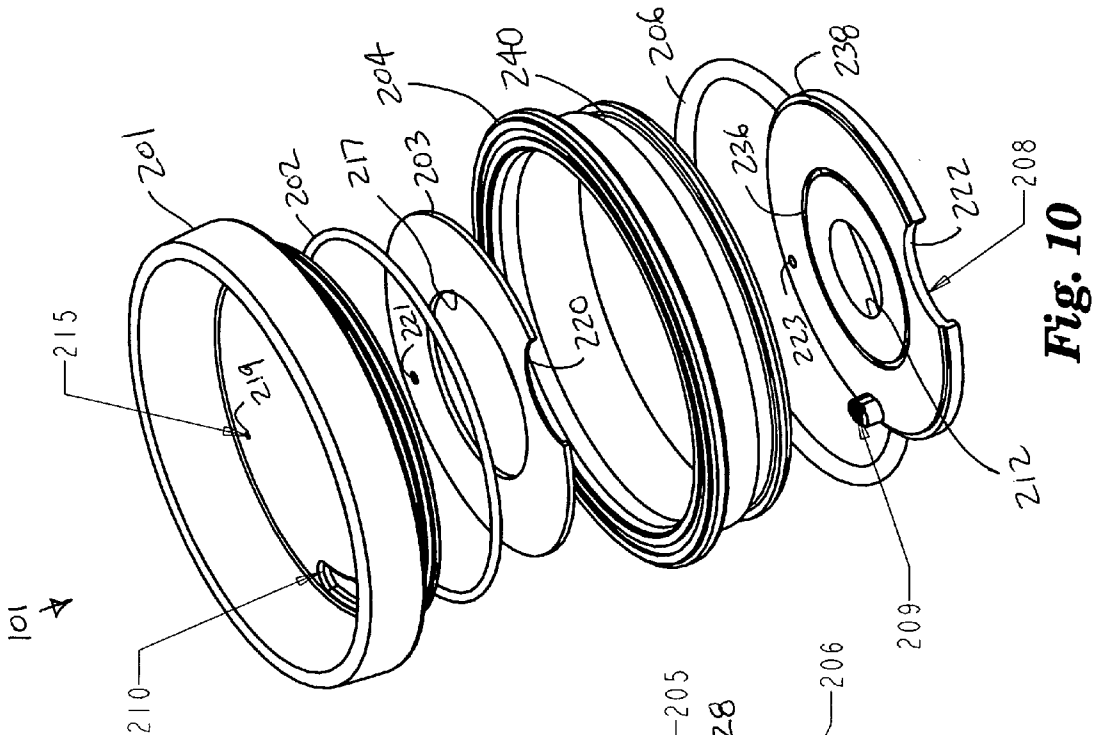



Fig. 8

Fig. 7

Fig. 6


101
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201
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217
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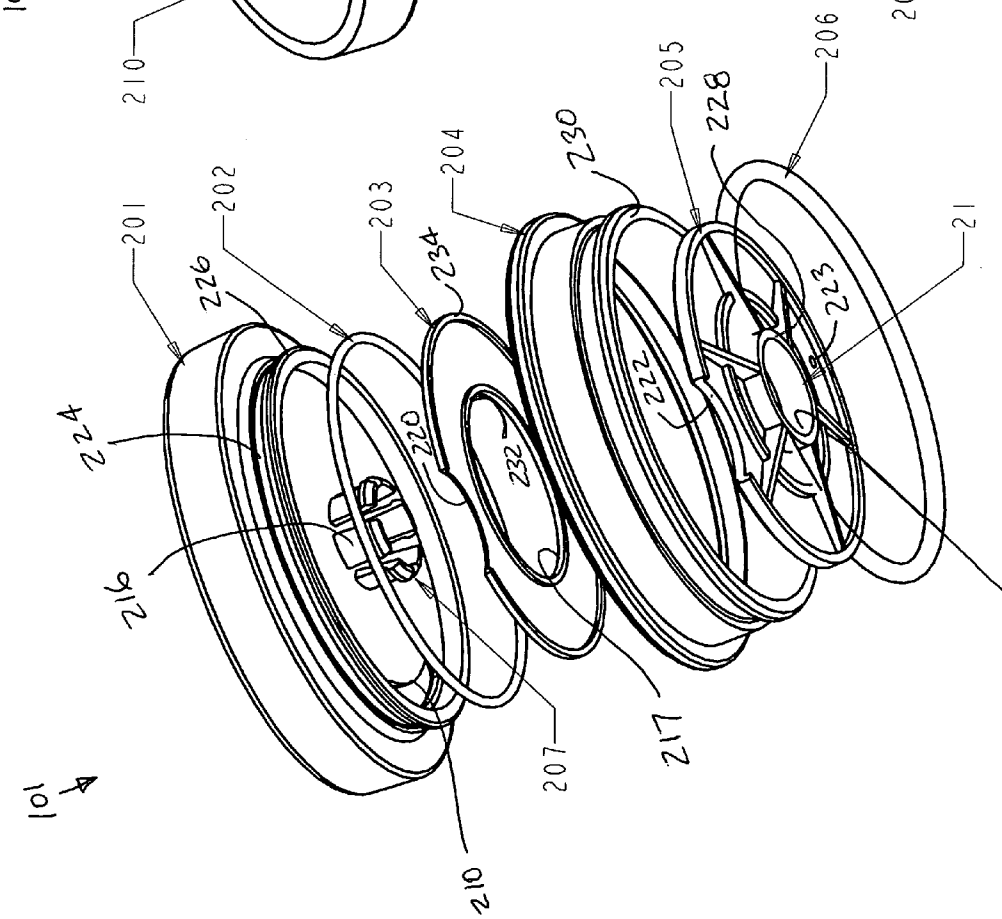
212
209
210

Fig. 10


101
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210

Fig. 9

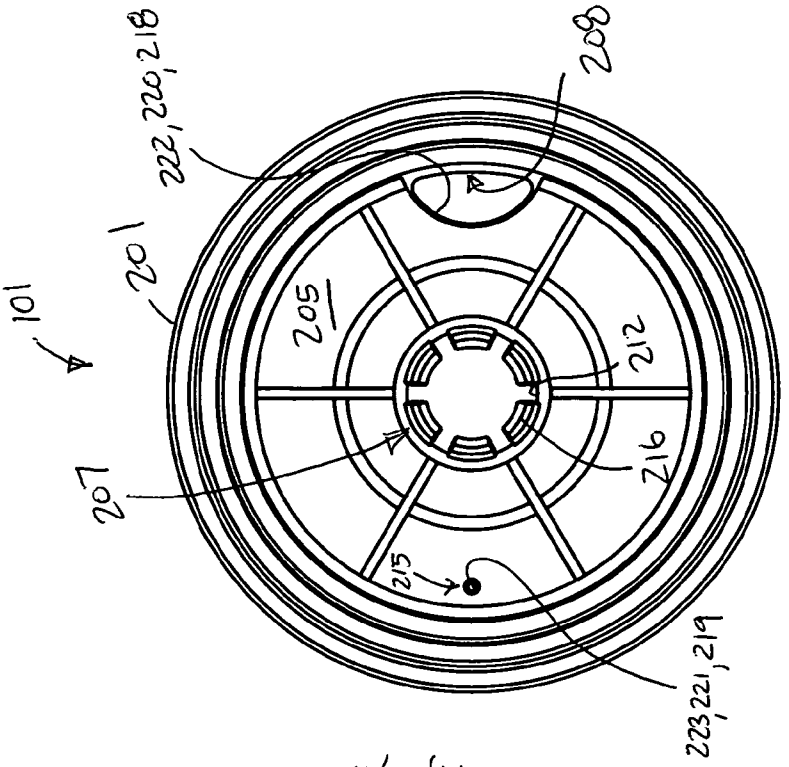


Fig. 13

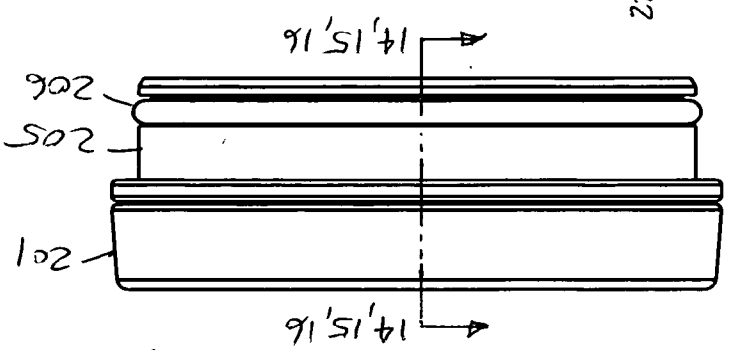


Fig. 12

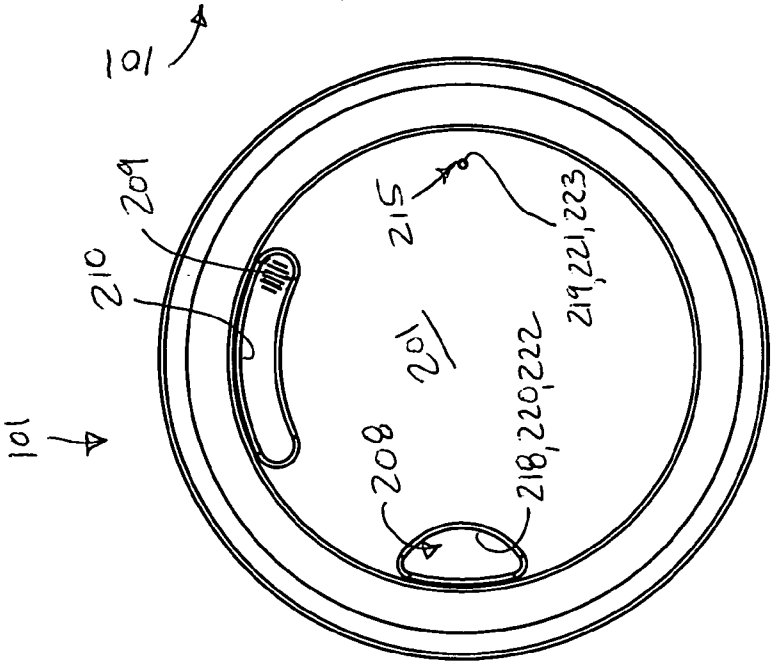


Fig. 11

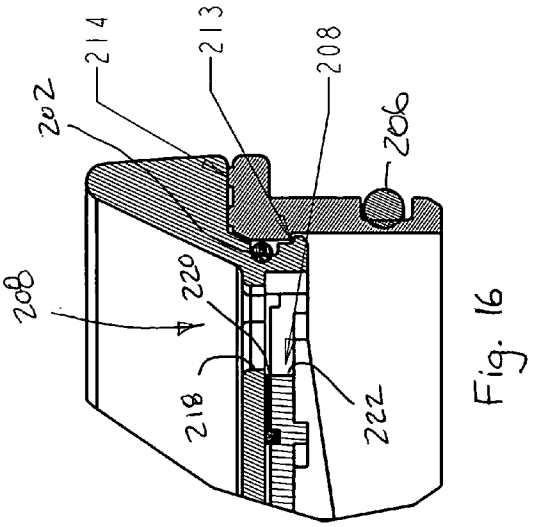


Fig. 16

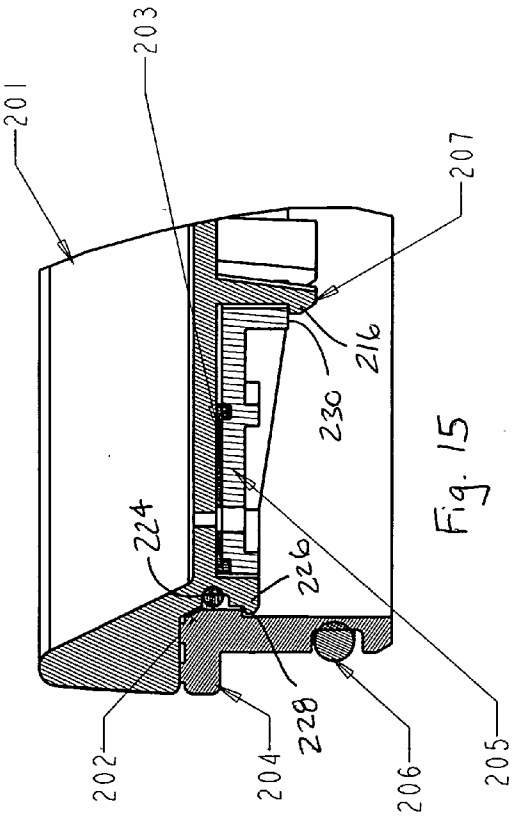


Fig. 15

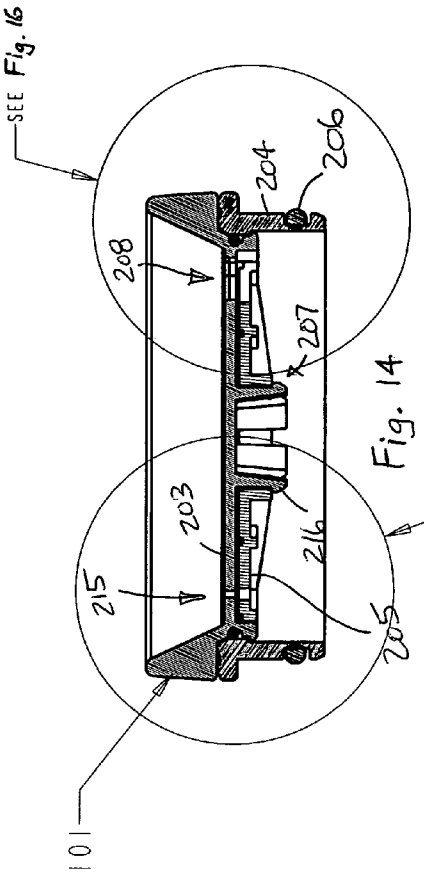


Fig. 14

# TRAVEL MUG, HAND-HELD FLUID CONTAINER, AND BEVERAGE CUP

## RELATED PATENT DATA

[0001] This application claims priority from U.S. Provisional Patent Application Ser. No. 60/678,223, which was filed May 6, 2005, and which is incorporated by reference herein.

## TECHNICAL FIELD

[0002] This invention pertains to hand-held fluid containers. More particularly, the present invention relates to travel mugs and beverage cups.

## BACKGROUND OF THE INVENTION

[0003] Cups and mugs have been used for hundreds of years in order to transport fluids such as beverages. However, recently it has become popular to provide cups that have removable lids and which are often referred to as "travel mugs" for storing both hot and cold beverages where the temperature of the beverage may be maintained for a period of time. The lid on such a travel mug allows a user to consume the beverage while mitigating loss of fluid to the top of the mug. Particularly, the lids on such travel mugs prevent fluids from sloshing around, particularly when the travel mugs are stored in a cup holder of a vehicle.

[0004] The popularity of travel mugs is largely due to their ability to fit within standard cup holders that are provided in automobiles. Travel mugs often take a relatively cylindrical, elongated configuration having a relatively narrow cylindrical base portion that is sized to fit within most automotive cup holders. Furthermore, many travel mugs are not provided with a handle because the generally elongated, cylindrical shape is optimally configured to be received within a multitude of different shaped cup holders. Some cup holders are provided within consoles of a vehicle wherein the provision of an outwardly projecting handle would make the travel mug incompatible with the cup holder if the depth of the cup holder is too great and the handle interferes with insertion of the travel mug within the cup holder. Accordingly, many travel mugs are not provided with a handle. Instead, a user typically needs to grip an outer cylindrical surface of the travel mug in order to use the travel mug when consuming beverages.

[0005] Accordingly, improvements are needed to incorporate a handle onto a travel mug that is still compatible with the majority of automotive cup holders and does not interfere with placement of the travel mug within certain of such cup holders.

## SUMMARY OF THE INVENTION

[0006] A hand-held fluid container is provided with a female handle portion configured to receive one or more fingers of a user hand having four fingers and an opposable thumb, and a thumb-receiving portion provide on an outer surface of the container. In one instance, the container is a travel mug or cup configured to receive beverages, such as hot or cold beverages.

[0007] According to one aspect, a travel mug is provided having a base, a wall, and a handle. The wall is configured to extend upwardly from the base having a first portion, a second portion, and a thumb-receiving portion provided between the first portion and the second portion. The handle includes a female receptacle extending through the wall from the first portion to the second, opposed portion.

[0008] According to another aspect, a hand-held fluid container is provided having a wall and a receptacle. The wall has a concave portion configured to retain fluid through coaction of gravitational forces with the fluid. The receptacle extends through the wall and into the concave portion and is sized to receive at least a portion of a user's hand to retain the container.

[0009] According to yet another aspect, a beverage cup is provided having a rigid outer substantially annular shell and a handle. The rigid outer substantially annular shell defines an open top, a bottom, an inside and an outside. The shell is sized to fit a plurality of alternatively sized vehicle cup holders. The handle includes a female aperture extending into the shell.

## BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Preferred embodiments of the invention are described below with reference to the following accompanying drawings.

[0011] **FIG. 1** is an exploded perspective view of a travel mug also showing an optional bottom end configuration.

[0012] **FIG. 2** is a perspective view taken from above of the optional configuration of the travel mug of **FIG. 1**.

[0013] **FIG. 3** is a perspective view taken from below of the optional configuration of the travel mug of **FIG. 1**.

[0014] **FIG. 4** is perspective view taken from above of the configuration of **FIG. 1**.

[0015] **FIG. 5** is a perspective view taken from below of the configuration depicted in **FIG. 1**.

[0016] **FIG. 6** is a side elevational view of the travel mug of **FIGS. 1 and 4-5**.

[0017] **FIG. 7** is a front elevational view of the travel mug of **FIG. 6**.

[0018] **FIG. 8** is a vertical sectional view of the travel mug of **FIG. 7** taken along line **8-8** of **FIG. 7**.

[0019] **FIG. 9** is an exploded perspective view taken from below of a lid assembly for the travel mug of **FIGS. 1-8**.

[0020] **FIG. 10** is an exploded assembly view taken from above of the lid assembly for the travel mugs of **FIGS. 1-8**.

[0021] **FIG. 11** is a plan view of the lid assembly of **FIGS. 9-10**.

[0022] **FIG. 12** is a side view of the lid assembly of **FIG. 11**.

[0023] **FIG. 13** is a bottom view of the lid assembly of **FIGS. 11-12**.

[0024] **FIG. 14** is a sectional view taken along line **14-14** of **FIG. 12**.

[0025] **FIG. 15** is an enlarged partial sectional view taken from the encircled region **15** of **FIG. 14**.

[0026] **FIG. 16** is an enlarged partial sectional view taken from the encircled region **16** of **FIG. 14**.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0027] This disclosure of the invention is submitted in furtherance of the constitutional purposes of the U.S. Patent Laws "to promote the progress of science and useful arts" (Article 1, Section 8).

[0028] Reference will now be made to a preferred embodiment of Applicant's invention comprising a fluid container in the form of a travel mug. While the invention is described by way of a preferred embodiment, it is understood that the description is not intended to limit the invention to such embodiment, but is intended to cover alternatives, equivalents, and modifications which may be broader than the embodiment, but which are included within the scope of the appended claims.

[0029] In an effort to prevent obscuring the invention at hand, only details germane to implementing the invention will be described in great detail, with presently understood peripheral details being incorporated by reference, as needed, as being presently understood in the art.

[0030] **FIG. 1** illustrates in exploded perspective view a hand-held fluid container configured in one form as a travel mug **100**, according to one aspect of the present invention. Travel mug **100** includes a removable lid assembly **101**, a main mug body **102** and a frusto-conical base **103** that is compatible with most automotive cup holders. Optionally, a flared base **104** can be substituted for base **103** in constructing an alternatively configured travel mug **1100** as shown in **FIGS. 2-3**.

[0031] As shown in **FIG. 1**, a grip wrap **107** is provided with a plurality of grip apertures **106**. Grip wrap **107** is adhesively bonded onto an outer periphery of body **102** to enhance a user's ability to grip travel mug **100**. More particularly, grip wrap **107** comprises a thin strip of sheet material, such as thermoplastic elastomer (TPE) that is adhered onto an outer surface of body **100**. Grip apertures **106** are provided at discrete locations within grip wrap **107** to enhance the grip. Grip wrap **107** is also provided in a location where a user's thumb is placed within an opposable thumb surface portion **120**, around such adjacent peripheral portion of body **102** when inserting fingers within an internal handle opening **110** of body **102**. Portion **120** is provided between first portion **116** and second portion **118**, along outside wall **109**. Portion **120** is configured to provide a thumb receiving portion along outside wall **109**.

[0032] According to one alternative construction, grip wrap **107** can be integrally molded into an outer peripheral surface of body **102**. Optionally, grip wrap **107** can be formed from a segment of TPE, rubber, or some other friction-imparting material or elastomeric material that is adhesively affixed onto an outer surface of body **102**. Further optionally, one or more grip elements can be adhered within an inside wall **108** of body **102** that forms internal handle **110**.

[0033] As shown in the alternative embodiment depicted in **FIGS. 2-3**, as well as the embodiment depicted in **FIGS. 4-5**, lid assembly **101** includes an opening **208** (through which a user receives a beverage), a vent hole **215**, and a slot **210** that cooperates with a knob **209** in order to open and close opening **208** and vent hole **215**. Further details of the cooperation of knob **209** in slot **210** are discussed below with reference to **FIGS. 8-16**.

[0034] As shown in **FIG. 5**, base **103** includes a rubber foot, or pad **113** that can be either integrally molded thereto or adhesively affixed thereon. Likewise, the embodiment of **FIG. 3** also includes a rubber foot **1113** affixed onto flared base **104** either by integral molding or by being adhesively affixed thereto.

[0035] As shown in the embodiments depicted in **FIGS. 1-5**, internal handle **110** forms an opening that extends between opposed wall portions on body **102**. An inside wall **108** extends between opposed wall portions on an outer surface of body **102** so as to provide a vertically oblong slot extending through body **102** into which a user's elongated fingers and hand can be inserted therethrough. A user's thumb is then wrapped along an outer peripheral surface of body **102** so as to lay atop grip elements **106**.

[0036] As shown in **FIGS. 1-5**, the opening that forms internal handle **110** is configured to provide a finger-conforming curve that extends in a curved direction along a horizontal plane through base **102**. Accordingly, internal **110** is formed from a female receptacle that extends through body **102** with a curvature that is ergonomically compatible with a user. A right hand user inserts their fingers into the opening of handle **110** as shown in **FIG. 1**. However, a left-handed user will insert their fingers into the opening of internal handle **110** from an opposite direction so that the curvature of the corresponding opening, or slot matches the natural curvature of a user's four fingers. Accordingly, internal handle **110** is configured with ergonomically complementary user features.

[0037] **FIGS. 6-8** further illustrate the frusto-conical configuration of base **103** as well as the generally frusto-conical configuration of body **102**. Additionally, inside walls **108** is clearly shown as having a vertically oblong slot that includes a finger-conforming curve that extends in a horizontal plane. Furthermore, the slot that forms internal handle **110** is shown as extending through diametrically opposed portions of wall **109**.

[0038] As shown in **FIGS. 6-8**, base **103** is ultrasonically welded onto a bottom end of body **102**, along the corresponding, mating circumferential edges. Optionally, base **103** can be adhesively affixed onto body **102**. Further optionally, base **103** can be integrally formed from body **102**, such as by rotomolding body **102** and base **103** from a single piece of plastic material. Further optionally, body **102** and base **103** can be formed from metal such as stainless steel using metal forming and welding techniques that are well understood in the art. In such alternative embodiment, inside wall **108** is formed from a tube of stainless steel that is end welded to the diametrically opposed portions and openings within wall **109**. Further optionally, body **102** and base **103** can be formed from a double wall construction similar to that depicted in U.S. Pat. Nos. 5,918,761 and 6,102,244, herein incorporated by reference.

[0039] As shown in **FIG. 8**, an interior volume **114** is provided between the boundaries of outside wall **109**, inside wall **108**, and lid assembly **101**. A circumferential joint **105**, provided between body **102** and base **103** is sealed via an ultrasonic weld. A cylindrical disk of rubber comprising a rubber foot **113** is affixed onto a bottom of base **103** to

stabilize the travel mug when placed on slippery surfaces. And as also shown in **FIG. 8**, lid assembly **101** includes openings **208**, a vent hole **215**, and rotary connector assembly **211**.

[**0040**] Rotary connector assembly **211** of **FIG. 8** comprises an array **207** of circumferentially configured snaps **215** that lock within a cylindrical aperture **212**.

[**0041**] **FIGS. 9 and 10** illustrate in exploded perspective view the construction of lid assembly **101**. More particularly, lid assembly **101** comprises a lid **201**, an o-ring seal **202**, a cylindrical washer-shaped seal **203**, a lid ring **204**, a lid seal ring **205**, and o-ring seal **206**. O-ring seal **206** is received within a circumferential groove **240** of lid ring **204**.

[**0042**] As shown in **FIGS. 9 and 10**, lid **201** of lid assembly **101** includes an array **207** of individual snap fingers **216** that are received through seal **202**, seal **203**, lid ring **204**, lid seal ring **205**, and o-ring **206** where each individual snap finger **216** is received through a cylindrical aperture **212** in lid seal ring **205** where each snap finger snaps into interlocking engagement with a cylindrical end surface **228** on ring **205**. Additionally, a circumferential lip **226** locks in assembly with a cylindrical end surface **230** on lid ring **204** (also see **FIG. 15**). Lid **201** also includes a circumferential groove **224** configured to receive o-ring seal **202** therein in assembly.

[**0043**] As shown in **FIG. 10**, vent hole **215** is formed by aperture **219** in lid **201**, aperture **221** in seal **203**, and aperture **223** in lid seal ring **205** which are aligned together in assembly. When knob **209** is driven to a furthest clockwise position within slot **210** such that lid seal ring **205** rotates relative to lid **201**. Similarly, drink opening **208** (see **FIG. 11**) is formed by aligning apertures **218**, **220** and **222** of lid **201**, seal **203** and lid seal ring **205**, respectively as knob **209** is rotated to a fully clockwise direction within arcuate slot **210**. When knob **209** is rotated into a counterclockwise most position within slot **210**, apertures **218** and **219** no longer align with corresponding apertures **220**, **222** and **221**, **223** which closes respective drink opening **208** and vent hole **215**.

[**0044**] As shown in **FIGS. 9 and 10**, seal **203** includes a radial inner rib **232** and a radial outer rib **234** that are each configured to be received within a cylindrical groove **236** and a corresponding cylindrical edge groove **238** provided in lid seal ring **205**.

[**0045**] **FIGS. 11-13** illustrate lid assembly **101** in an assembled state ready to be frictionably received into a topmost inner surface of a travel mug comprising a topmost open portion of body **102** (see **FIGS. 1-5**). As shown in **FIGS. 11-13**, knob **209** is shown rotated to a clockwise-most position within arcuate slot **210** corresponding with drink opening **208** and vent hole **212** being shown in an open configuration. More particularly, drink opening **208** is provided by aligning apertures **218**, **220** and **222**. Likewise, vent hole **215** is provided in an open configuration by aligning apertures **219**, **221** and **223**. Furthermore, **FIG. 13** illustrates the locked together configuration of the cup assembly wherein individual snaps, or snap fingers **216** have been received through and engaged against aperture **212**, thereby locking together the lid assembly **101**.

[**0046**] **FIG. 14** illustrates lid assembly **101** taken in vertical sectional view along lines **14-14** of **FIG. 12**. More particularly, lid **201** is shown rotated relative to lid ring **204** so that drink opening **208** and vent hole **215** are shown in an open configuration. Counterclockwise rotation of knob **219** (see **FIG. 11**) causes counterclock rotation of seal **203** and lid seal ring **205** relative to lid **201** which closes opening **208** and vent hole **215**.

[**0047**] **FIG. 15** illustrates in greater detail the relationship of lid **201** which is capable of being rotated relative to lid ring **204**. O-ring seal **202** forms a rotatably slidable seal between lid **201** and lid ring **204**. In contrast, o-ring **206** is sized to provide a significant interference fit when inserted into an open mouth portion of a main body **102** of a travel mug so that lid ring **204** is seated in an immovable and sealing relation relative to the open mouth portion of the tumble mug body. Accordingly, the relative position of lid **201** can be rotated in relation to tumbler mug base to present the drink opening at a desired circumferential location relative to the handle **110** provided in the travel mug **100** (see **FIG. 4**). In that **FIG. 16** illustrates in greater detail the alignment of apertures **218**, **220** and **222** which provide liquid opening **208** in an open configuration.

[**0048**] According to one construction, travel mug **100** (as well as **1100**) is constructed with body **102** and base **103**/**104** constructed from a polycarbonate material. Also according to such embodiment, grip wrap **107** and rubber feet **113**, **1113** are each constructed from a sheet of thermoplastic elastomer (TPE). According to one optional construction, rubber foot **1113** (see **FIGS. 2-3**) wraps around a bottom edge of the enlarged portion of flared base **104**.

[**0049**] Also according to one construction, lid **201**, lid ring **204** and lid seal ring **205** are each constructed from a polycarbonate material. Further to such construction, o-ring seals **202** and **206** are each constructed from silicone material. Furthermore, according to such one construction, seal **203** is constructed from thermoplastic elastomer (TPE).

[**0050**] Optionally, the components in travel mugs **100** and **1100** can be constructed from any of a number of engineering materials including elastameric materials, Santoprene®, polymers, plastics, composite materials, as well as metals, including stainless steel. As a further optional construction, the travel mug can be constructed with a double wall construction, or can have an insulative layer provided on an inner surface, an outer surface, or both surfaces.

[**0051**] In addition to the embodiments depicted in **FIGS. 1-16**, inside wall **108** of internal handle **110** can be constructed to have greater thermal conductivity than outside wall **109**. For example, **FIG. 8** depicts inside wall **108** having a thinner wall thickness than outside wall **109**. Optionally, inside wall **108** can be constructed from a material that has poorer insulating properties than the material used to construct outside wall **109**. Alternatively, inside wall **108** and outside wall **109** can be constructed so as to have the same thermal conductivity or insulating properties, or inside wall **108** can be constructed to have greater insulating properties than outside wall **109**.

[**0052**] In compliance with the statute, the invention has been described in language more or less specific as to structural and methodical features. It is to be understood, however, that the invention is not limited to the specific features shown and described, since the means herein disclosed comprise preferred forms of putting the invention

into effect. The invention is, therefore, claimed in any of its forms or modifications within the proper scope of the appended claims appropriately interpreted in accordance with the doctrine of equivalents.

The invention claimed is:

**1**. A travel mug, comprising:

a base;

a wall extending upwardly from the base having a first portion, a second portion, and a thumb-receiving portion provided between the first portion and the second portion; and

a handle comprising a female receptacle extending through the wall from the first portion to the second, opposed portion.

**2**. The travel mug of claim 1, wherein the female receptacle comprises a vertically oblong slot extending through opposed portions of the wall.

**3**. The travel mug of claim 2, wherein the vertically oblong slot comprises a finger-conforming curve in a horizontal plane.

**4**. The travel mug of claim 2, wherein the slot extends through diametrically opposed portions of the wall.

**5**. The travel mug of claim 1, wherein the wall and the base cooperate to provide a substantially annular shell defining an open top, a bottom, an inside, and an outside.

**6**. The travel mug of claim 1, wherein a resilient, frictional grip is provided on an outside of the wall corresponding with the thumb-receiving portion.

**7**. The travel mug of claim 6, wherein the grip is adhesively affixed onto the outside of the wall.

**8**. The travel mug of claim 6, wherein the grip is molded to the outside of the wall.

**9**. A hand-held fluid container, comprising:

a wall having a concave portion configured to retain fluid through coaction of gravitational forces with the fluid; and

a receptacle extending through the wall and into the concave portion and sized to receive at least a portion of a user's hand to retain the container.

**10**. The fluid container of claim 9, wherein the wall comprises a first portion and a thumb-engaging portion spaced from the first portion, wherein the receptacle is provided in the first portion.

**11**. The fluid container of claim 10, wherein the wall further comprises a second portion spaced from the first portion with the thumb-engaging portion provided between the first portion and the second portion, and the receptacle is configured to extend through the wall from the first portion to the second portion.

**12**. The fluid container of claim 9, wherein the receptacle comprises a vertically oblong slot extending into the concave portion of the wall.

**13**. The fluid container of claim 12, wherein the slot comprises a finger-conforming curve extending along a horizontal plane through the container.

**14**. The fluid container of claim 9, wherein the receptacle extends through diametrically opposed portions of the wall.

**15**. The fluid container of claim 9, wherein the wall provides a base.

**16**. The fluid container of claim 9, wherein the wall provides a substantially annular shell providing an open top, a bottom, an inside and an outside.

**17**. A beverage cup, comprising:

a rigid outer substantially annular shell defining an open top, a bottom, an inside and an outside, the shell sized to fit a plurality of alternatively sized vehicle cup holders; and

a handle comprising a female aperture extending into the shell.

**18**. The beverage cup of claim 17, wherein the handle does not extend outwardly of the annular shell.

**19**. The beverage cup of claim 17, wherein the female aperture extends through the shell from a first portion of the outside to a second portion of the outside spaced from the first portion.

**20**. The beverage cup of claim 19, wherein the female aperture comprises an oblong slot configured to receive a plurality of fingers on a hand of a user, the slot having a finger-conforming curve within the shell.

* * * * *