



(43) International Publication Date
20 December 2012 (20.12.2012)

- (51) International Patent Classification:
B29C 43/22 (2006.01) *B31C 7/00* (2006.01)
B29C 65/02 (2006.01) *B65D 3/22* (2006.01)
- (21) International Application Number:
PCT/US2012/042737
- (22) International Filing Date:
15 June 2012 (15.06.2012)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/498,435 17 June 2011 (17.06.2011) US
61/618,632 30 March 2012 (30.03.2012) US
- (71) Applicant (for all designated States except US): **BERRY PLASTICS CORPORATION** [US/US]; 101 Oakley Street, Evansville, IN 47710 (US).

- (72) Inventor; and
(71) Applicant : **BOWLDS, Randy, A.** [US/US]; 13225 Browning Road, Evansville, IN 47725 (US).
- (72) Inventors; and
(75) Inventors/Applicants (for US only): **LESER, Chris, Kyle** [US/US]; 11426 Darmstadt Road, Evansville, IN 47725 (US). **DRISKILL, Philip, Andrew** [US/US]; 5322 East Timberwood Drive, Newburgh, IN 47630 (US). **WALLACE, Charles, Tyler** [US/US]; 6601 West Schmitt Lane, Evansville, IN 47720 (US). **EULER, John, Bryan** [US/US]; 10477 Heim Road, Evansville, IN 47610 (US). **PALADINO, Jason, Joseph** [US/US]; 6433 Waterstone Court, Newburgh, IN 47630 (US). **MARAVICH, Milan, Christopher** [US/US]; 7388 Parkridge Drive, Newburgh, IN 47630 (US). **DAVIS, Daniel, O.** [US/US]; 9061 West 1000 South, Cynthiana, IN 47612 (US). **MANN, Jeffrey, Allen** [US/US]; 13220 Browning Street, Evansville, IN 47725 (US).

[Continued on next page]

(54) Title: INSULATED CONTAINER WITH MOLDED BRIM

(57) Abstract: A container is formed to include an interior region and a mouth opening into the interior region. The container includes a floor and a side wall coupled to the floor to define the interior region between the floor and the side wall.

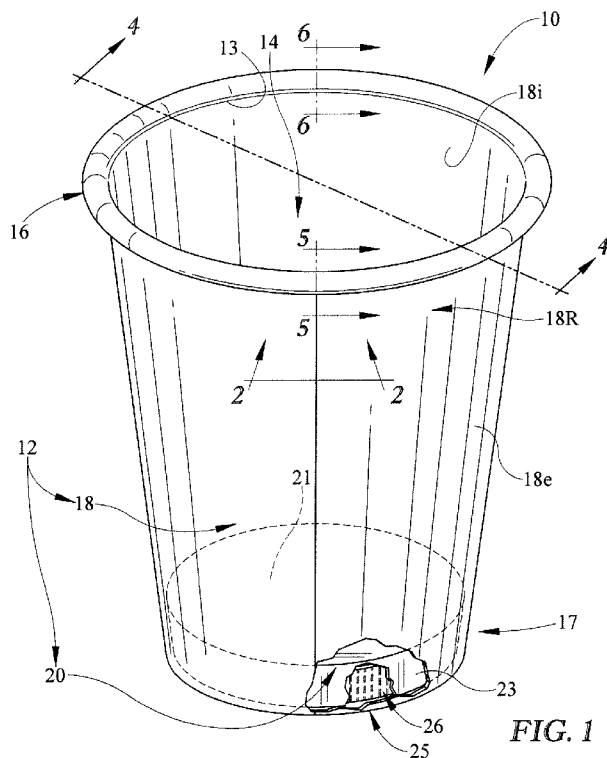


FIG. 1



(74) **Agents:** REZEK, Richard, A. et al.; Barnes & Thornburg LLP, 11 South Meridian Street, Indianapolis, IN 46204 (US).

(81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

- without international search report and to be republished upon receipt of that report (Rule 48.2(g))

INSULATED CONTAINER WITH MOLDED BRIM

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority under 35 U.S.C. § 119(e) to U.S. Provisional Application Serial No. 61/498,435, filed June 17, 2011 and U.S. Provisional Application Serial No. 61/618,632, filed March 30, 2012, both of which are expressly incorporated by reference herein.

BACKGROUND

[0002] The present disclosure relates to vessels, and in particular to insulated containers, such as cups, for containing hot or cold beverages or food. More particularly, the present disclosure relates to an insulated cup formed from polymeric materials.

SUMMARY

[0003] An insulated container, such as a cup, in accordance with the present disclosure includes a bottom and a side wall extending upwardly from the bottom. The side wall cooperates with the bottom to form a base having an interior region.

[0004] In illustrative embodiments, a brim is coupled to a rim of the side wall of the base after the base has been formed without rolling any portion of the rim of the side wall. The rim of the side wall is made of a first polymeric material and the brim is made of a different second polymeric material. In illustrative embodiments, the base is made of an insulative cellular non-aromatic polymeric material and the separate brim is made of a non-cellular polymeric material.

[0005] In illustrative embodiments, the brim is formed by compression molding. The compression-molded brim is then coupled to the rim of the side wall of the base to frame an opening into the interior region formed in the base.

[0006] Additional features of the present disclosure will become apparent to those skilled in the art upon consideration of illustrative embodiments exemplifying the best mode of carrying out the disclosure as presently perceived.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The detailed description particularly refers to the accompanying figures in which:

[0008] Fig. 1 is a perspective view of first embodiment of an insulative cup in accordance with the present disclosure showing that the insulative cup includes a base made from an insulative cellular non-aromatic polymeric material and formed to include an interior region and a molded brim made from a different non-aromatic polymeric material and coupled to a rim included in a top portion of the base as suggested, for example, in Figs. 3 and 10;

[0009] Fig. 2 is an enlarged partial perspective view of a portion of the molded brim of Fig. 1 with portions broken away to reveal that the molded brim has a solid core provided with a tube-shaped outer surface;

[0010] Fig. 3 is an exploded assembly view of the insulative cup of Fig. 1 showing that the molded brim is a ring-shaped endless band that is configured to be mated with a ring-shaped top surface of the rim of the side wall of the base and showing that the insulative cup includes, from top to bottom, a floor included in the base, the molded brim, a sleeve-shaped side wall included in the base, and a floor mount included in the base and coupled to a bottom portion of the sleeve-shaped side wall and configured to mate with and support the floor in a stationary position relative to the sleeve-shaped side wall as suggested in Fig. 4;

[0011] Fig. 4 is a sectional view taken along line 4-4 of Fig. 1 showing that the molded brim is coupled to a top surface of the rim of the base and that the base of the insulative cup includes a sleeve-shaped side wall extending downwardly from the molded brim, a floor mount coupled to a bottom portion of the sleeve-shaped side wall to lie below and in spaced-apart relation to the molded brim, and a floor fixed in a stationary position relative to the sleeve-shaped side wall by the floor mount;

[0012] Fig. 4A is an enlarged sectional view of a portion of the sleeve-shaped side wall included in the base of the insulative cup of Fig. 4 showing that the side wall is made from sheet that includes, from left to right, a skin comprising a film layer, an ink layer, and an adhesive layer, and a strip of insulative cellular non-aromatic polymer material coupled to the adhesive layer of the skin;

[0013] Fig. 5 is an enlarged partial sectional view of Fig. 4 showing a right side of the molded brim coupled to overlapping inner and outer upright tabs included in the sleeve-shaped side wall and showing that each upright tab has been plastically deformed to have a first thickness and a first density so that when the upright tabs overlap one another a relatively greater second thickness is established;

[0014] Fig. 6 is an enlarged partial sectional view of Fig. 4 showing a left side of the molded brim coupled to an upright fence included in the sleeve-shaped side wall that extends

between the inner and outer upright fences and that the upright fence has the relatively greater second thickness and a relatively smaller second density;

[0015] Fig. 7 is a diagrammatic and an enlarged dead section view of the molded brim of Figs. 1 and 3-6 showing that the molded brim is coupled to a concave top surface of the rim of the side wall of the base and suggesting that the molded brim is made of one plastics material and that the rim of the side wall of the base that mates with the molded brim is made of a different plastics material;

[0016] Fig. 8 is a partial sectional view of a combination of a portion of the insulative cup of Fig. 1 and a companion lid showing that the lid includes a rim that mates with the molded brim of the insulative cup as suggested in Fig. 9;

[0017] Fig. 9 is a partial sectional view of the lid and insulative cup of Fig. 8 with the lid mated to the cup so that the rim of the lid engages the molded brim of the insulative cup to close a mouth opening into the interior region formed in the base;

[0018] Fig. 10 is a perspective and diagrammatic view of an illustrative cup-forming process suggesting that the cup-forming process includes a base-loading step in which the base is loaded into a mold cavity, a molten-gob ring loading step in which a molten-gob ring is deposited in the mold cavity on the base, and a brim molding and coupling step in which the molten-gob ring is molded into a molded brim and coupled to the base to form the insulative cup of Fig.1;

[0019] Fig. 11 is a partial dead section view of another embodiment of an insulative cup in accordance with the present disclosure showing that the insulative cup includes a sleeve-shaped side wall of a rim of a base and a molded brim coupled to a top surface of the sleeve-shaped side wall at about a six o'clock position on the molded brim;

[0020] Fig. 12 is a partial dead section view of another embodiment of an insulative cup in accordance with the present disclosure showing that the insulative cup includes a sleeve-shaped side wall and a molded brim formed to have a teardrop-shaped cross-section and coupled to the sleeve-shaped side wall by an adhesive;

[0021] Fig. 13 is a partial dead section view of another embodiment of a molded brim in accordance with the present disclosure showing that the molded brim has an oval-shaped cross-section; and

[0022] Fig. 14 is a partial dead section view of another embodiment of a molded brim in accordance with the present disclosure showing that the molded brim has a bowtie-shaped cross-section.

DETAILED DESCRIPTION

[0023] An insulative cup 10 in accordance with a first embodiment of the present disclosure includes a non-molded base 12 made of a first insulative cellular non-aromatic polymeric material and formed to include an interior region 14 and a compression-molded brim 16 made of a different non-cellular non-aromatic polymeric material as shown, for example, in Fig. 1. Brim 16 is coupled to a rim 18R included in an upper portion of base 12 after base 12 has been formed and is arranged to define a mouth 13 opening into interior region 14 formed in base 12.

[0024] In illustrative embodiments, base 12 is formed from an insulative cellular non-aromatic polymeric material in accordance with an illustrative base-forming process suggested in Fig. 10. Compression-molded brim 16 is made from a different non-cellular non-aromatic polymeric material and is coupled to base 12 after base 12 has been formed to establish insulative cup 10 in an illustrative cup-forming process 103 as suggested, for example, in Fig. 10. In illustrative embodiments, the non-aromatic polymeric materials used to make base 12 and the separate brim 16 are polypropylene-based.

[0025] Base 12 includes a bottom 15 adapted to set on a generally flat surface and a sleeve-shaped side wall 18 rising upwardly from a peripheral edge of bottom 15 to form interior region 14 as shown, for example, in Figs. 3 and 4. A circular terminal rim 18R is defined by an upper portion of sleeve-shaped side wall 18 as shown, for example, in Fig. 3. Both of bottom 15 and sleeve-shaped side wall 18 are made of an insulative cellular non-aromatic polymeric material in an illustrative embodiment.

[0026] Brim 16 is mated to terminal rim 18R of base 12 in accordance with the present disclosure as suggested, for example, in Fig. 10 to form insulative cup 10. Brim 16 is made of one non-cellular polymeric material while base 12 is made of a cellular polymeric material.

[0027] Bottom 15 of base 12 includes a floor mount 17 and a floor 20 as shown, for example, in Fig. 3. Floor mount 17 is coupled to a lower portion of sleeve-shaped side wall 18 and to floor 20 to support floor 20 in a stationary position relative to sleeve-shaped side wall 18 to form interior region 14 as suggested in Fig. 4. Floor mount 17 includes a floor-retaining flange 26 coupled to floor 20, a web-support ring 126 coupled to the lower end of sleeve-shaped side wall 18 and arranged to surround floor-retaining flange 26, and a connecting web 25 arranged to interconnect floor-retaining flange 26 and web-support ring 126 in illustrative

embodiments as suggested in Figs. 1, 3, and 4. It is within the scope of the present disclosure to form bottom 15 and couple bottom 15 to sleeve-shaped side wall 18 in any suitable manner.

[0028] Side wall 18 of base 12 includes an interior surface 18i facing inwardly toward interior region 14 and an exterior surface 18e facing outwardly away from interior region 14 as suggested in Figs. 1, 3, and 4. Side wall 18 also includes a top surface 18t arranged to interconnect interior and exterior surfaces 18i, 18e and included in rim 18R as suggested in Fig. 3. In illustrative embodiments, top surface 18t is endless and, for example, ring-shaped, while each of interior and exterior surfaces 18i, 18e has a frustoconical shape as suggested in Fig. 3.

[0029] Brim 16 is an endless band as suggested in Fig. 3. Brim 16 is circular and has a round transverse cross-section in an illustrative embodiment as shown, for example, in Figs. 3 and 4. Brim 16 has a solid core 16c and an endless tube-shaped outer surface 16o mating with rim 18R of side wall 18 of base 12 in an illustrative embodiment as suggested in Figs. 3 and 4.

[0030] Brim 16 is mated to top surface 18t of rim 18R of side wall 18 of base 12 to form insulative cup 10 and cause outer surface 16o of brim 16 to interconnect interior surface 18i of side wall 18 and exterior surface 18e of side wall 18 as suggested in Figs. 4-6. Brim 16 is not a rolled brim made of the same material used to make side wall 18 during a conventional brim-rolling process but rather an endless band having a tube-shaped outer surface 16o. Brim 16 is made of a non-cellular material while base 12 is made from a cellular material. Although brim 16 has a solid core 16c in an illustrative embodiment, it is within the scope of the present disclosure to extrude a tube having a tube-shaped outer surface and join opposite ends of the tube to one another to form an endless band having a closed hollow interior region and then mate the endless band to top surface 18t of rim 18R of side wall 18 of base 12 to form a drink cup in accordance with one embodiment of the present disclosure.

[0031] Brim 16 is molded as suggested, for example, in Fig. 10 and joined to top surface 18t of rim 18R of side wall 18 of base 12 as suggested, for example, in Figs. 3 and 10 in accordance with the present disclosure to produce insulative cup 10 made of two different materials. In illustrative embodiments, base 12 is made of an insulative cellular non-aromatic polymeric material that is polypropylened based while brim 16 is made of a non-cellular non-aromatic polymeric material that is polypropylene based. As a result of both brim 16 and base 12 both being made of polypropylene based materials, recyclability is maximized.

[0032] Brim 16 is joined to top surface 18t of rim 18R using, for example, an adhesive or heat or other suitable process. It is within the scope of the present disclosure to place base 12 in a mold cavity of a mold and inject a plastics material that is different from the materials used

- 6 -

to make base 12 into a space formed in the closed mold to communicate with top surface 18t of rim 18R of side wall 18 of base 12 to overmold brim 16 onto top surface 18t of rim 18R of base 12. Once brim 16 is joined to top surface 18t, top surface 18t has a concave cross-section to provide top surface 18t with a concave shape arranged to face outwardly away from interior region 14 as suggested in Figs. 4-8.

[0033] Brim 16 includes a convex rim-engaging surface 16r that is arranged to mate to and conform with the concave top surface 18t of rim 18R of side wall 18 of base 12 as shown, for example, in Figs. 5-7. Brim 16 also includes a convex exterior surface 16e that is arranged to extend from an inner edge of convex rim-engaging surface 16r to an outer edge of convex rim-engaging surface 16r as suggested in Fig. 7. When brim 16 is mated to rim 18R of side wall 18 of base 12, convex exterior surface 16e of brim 16 is arranged to interconnect interior and exterior surfaces 18i, 18e of rim 18R of base 12 as suggested in Fig. 7. Convex rim-engaging surface 16r and convex exterior surface 16e of brim 16 cooperate to provide brim 16 with a circular cross-sectional shape in an illustrative embodiment as shown in Figs. 5-7.

[0034] Base 12 is formed from a strip of insulative cellular non-aromatic polymeric material as disclosed in illustrative embodiments herein. In accordance with the present disclosure, a strip of insulative cellular non-aromatic polymeric material is configured (by application of pressure -- with or without application of heat) to provide means for enabling localized plastic deformation of selected regions (in, for example, side wall 18 and floor mount 17) of base 12 to provide a plastically deformed first material segment having a first thickness and first density located in a first portion of the selected region of base 12 and a second material segment having a second thickness larger than the first thickness and a second density lower than the first density located in an adjacent second portion of the selected region of base 12 without fracturing the insulative cellular non-aromatic polymeric material so that a predetermined insulative characteristic is maintained in base 12.

[0035] Side wall 18 includes a region in which localized plastic deformation is enabled by the insulative cellular non-aromatic polymeric material as suggested in Figs. 1, 4, and 4A. Sleeve-shaped side wall 18 includes an upright inner tab 514, an upright outer tab 512, and an upright fence 513 extending between inner and outer tabs 514, 512 as suggested in Figs. 1 and 4. Upright inner tab 514 is arranged to extend upwardly from floor 20 and configured to provide the first material segment having the smaller first thickness T1 and the higher first density in a first region of base 12. Upright outer tab 512 is arranged to extend upwardly from floor 20 and to mate with upright inner tab 514 along an interface I therebetween as suggested

in Fig. 4. Upright fence 513 is arranged to interconnect upright inner and outer tabs 514, 512 and surround interior region 14. Upright fence 513 is configured to provide the second material segment having the larger second thickness T2 and the lower second density in the first region of base 12 and cooperate with upright inner and outer tabs 514, 512 to form sleeve-shaped side wall 18 as suggested in Figs. 1 and 4.

[0036] As suggested in Fig. 7, upright inner tab 514 is configured to form a radially inner portion 18ti of top portion 18t of rim 18R of base 12 and upright outer tab 512 is configured to form a radially outer portion 18to of top portion 18t. Upright fence 513 is configured to form another portion 18ta of top portion 18t.

[0037] As shown in Figs. 4 and 8, upright inner and outer tabs 514, 512 each have the smaller first thickness T1 and the higher first density and are arranged to overlap one another and cooperate together establish a third thickness T3. As an illustrative example, third thickness T3 is about equal to second thickness T2 as shown in Fig. 7. As a result, sleeve-shaped side wall 18 is provided with a smooth, unending appearance.

[0038] Molded brim 16 is coupled to the top surface 18t of rim 18R included in upper portion of sleeve-shaped side wall 18 as shown, for example, in Figs. 1, 3, and 7. Molded brim 16 has a brim thickness B1 shown in Figs. 4 and 7 which is generally constant around the circumference of molded brim 16. As a result, molded brim 16 provides means for mating with a container lid 116 to block products stored in interior region 14 from moving through mouth 13 as suggested in Fig. 8 and shown in Fig. 9. Molded brim 16 also provides improved hoop strength to insulative cup 10 and a uniform interface between molded brim 16 and lid 116. Molded brim 16 also permits the use of sleeve-shaped side walls that have third thickness T3 that is greater than second thickness T2.

[0039] Sleeve-shaped side wall 18 of base 12 includes tabs 514, 512 that mate to provide side wall 18 with a frustoconical shape in the illustrative embodiment shown in Figs. 1, 3, 4, and 7. Upright inner tab 514 of side wall 18 includes an inner surface 514i bounding a portion of interior region 14 and an outer surface 514o facing toward upright outer tab 512 as shown in Fig. 7. Upright outer tab 512 includes an inner surface 512i facing toward interior region 14 and mating with outer surface 514o of upright inner tab 514 to define the interface I between upright inner and outer tabs 514, 512. Upright outer tab 512 further includes an outer face 512o facing away from upright inner tab 514.

[0040] Upright fence 513 of side wall 18 is C-shaped in a horizontal cross-section and each of upright inner and outer tabs 514, 512 has an arcuate shape in a horizontal cross-section

- 8 -

as suggested in Fig. 1. Upright fence 513 includes an upright left side edge 513L and an upright right side edge 513R that is arranged to lie in spaced-apart confronting relation to upright left side edge 513L in Fig. 2. Upright outer tab 512 is configured to have the higher first density and smaller first thickness T1 and mate with upright inner tab 514 also characterized by the higher first density to establish a bridge 512, 514 arranged to interconnect upright left and right side edges 513L, 513R of upright fence 513. Bridge 512, 514 is formed of plastically deformed material having the higher first density and smaller first thickness T1. As a result, bridge 512, 514 has third thickness T3 which is about equal to second thickness T2.

[0041] Upright fence 513 of side wall 18 has an inner surface 513i bounding a portion of interior region 14 and an outer surface 513o facing away from interior region 14 and surrounding inner surface 513i of upright fence 513 as shown, or example, in Fig. 4. Outer surface 513o cooperates with inner surface 513i of upright fence 513 to define a first thickness T1 therebetween. Upright inner tab 514 includes an inner surface 514i bounding a portion of interior region 14 and an outer surface 514o facing toward upright outer tab 512. Upright outer tab 512 includes an inner surface 512i facing toward interior region 14 and mating with outer surface 514o of upright inner tab 514 to define the interface **I** between upright inner and outer tabs 514, 512. Upright outer tab 512 further includes an outer face 512o facing away from upright inner tab 514. Inner and outer surfaces of upright inner tab 514 cooperate to define first thickness T1 therebetween that is less than the second thickness T2. Inner and outer surfaces of upright outer tab 512 cooperate to define first thickness T1 that is less than the second thickness T2.

[0042] Floor mount 17 of base 12 is coupled to a lower end of sleeve-shaped side wall 18 and to floor 20 to support floor 20 in a stationary position relative to sleeve-shaped side wall 18 to form interior region 14 as suggested in Figs. 1, 3, and 4. Floor mount 17 includes a floor-retaining flange 26, a web-support ring 126, and a connecting web 25 as shown in Fig. 4. Floor-retaining flange 26 is coupled to floor 20 to support floor 20 in spaced-apart relation to ground underlying insulative cup 10. Web-support ring 126 is coupled to the lower end of sleeve-shaped side wall 18 and arranged to surround floor-retaining flange 26. Connecting web 25 is arranged to interconnect floor-retaining flange 26 and web-support ring 126 as suggested in Fig. 4.

[0043] Connecting web 25 is configured to provide the first material segment having the higher first density. Connecting web-support ring 126 is configured to provide the second material segment having the lower second density. Each of connecting web 25 and web-

support ring 126 has an annular shape. Floor-retaining flange 26 has an annular shape. Each of floor-retaining flange 26, connecting web 25, and web-support ring 126 includes an inner layer having an interior surface mating with floor 20 and an overlapping outer layer mating with an exterior surface of inner layer as suggested in Fig. 4.

[0044] Floor 20 of insulative cup 10 includes a horizontal platform 21 bounding a portion of interior region 14 and a platform-support member 23 coupled to horizontal platform 21 as shown, for example, in Figs. 3 and 4. Platform-support member 23 is ring-shaped and arranged to extend downwardly away from horizontal platform 21 and interior region 14 into a space 27 provided between floor-retaining flange 26 and the web-support ring 126 surrounding floor-retaining flange 26 to mate with each of floor-retaining flange 26 and web-support ring 126 as suggested in Figs. 3 and 4. Platform-support member 23 of floor 20 has an annular shape and is arranged to surround floor-retaining flange 26 and lie in an annular space provided between horizontal platform 21 and connecting web 25.

[0045] Floor-retaining flange 26 of floor mount 17 is arranged to lie in a stationary position relative to sleeve-shaped side wall 18 and coupled to floor 20 to retain floor 20 in a stationary position relative to sleeve-shaped side wall 18 as suggested in Figs. 1, 3, and 4. Horizontal platform 21 of floor 20 has a perimeter edge mating with an inner surface of sleeve-shaped side wall 18 and an upwardly facing top side bounding a portion of interior region 14.

[0046] Floor-retaining flange 26 of floor mount 17 is ring-shaped and includes an alternating series of upright thick and thin staves arranged to lie in side-to-side relation to one another to extend upwardly toward a downwardly facing underside of horizontal platform 21. A first 261 of the upright thick staves is configured to include a right side edge 261R extending upwardly toward the underside of horizontal platform 21. A second 262 of the upright thick staves is configured to include a left side edge 262L arranged to extend upwardly toward underside of horizontal platform 21 and lie in spaced-apart confronting relation to right side edge 261R of the first 261 of the upright thick staves. A first 260 of the upright thin staves is arranged to interconnect left and right side edges 262L, 261R and cooperate with left and right side edges 262L, 261R to define therebetween a vertical channel 263 opening inwardly into a lower interior region 264 bounded by horizontal platform 21 and floor-retaining flange 26 as suggested in Fig. 4. The first 260 of the thin staves is configured to provide the first material segment having the higher first density. The first 261 of the thick staves is configured to provide the second material segment having the lower second density.

[0047] Floor-retaining flange 26 of floor mount 17 has an annular shape and is arranged to surround a vertically extending central axis CA intercepting a center point of horizontal platform 21 as suggested in Fig. 3. The first 260 of the thin staves has an inner wall facing toward a portion of the vertically extending central axis CA passing through the lower interior region. Platform-support member 23 is arranged to surround floor-retaining flange 26 and cooperate with horizontal platform 21 to form a downwardly opening floor chamber 20C containing the alternating series of upright thick and thin staves therein.

[0048] Insulative cup 10 is formed, for example, using cup-forming process 103 as shown in Fig. 10. Cup-forming process 103 includes base-loading step 1031, a molten-gob ring loading step 1032, and a brim molding and coupling step 1033 as shown in Fig. 10. Base-loading step 1031 loads a base provides base 12 as described above and loads base 12 into a mold cavity formed in a mold 108. Molten-gob ring loading step 1032 provides a molten-gob ring 104 and loads it into the mold cavity of mold 108 on top surface 18T of base 12. Brim-molding and coupling step 1033 forms molten-gob ring 104 into molded brim 16 and couples molded brim 16 to base 12. In one example, molding and coupling happen at substantially the same time. However, it is within the scope of the present disclosure for the coupling and molding to be performed in a serialized fashion. Alternatively, molded brim 16 may be welded, glued, or otherwise attached to base 12.

[0049] Base-loading step 1031 provides base 12 as described above. Base 12 is formed from a strip of insulative cellular non-aromatic polymeric material. Reference is hereby made to U.S. Application No. 13/491,007 filed June 7, 2012 and titled INSULATED CONTAINER for disclosure relating to a base made from an insulative cellular non-aromatic polymeric material, which application is hereby incorporated in its entirety herein. Reference is hereby made to U.S. Application No. 13/491,327 filed June 7, 2012 and titled POLYMERIC MATERIAL FOR AN INSULATED CONTAINER for disclosure relating to such insulative cellular non-aromatic polymeric material, which application is hereby incorporated in its entirety herein.

[0050] Another embodiment of an insulative cup 210 in accordance with the present disclosure is shown in Fig. 11. Insulative cup 210 includes base 12 and molded brim 216 as suggested in Fig. 11. Molded brim 216 is coupled to side wall 18 included in base 12 about a six o'clock position on molded brim 216. As a result, a portion 216A of molded brim 16 extends into interior region 214 formed in base 12.

[0051] Insulative cup 310 in accordance with another embodiment of the present disclosure includes base 12, molded brim 316, and an adhesive 317 as shown in Fig. 12. Adhesive 317 is arranged to lie between and interconnect molded brim 316 and base 12.

[0052] Molded brim 316 includes, for example, a brim body 316A and a brim tail 316B as shown in Fig. 12. Brim tail 316B is arranged to interconnects brim body 316A and adhesive 317 to produce a relatively smooth transition T between molded brim 316 and side wall 18 of base 12. Brim tail 316B is appended to brim body 316A and is arranged to extend away from brim body 316A toward side wall 18 and interior region 14 as shown in Fig. 12.

[0053] Another embodiment of a molded brim 416 in accordance with the present disclosure is shown in Fig. 13. Molded brim 416 has an oval-shaped cross-section 416A. In comparison, molded brim 16 has a circle-shaped cross-section 16A as shown in Figs. 5 and 6.

[0054] Still yet another embodiment of a molded brim 516 in accordance with the present disclosure is shown in Fig. 14. Molded brim 516 has a bow-tie shaped cross-section 516A as shown in Fig. 14. Molded brim 516 includes an inner lobe 5161, an outer lobe 5163, and a lobe strip 5162. Lobe strip 5162 is positioned to lie between and interconnect inner and outer lobes 5161, 5163 of molded brim 14. As shown in Fig. 14, inner lobe 5161 is coupled to upper portion of side wall 18 included in base 12. Outer lobe 5163 is spaced-apart radially from inner lobe 5161 and positioned to locate lobe strip 5162 therebetween.

WHAT IS CLAIMED IS:

1. A drink cup comprising
a base including a bottom adapted to set on a generally flat surface and a sleeve-shaped side wall arranged to extend upwardly from the bottom to form an interior region bounded by the bottom and the sleeve-shaped side wall and to terminate at a rim and
a brim mated to the rim of the base to lie in spaced-apart relation to the bottom and to frame an opening into the interior region formed in the base, wherein the sleeve-shaped side wall of the base is made of a first polymeric material and the brim is made of a different second polymeric material.
2. The drink cup of claim 1, wherein the rim includes an interior surface facing inwardly toward the interior region formed in the base, an exterior surface facing outwardly away from the interior region formed in the base, and a top surface arranged to interconnect the interior and exterior surfaces and to mate with the brim.
3. The drink cup of claim 2, wherein the top surface of the rim of the base has a concave cross-section to provide the top surface with a concave shape arranged to face outwardly away from the interior region of the base.
4. The drink cup of claim 3, wherein the brim includes a convex rim-engaging surface mating to and conforming with the top surface of the rim of the base and a convex exterior surface extending from an inner edge of the convex rim-engaging surface to an outer edge of the convex rim-engaging surface and interconnecting the interior and exterior surfaces of the rim of the base.
5. The drink cup of claim 4, wherein the convex rim-engaging surface and the convex exterior surface of the brim cooperate to provide the brim with a circular cross-sectional shape.
6. The drink cup of claim 2, wherein the sleeve-shaped side wall includes an upright inner tab arranged to extend upwardly from the bottom, an upright outer tab arranged to extend upwardly from the bottom and to mate with the upright inner tab along an interface therebetween, and an upright fence arranged to interconnect the upper inner and outer tabs, the upright inner tab is configured to form a radially inner portion of the top surface of the rim of the side wall of the base, and the upright outer tab is configured to form a radially outer portion of the top surface of the rim of the side wall of the base.

7. The drink cup of claim 6, wherein the upright fence is configured to form another portion of the top surface of the rim of the side wall of the base.

8. The drink cup of claim 1, wherein the sleeve-shaped side wall of the base comprises an insulative cellular non-aromatic polymeric material and the brim comprises a non-cellular non-aromatic polymeric material.

9. The drink cup of claim 1, wherein the brim is an endless band and comprises a solid core and an endless tube-shaped outer surface surrounding the solid core and mating with the rim of the side wall of the base.

10. The drink cup of claim 1, wherein the brim is an endless band having a circular cross-section.

11. The drink cup of claim 1, wherein the brim is an endless band having an oval-shaped cross-section.

12. The drink cup of claim 1, wherein the brim is an endless band having a bowtie-shaped cross-section.

13. An insulative cup comprising
a base formed to include an interior region and comprising an insulative cellular non-aromatic polymeric material and
a brim coupled to the base to define a mouth opening into the interior region and comprising a non-cellular non-aromatic polymeric material.

14. The vessel of claim 13, wherein the base includes a sleeve-shaped side wall coupled to the brim and the side wall comprises polypropylene-base insulative cellular polymeric material.

15. The vessel of claim 14, wherein the side wall is heated prior to securing the brim to the side wall.

16. The vessel of claim 14, wherein the brim is heated prior to securing the brim to the side wall.

17. The vessel of claim 14, wherein the brim is secured to the side wall by an adhesive.

18. The vessel of claim 14, wherein the solid brim is secured to the elongated wall by frictional welding.

19. The vessel of claim 13, wherein the brim is formed by compression molding.

20. The vessel of claim 19, wherein the brim is annular and comprised a non-cellular core and an endless tube-shaped outer surface surrounding the non-cellular core and mating with the base.

21. The vessel of claim 20, wherein the brim has a circular cross-section.

22. A process for forming an insulative container, the process comprising the steps of

providing a base made of an insulative cellular non-aromatic polymeric material, forming a brim made of non-cellular non-aromatic polymeric material, and coupling the brim to base to form an insulative cup.

23. The method of claim 22, wherein the forming step comprises the steps of extruding cylindrical material, cutting annular structures from the cylindrical material, and compressing the annular structures to form an annular ring with a circular cross-section.

24. The method of claim 22, wherein the coupling step comprises the steps of aligning the brim with a rim of the base and gluing the solid brim to the rim of the base.

25. The method of claim 22, wherein the coupling step comprises the steps of heating the brim and a rim of the base, mating the brim and the rim, and allowing the brim and the rim to cool to fuse the brim to the rim.

26. The method of claim 22, wherein the coupling step comprises the steps aligning the brim with a rim of the base and rotationally welding the brim to the rim of the base.

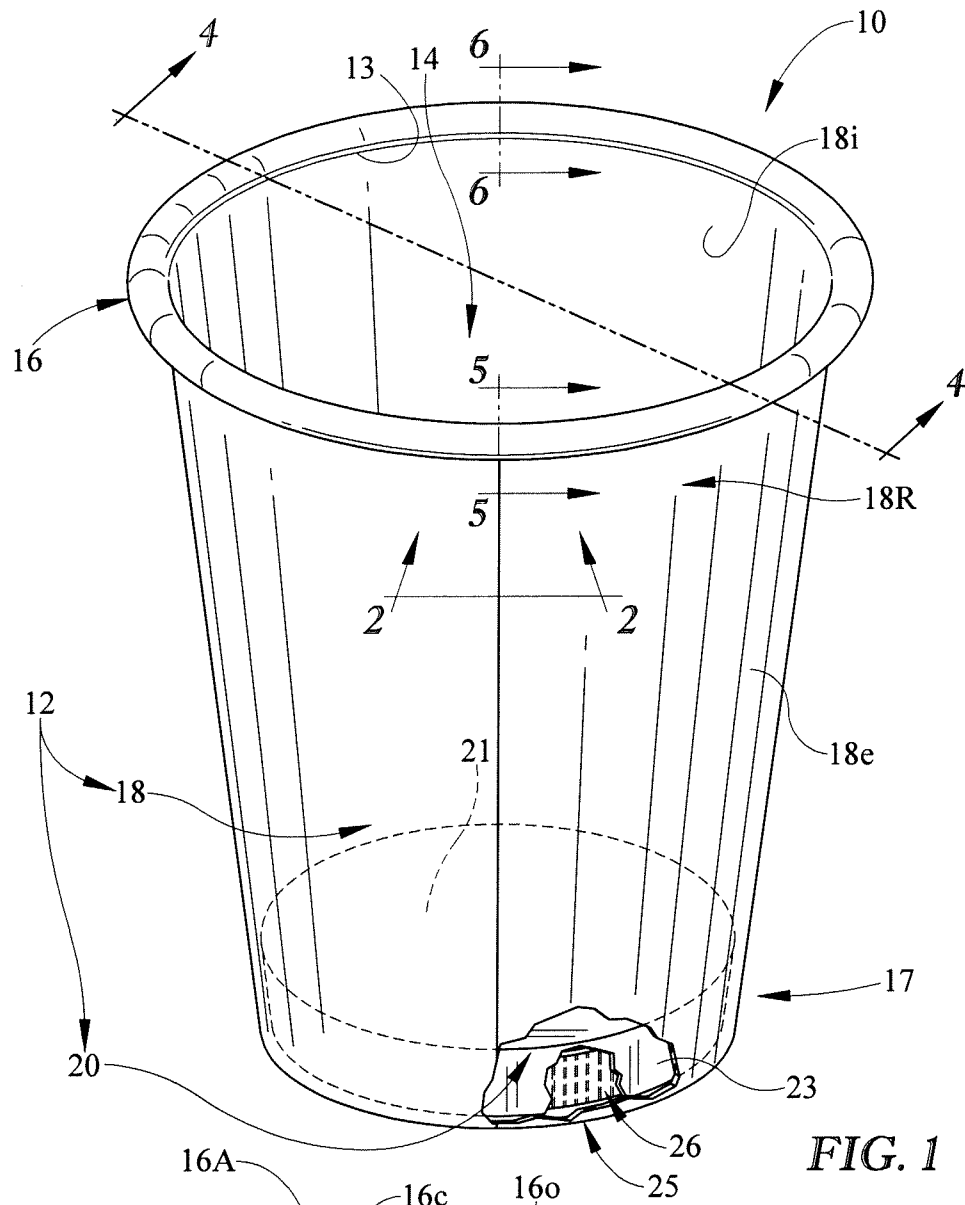


FIG. 1

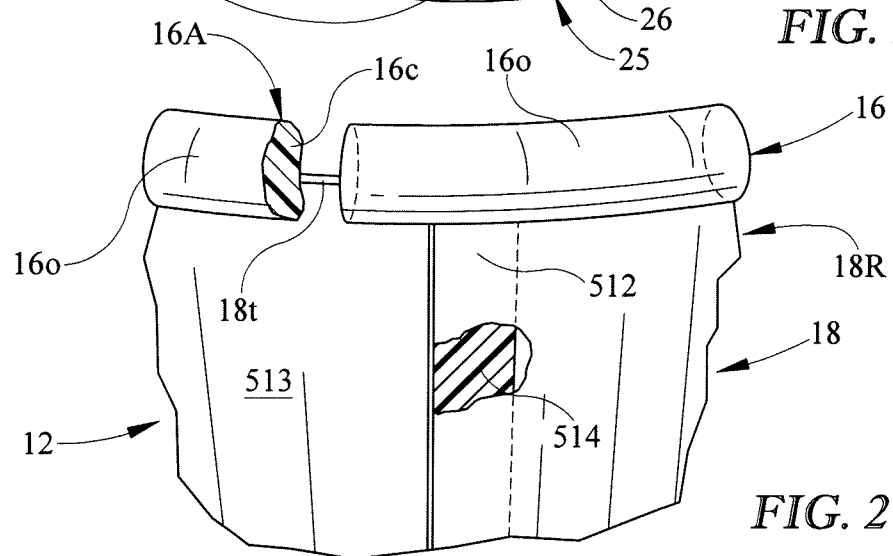


FIG. 2

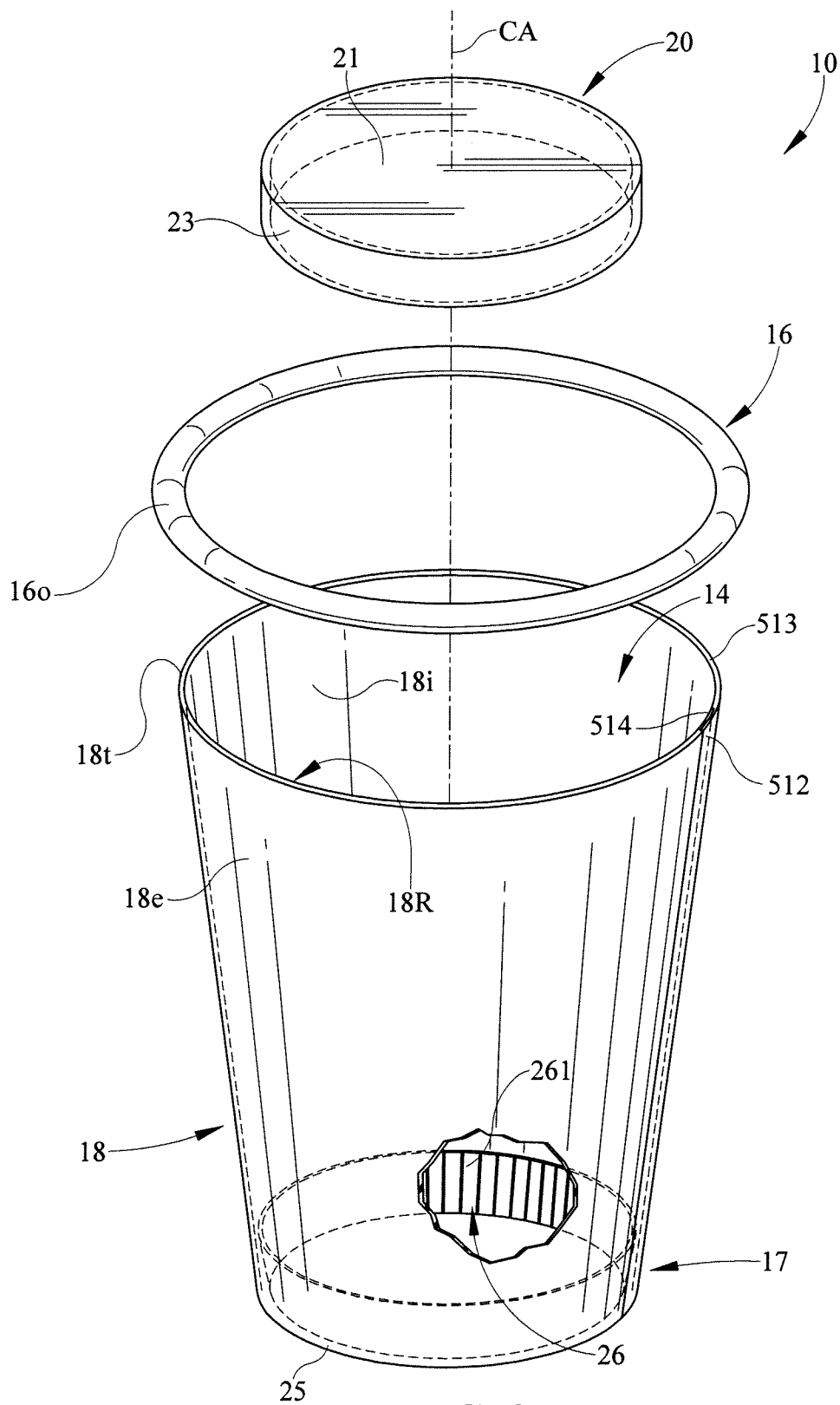
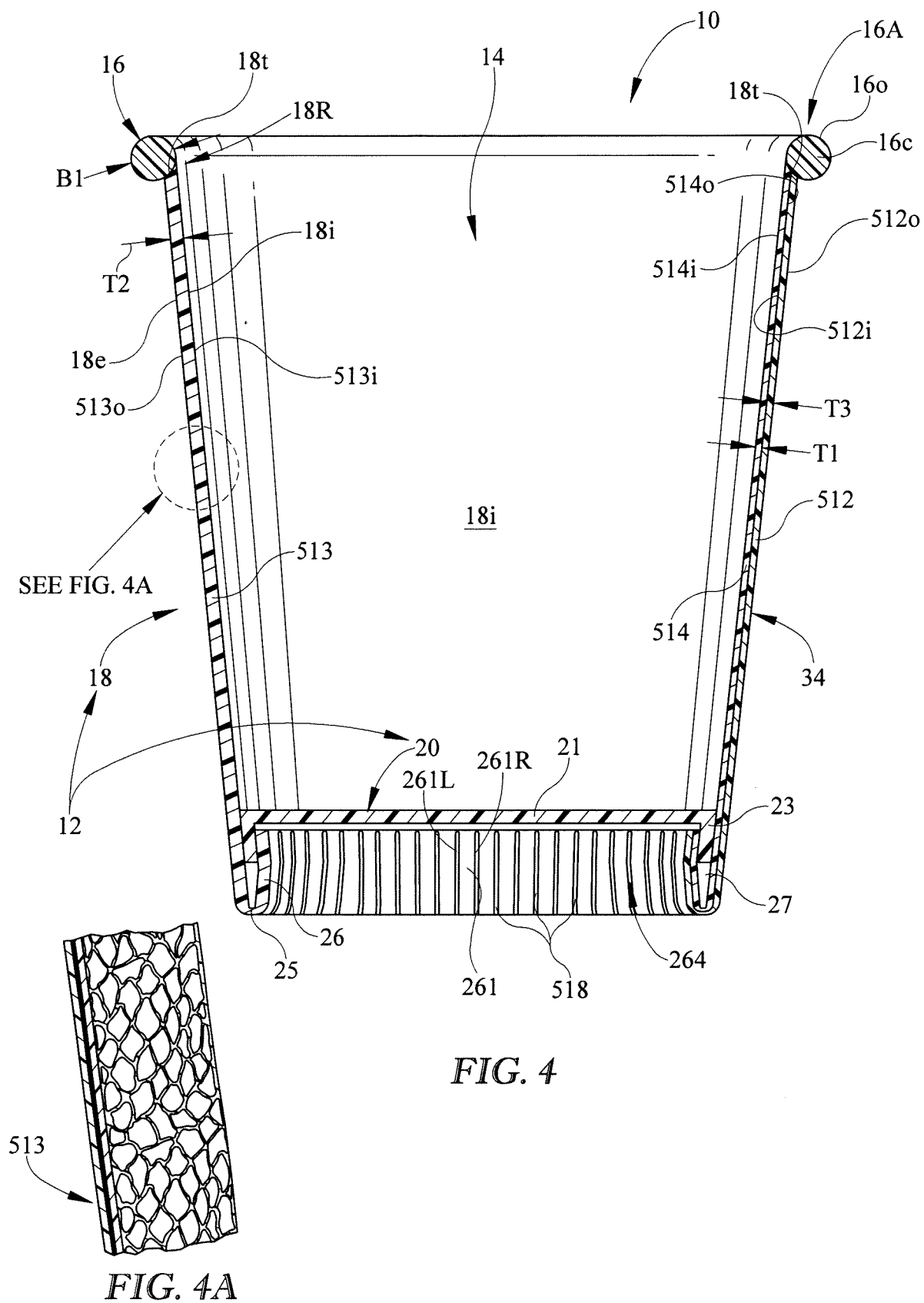


FIG. 3



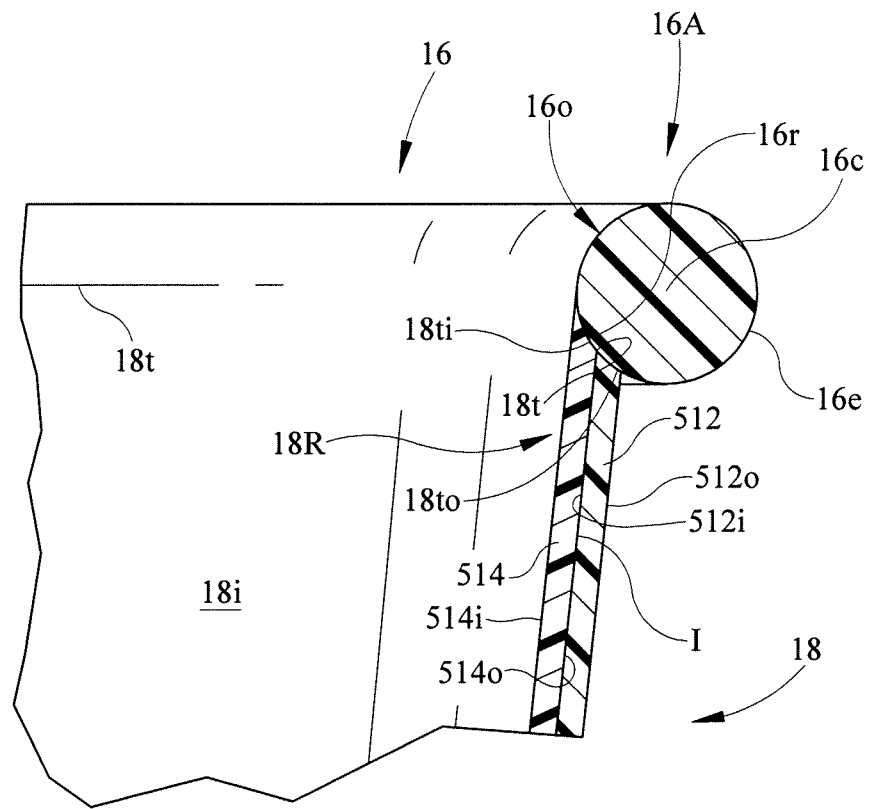


FIG. 5

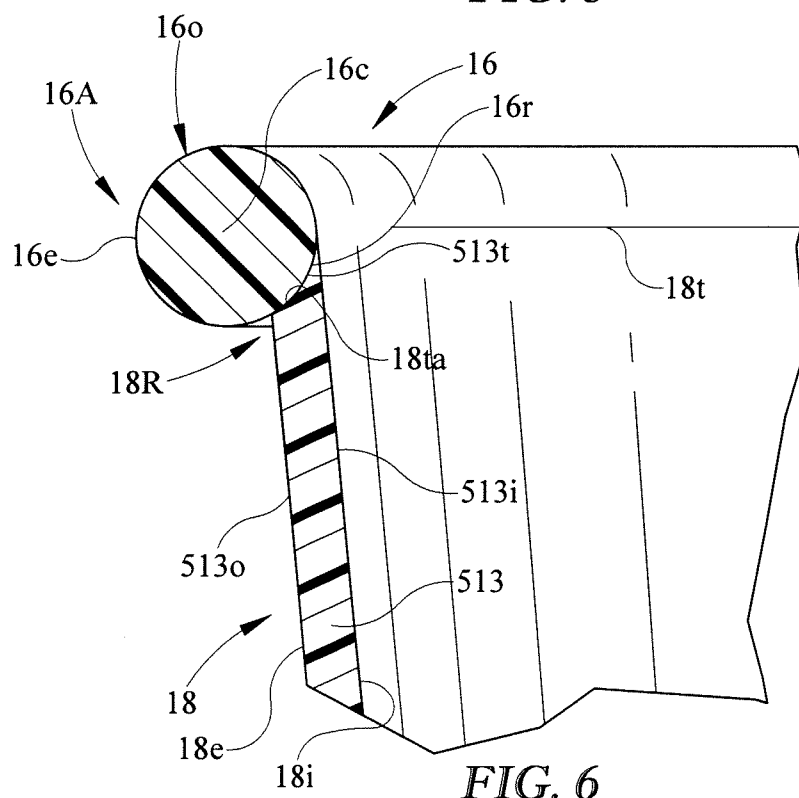


FIG. 6

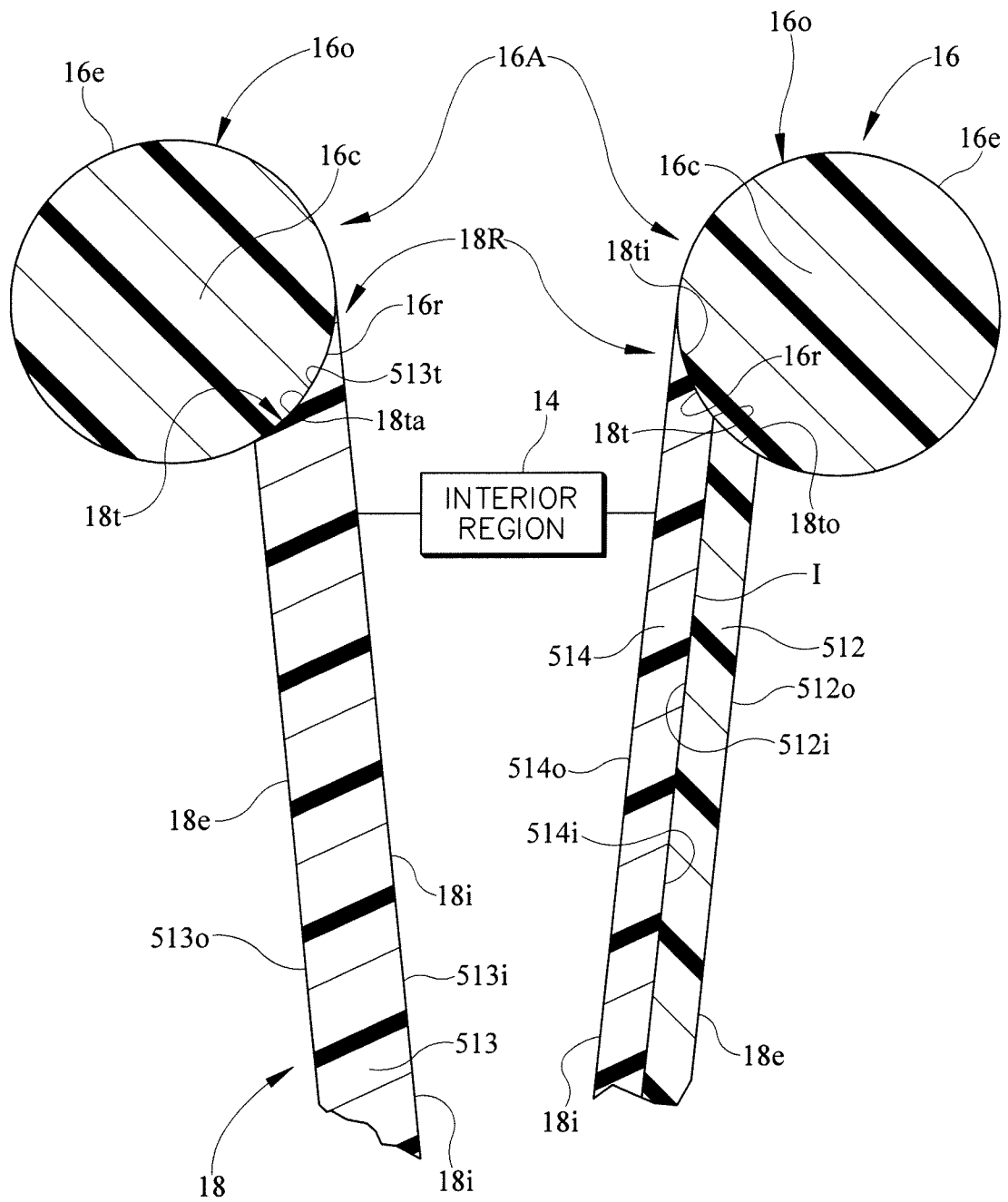
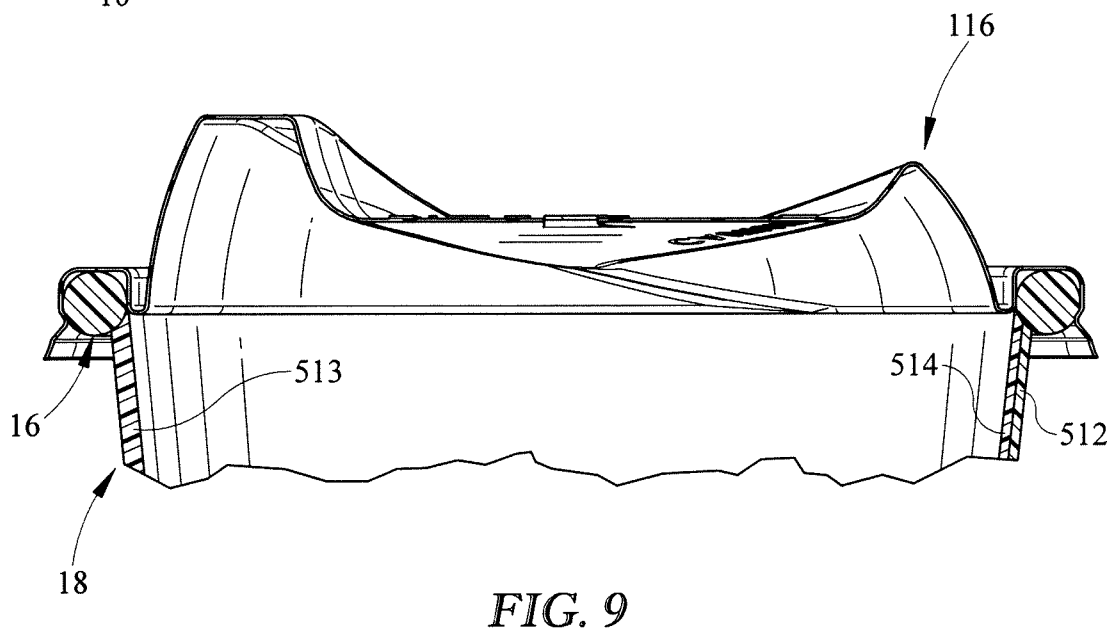
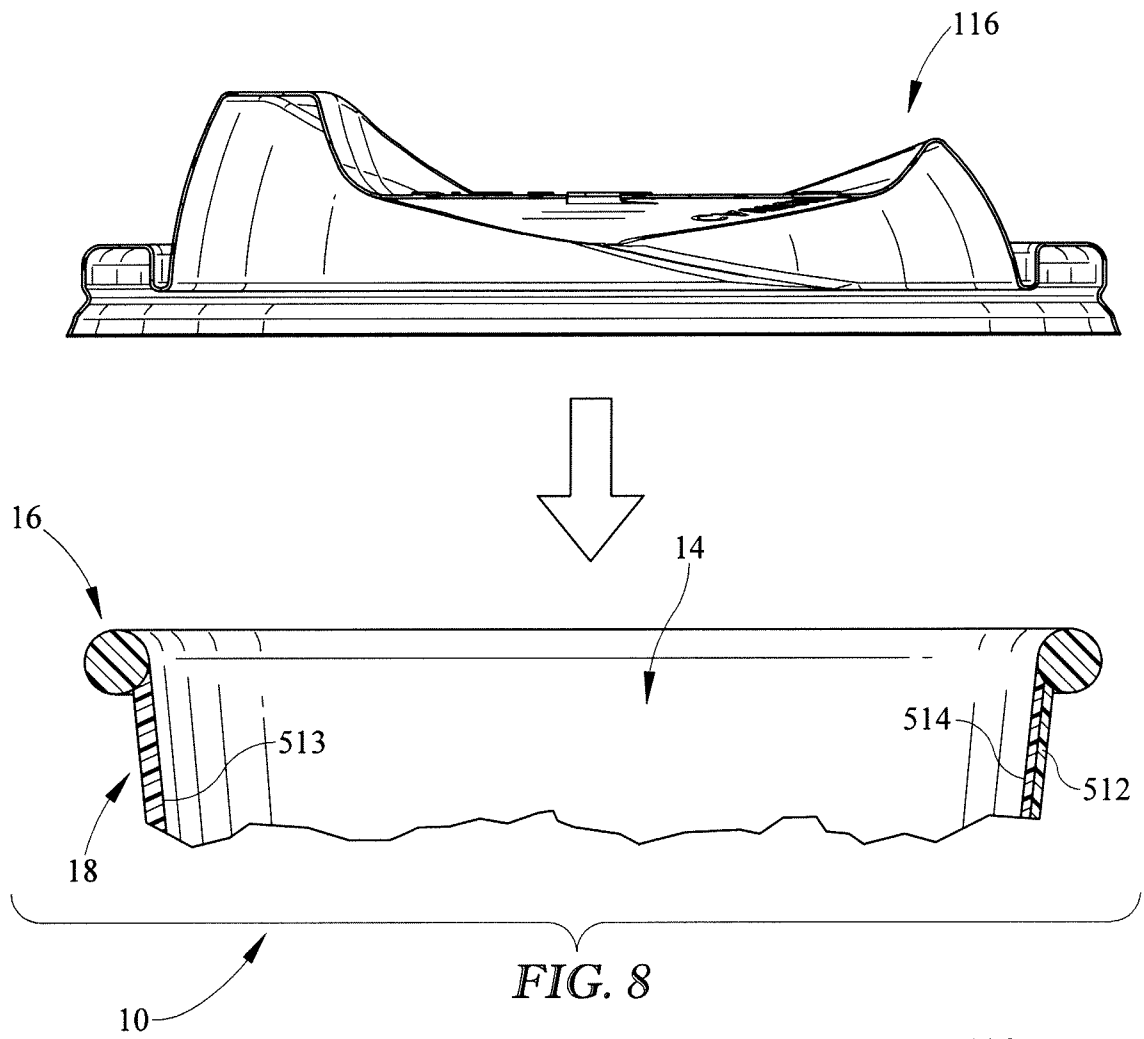
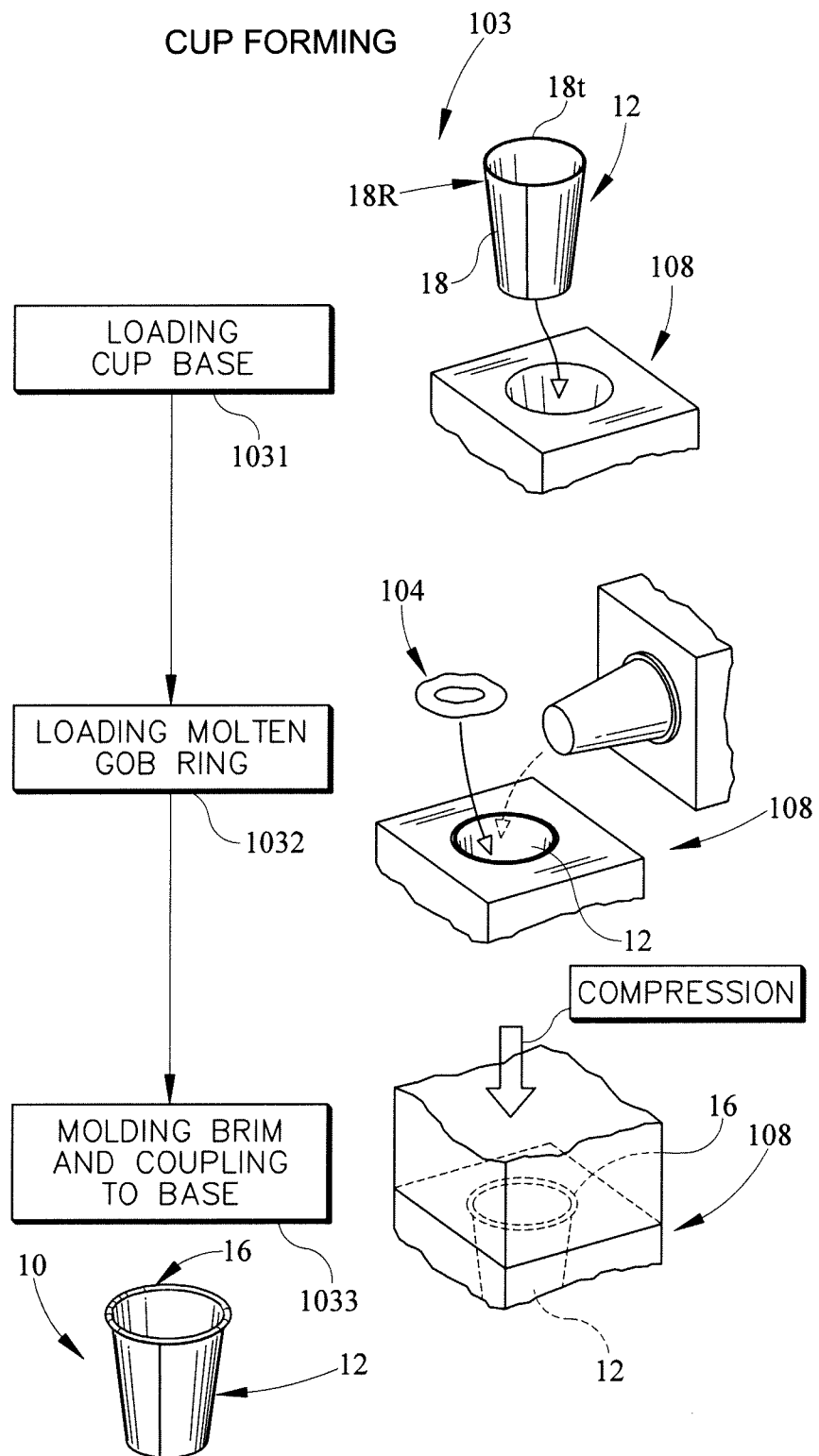


FIG. 7



**FIG. 10**

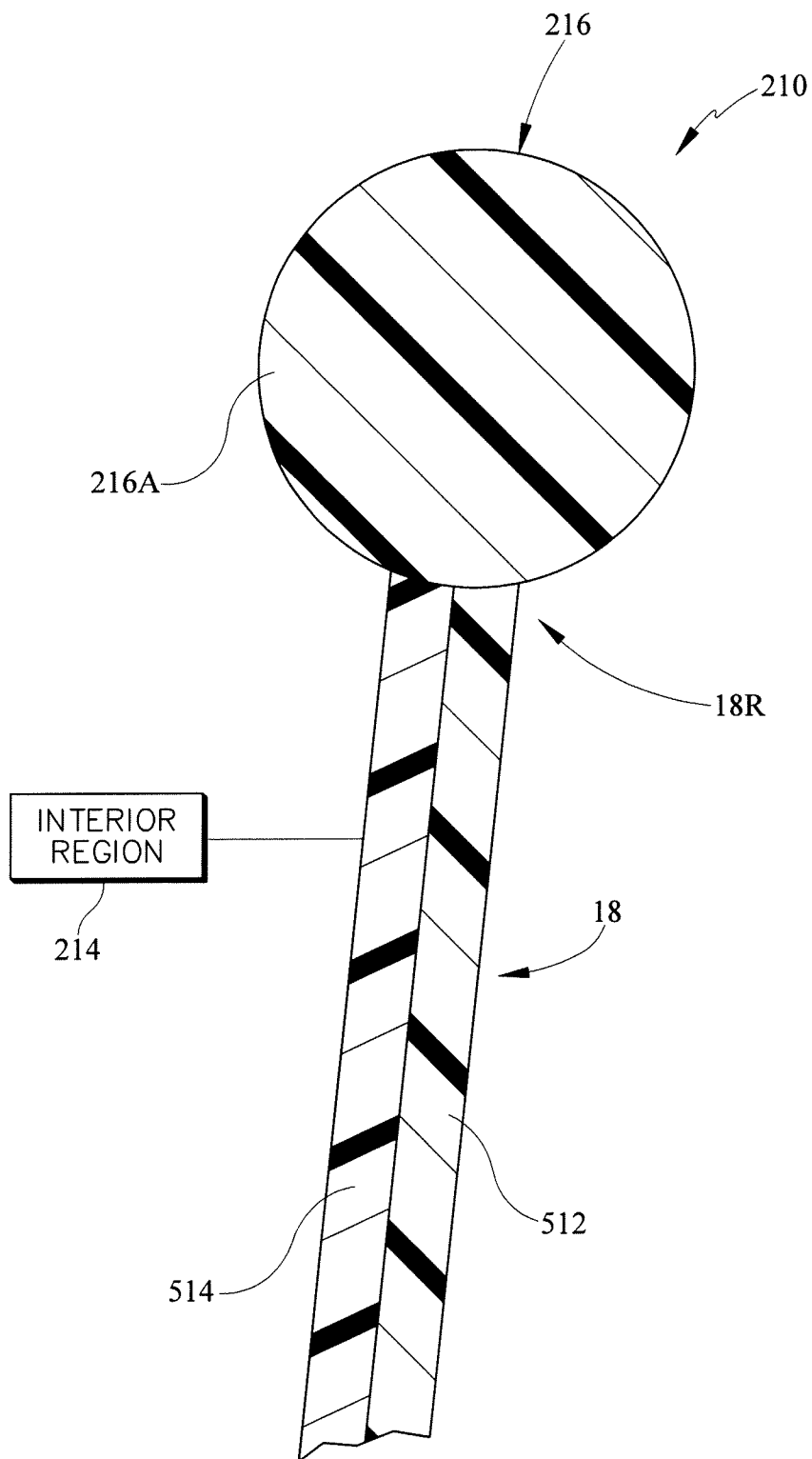


FIG. 11

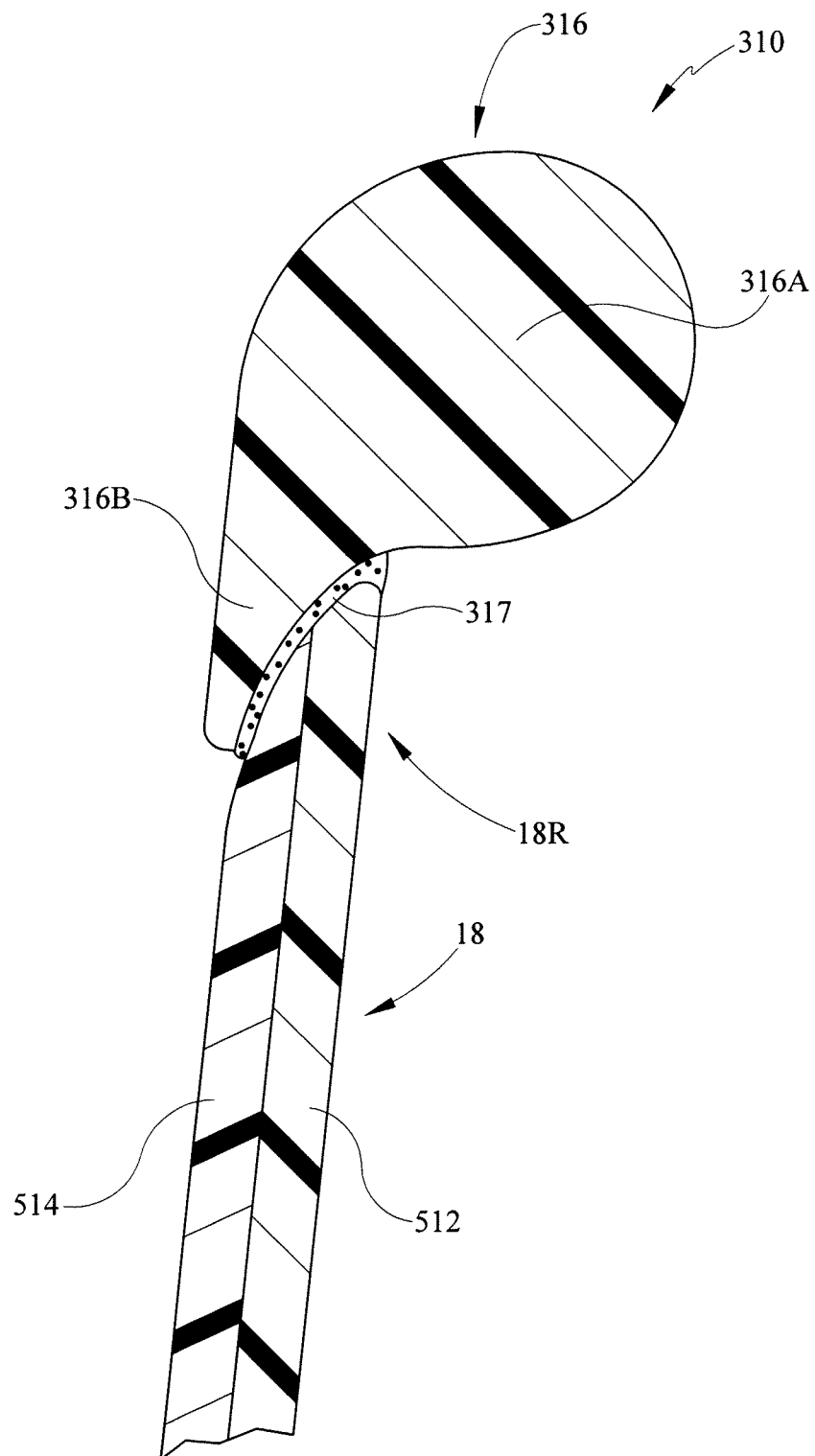


FIG. 12

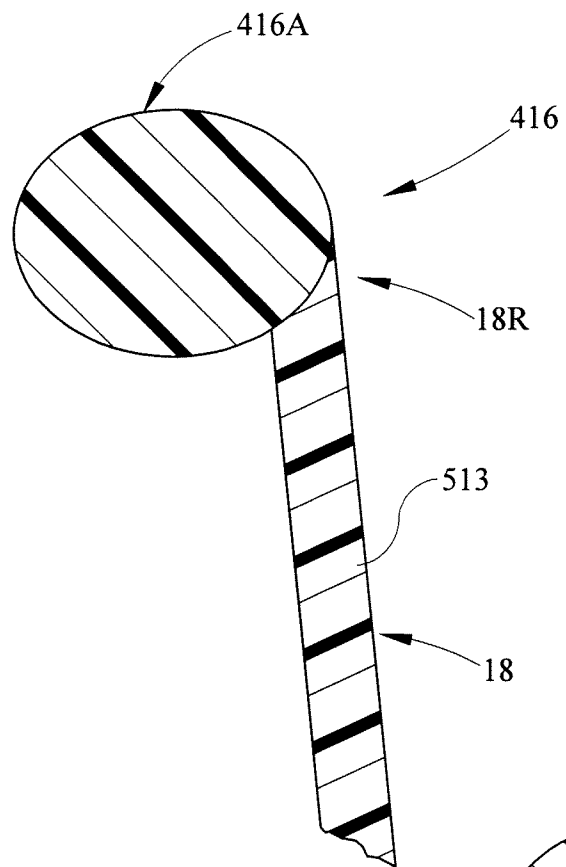


FIG. 13

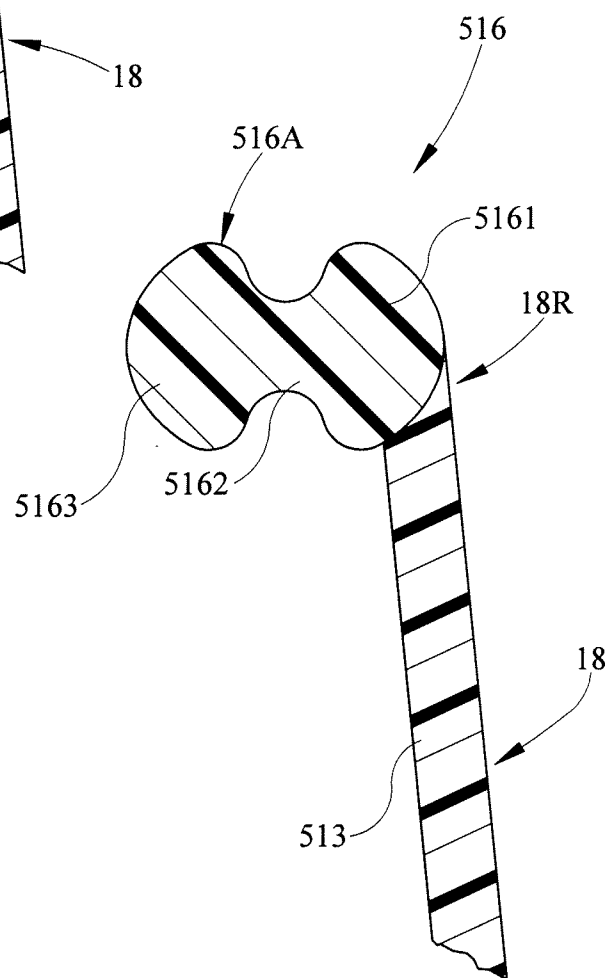


FIG. 14