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(54) **THREADED CONTAINER COMPONENTS HAVING FRUSTUM SHAPED SURFACES ENABLING NESTING**

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CPC ..... ***B65D 17/4014*** (2018.01); ***B65D 17/347*** (2018.01); ***B65D 21/0233*** (2013.01); ***B65D 43/0229*** (2013.01)

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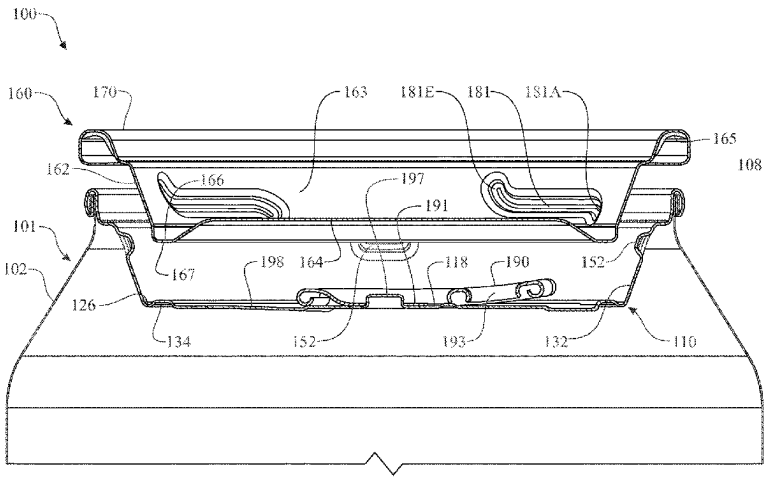
(57) **ABSTRACT**

A container lid comprising a frustum shaped sidewall, a chuck shoulder formed between an upper edge of the sidewall and a seaming panel, and at least one translative motion guide feature extending radially inward from the sidewall. A bottom (lower) edge of the sidewall can be closed by a bottom wall or rolled creating an open design. The frustum shaped sidewall and size of the translative motion guide features is designed to enable nesting of multiple container lids/caps. The lid is seamed to a container body. The lid and cap each include sealing surfaces designed to engage with one another creating a gas and liquid impervious seal, preferably capable of retaining pressure within a container. Alternatively, the translative motion guide feature can be integral with a frustum shaped container body, such as a cup.

**19 Claims, 101 Drawing Sheets**



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See application file for complete search history.

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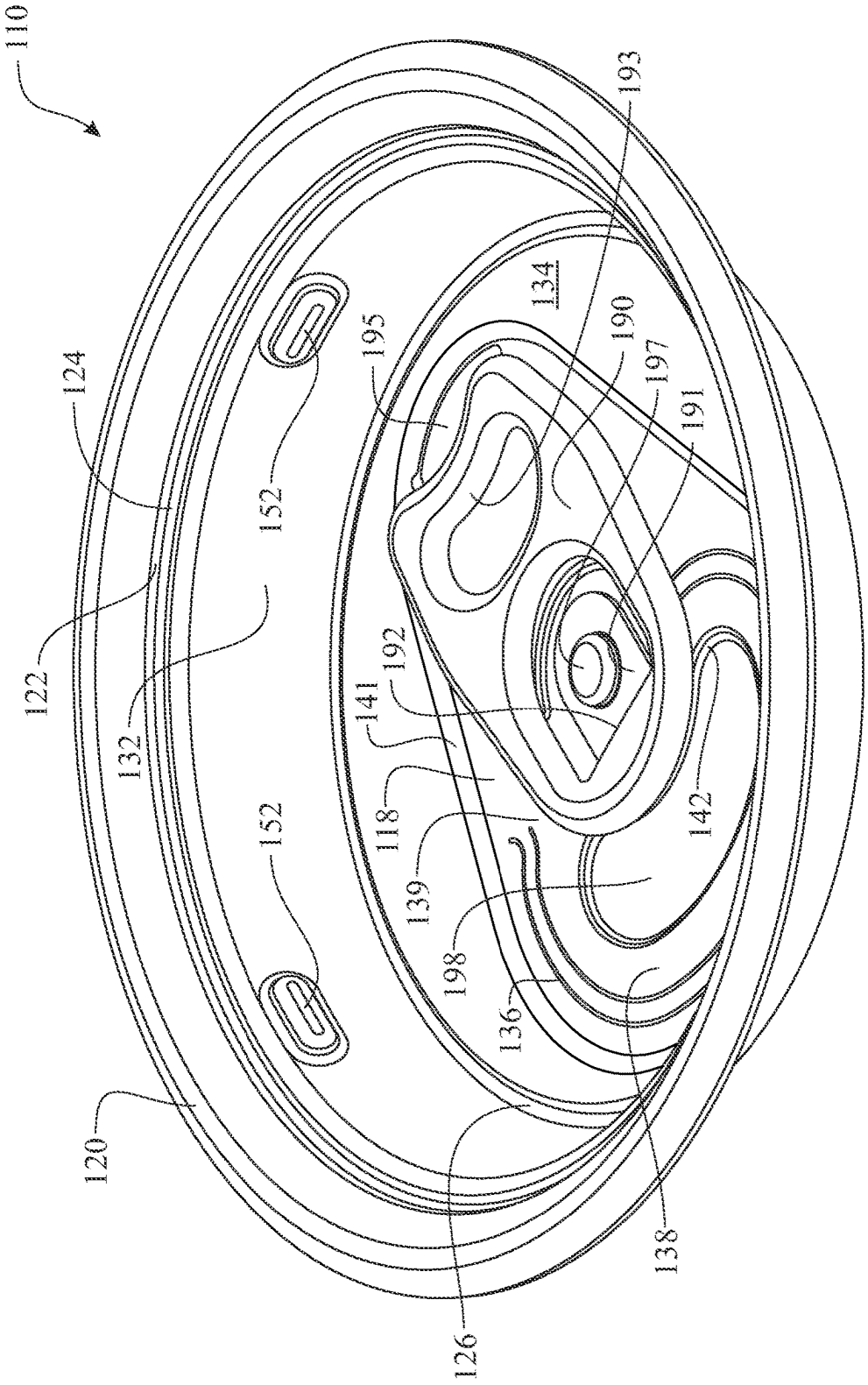
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FIG. 1

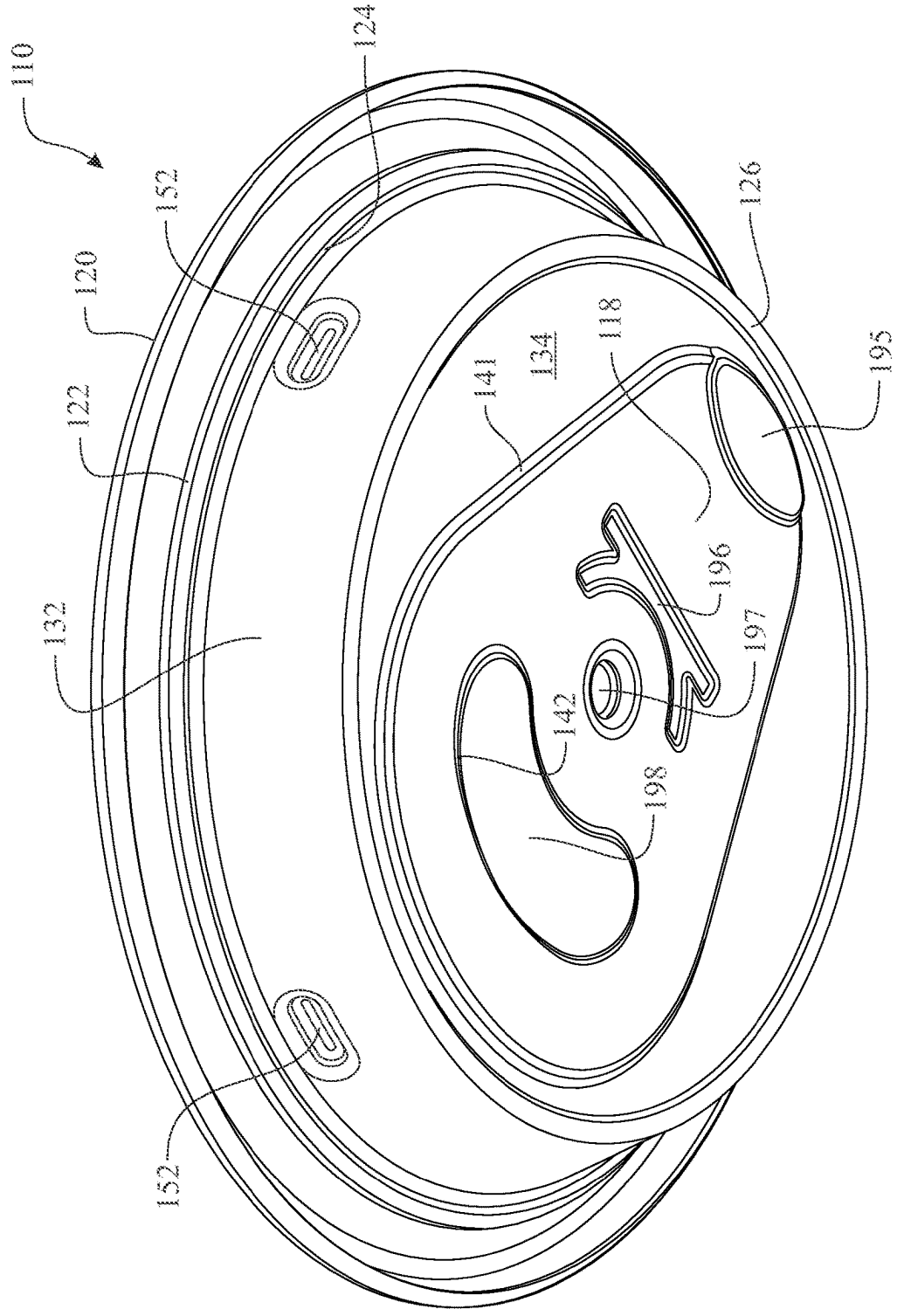


FIG. 2

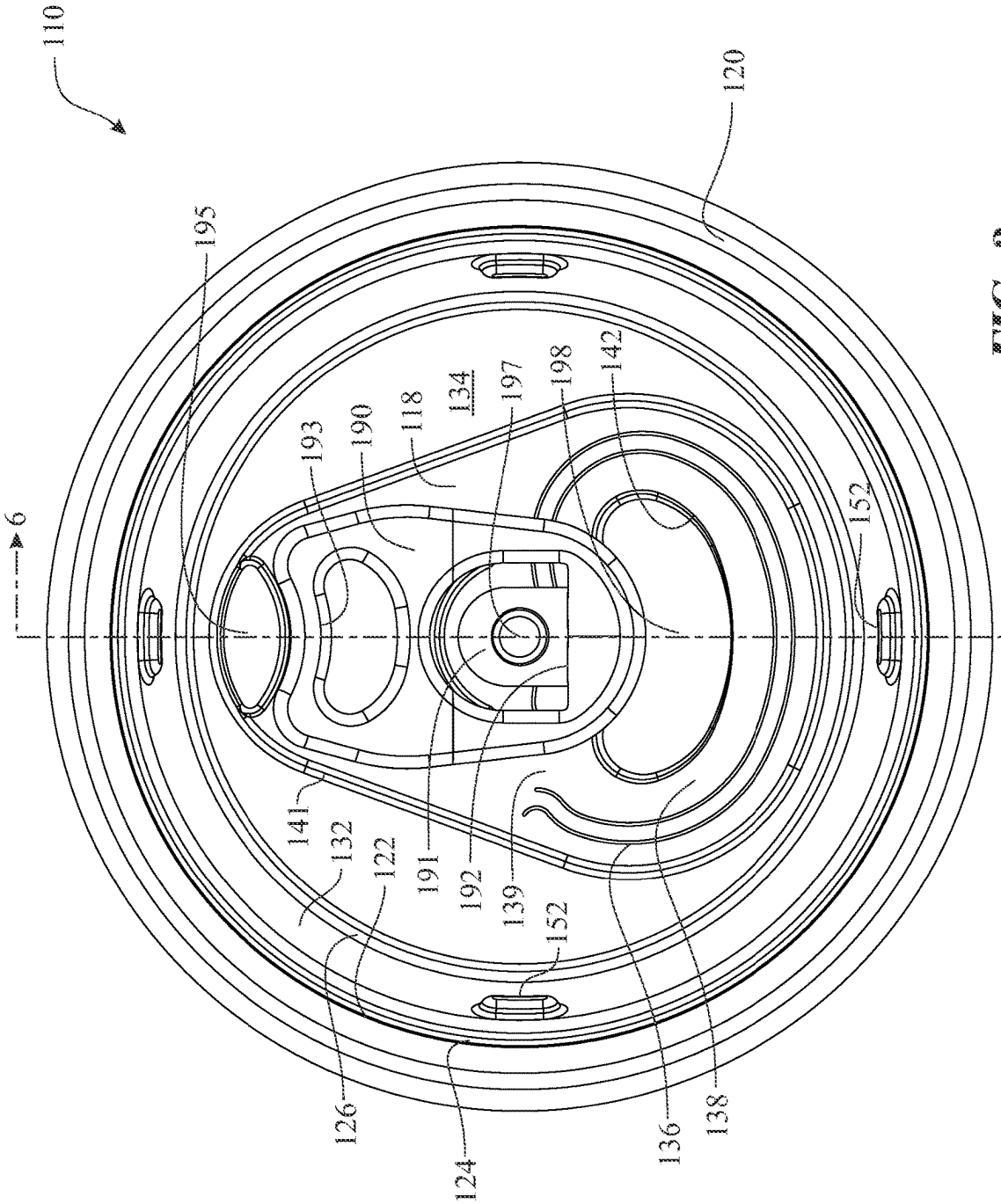
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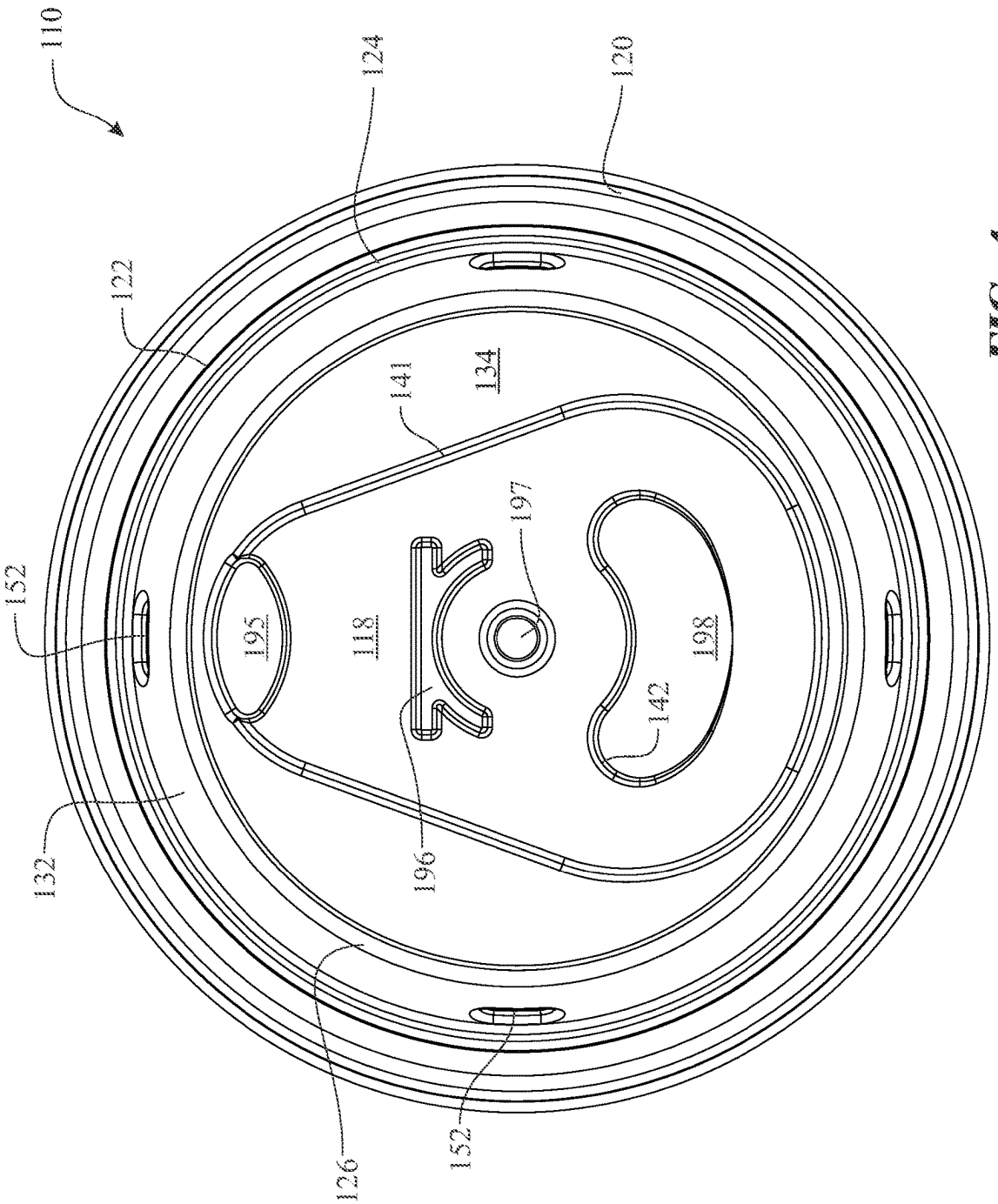
FIG. 3

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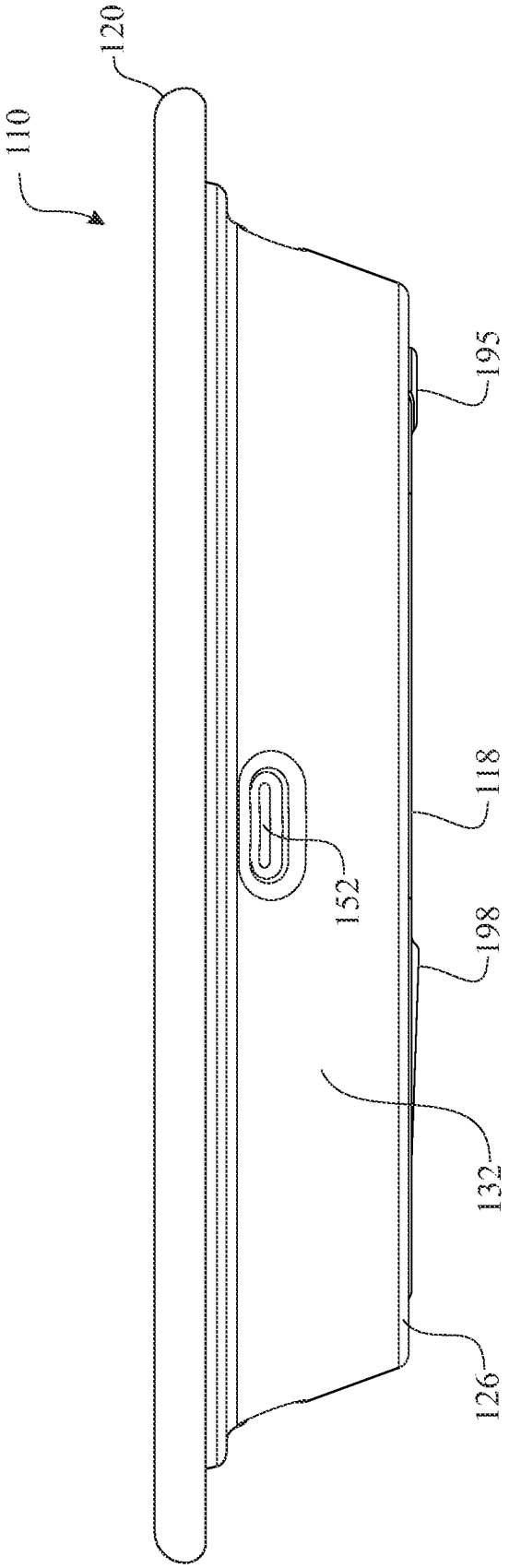


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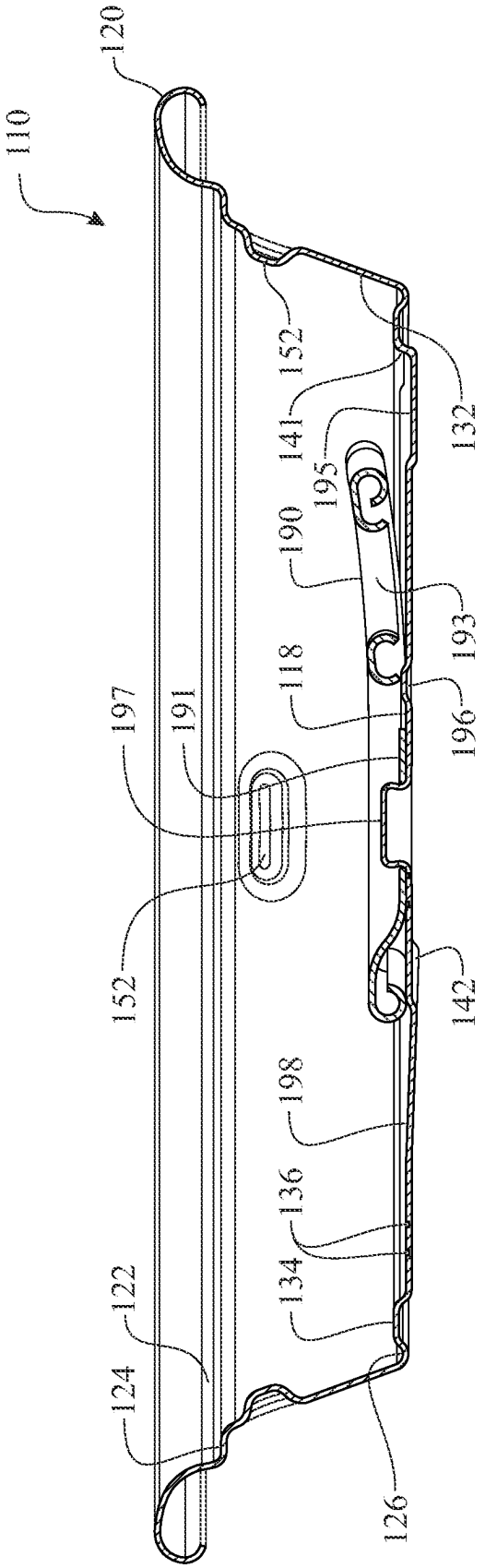
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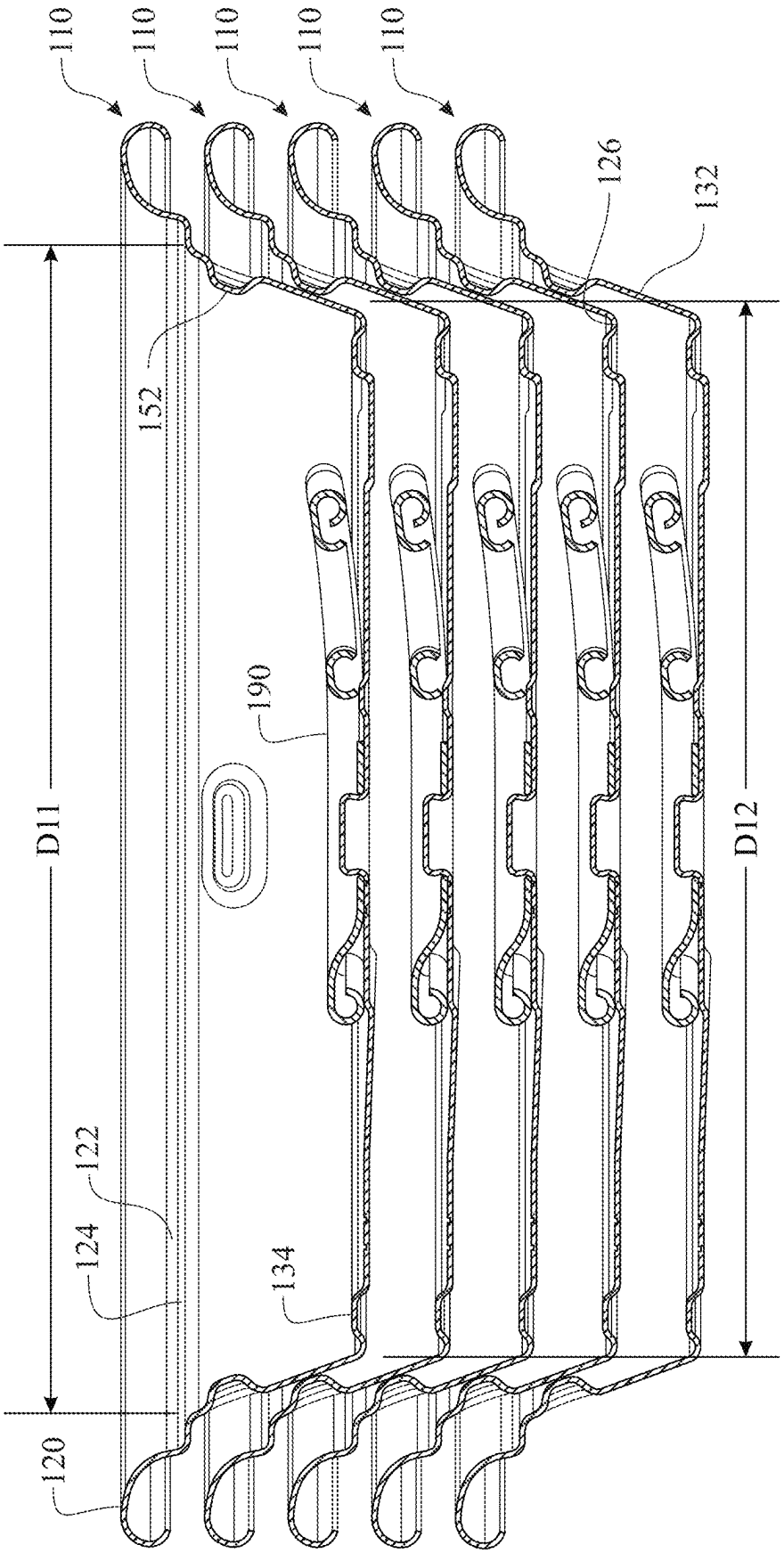
FIG. 6

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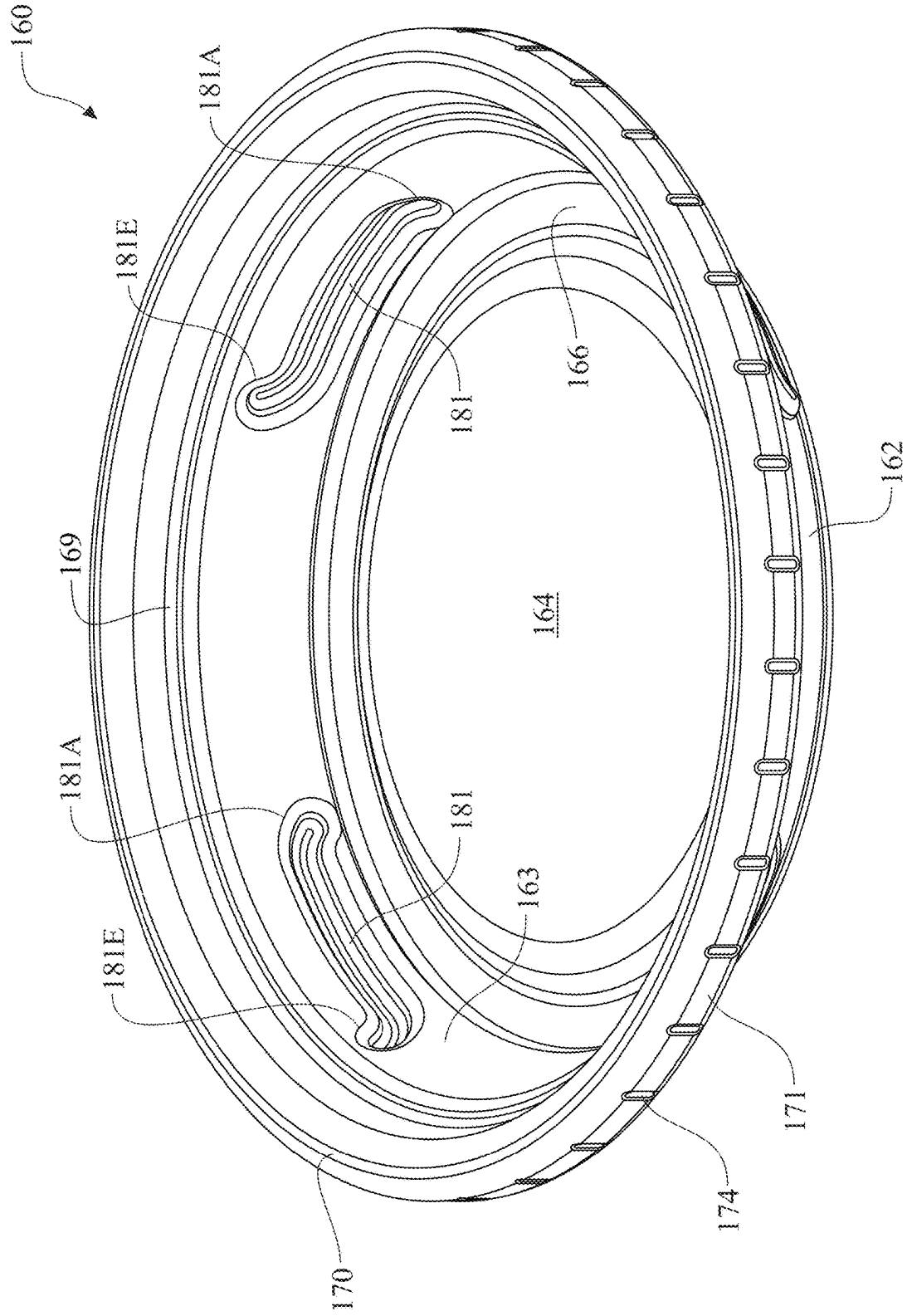


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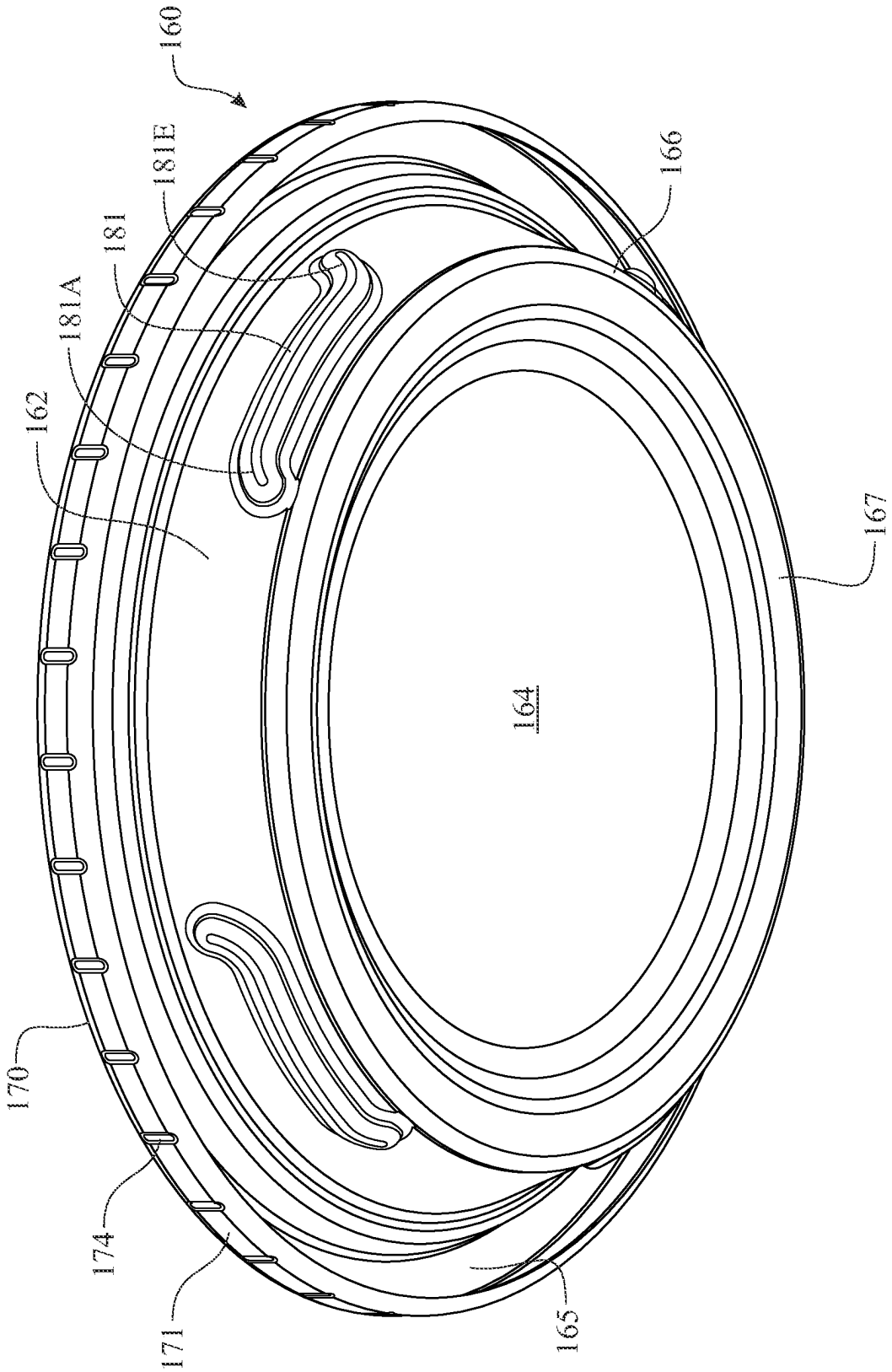


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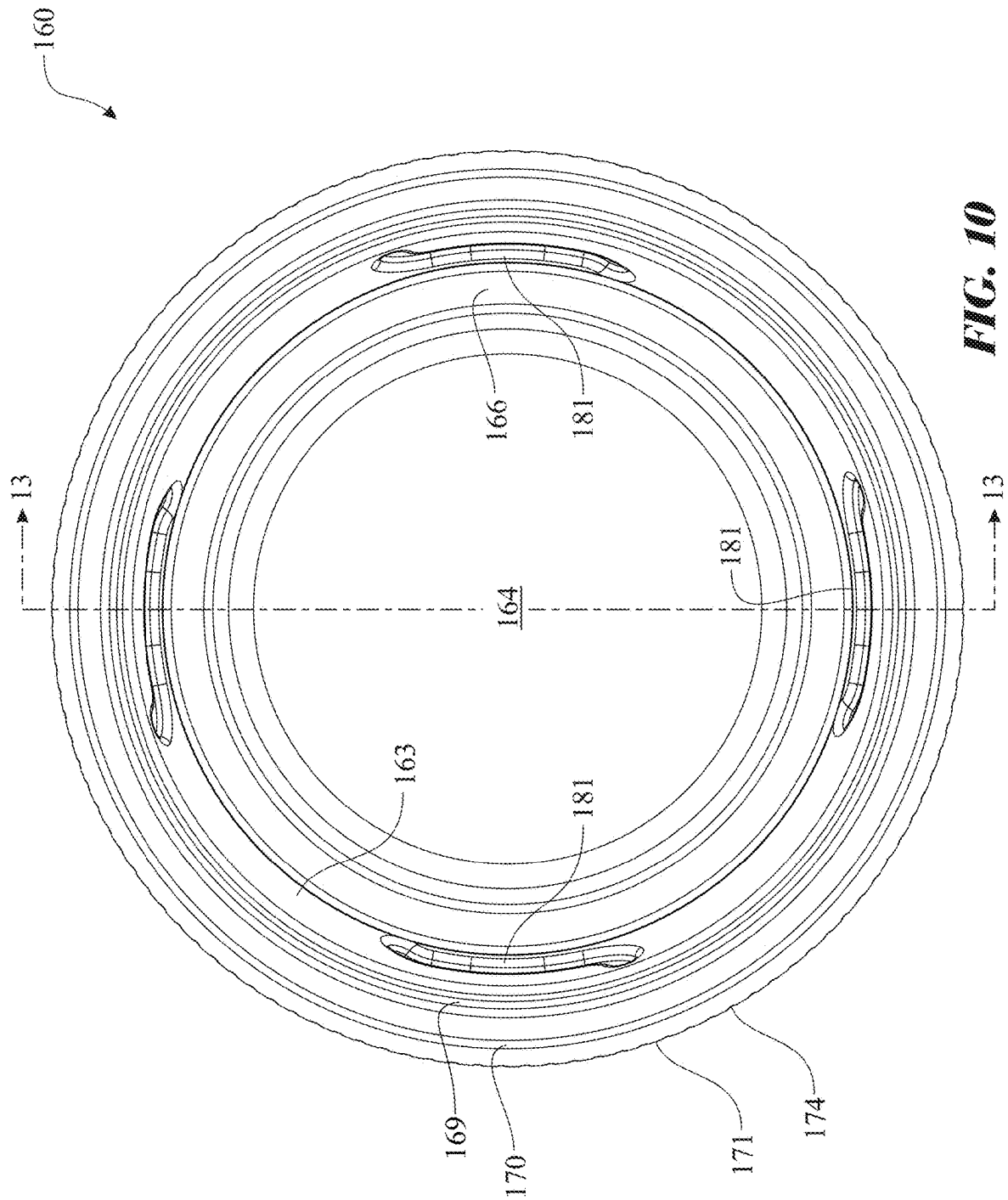


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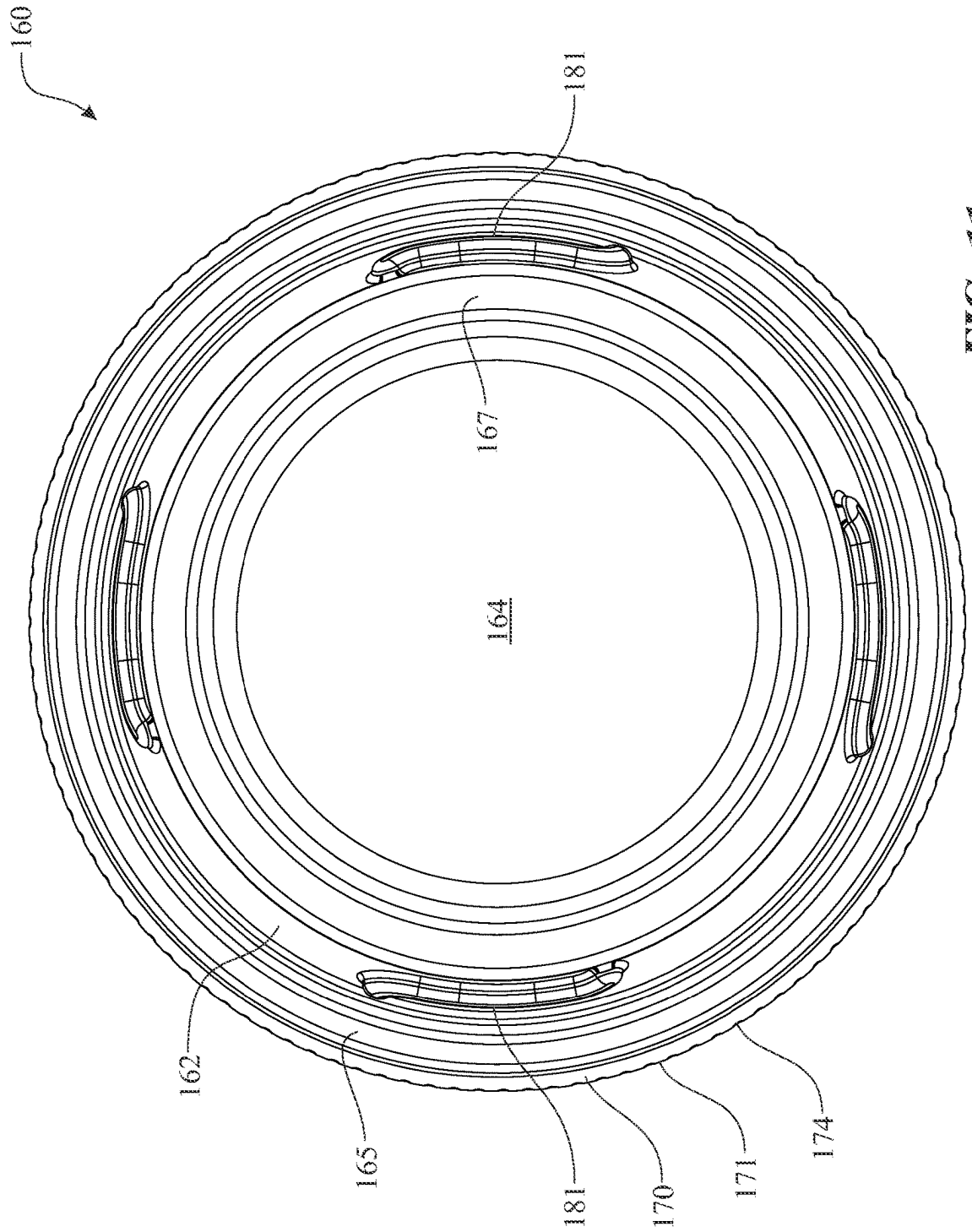


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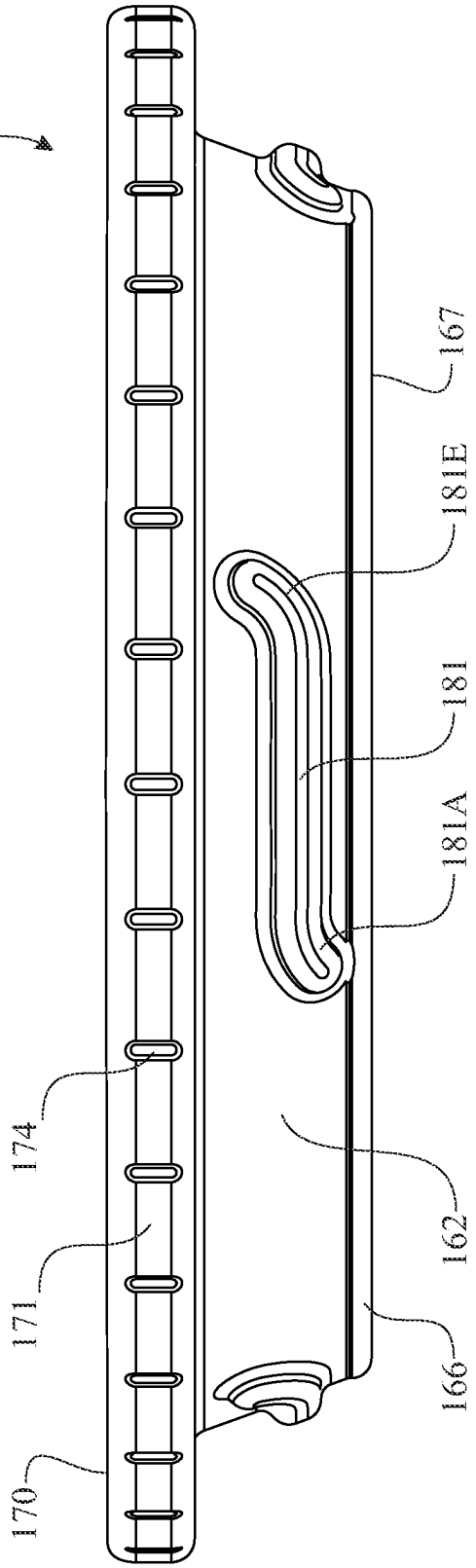


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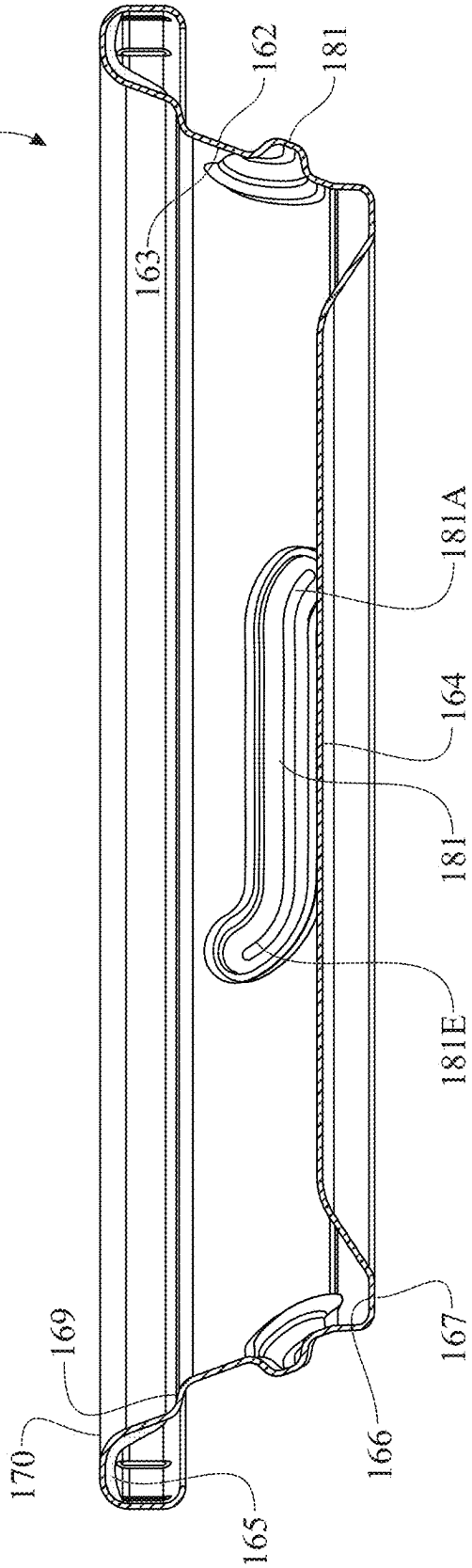


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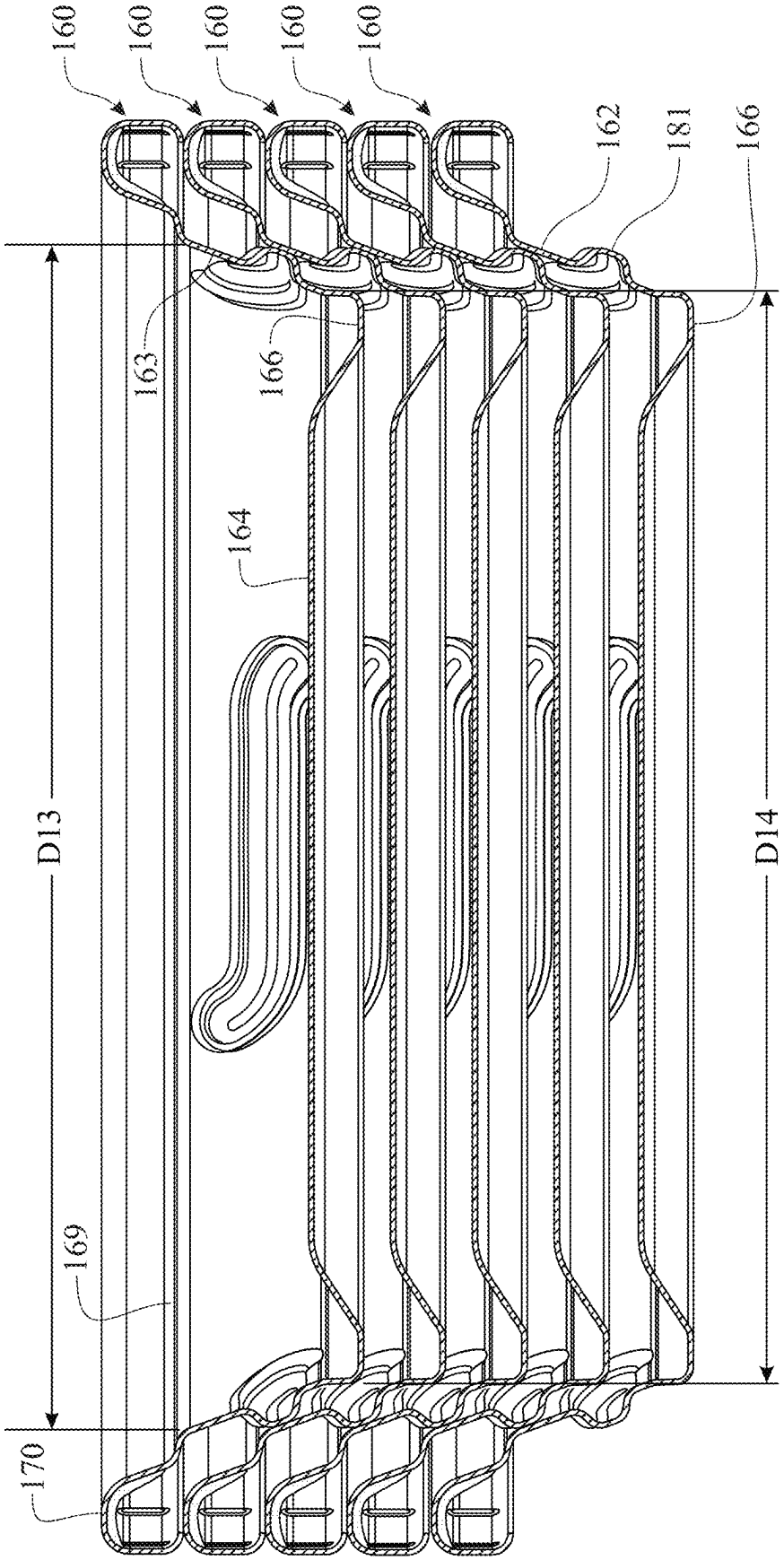


FIG. 14

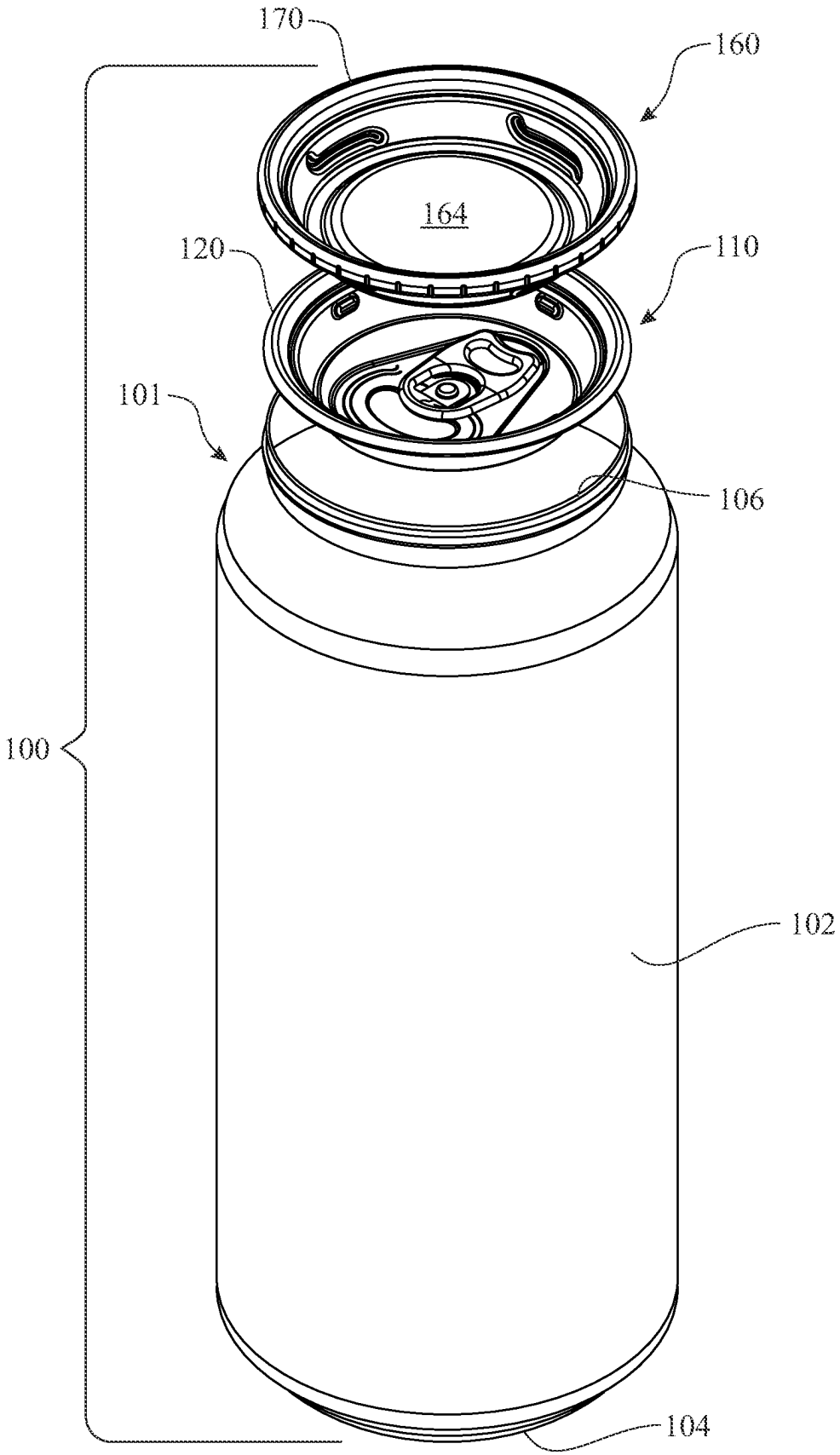


*FIG. 15*

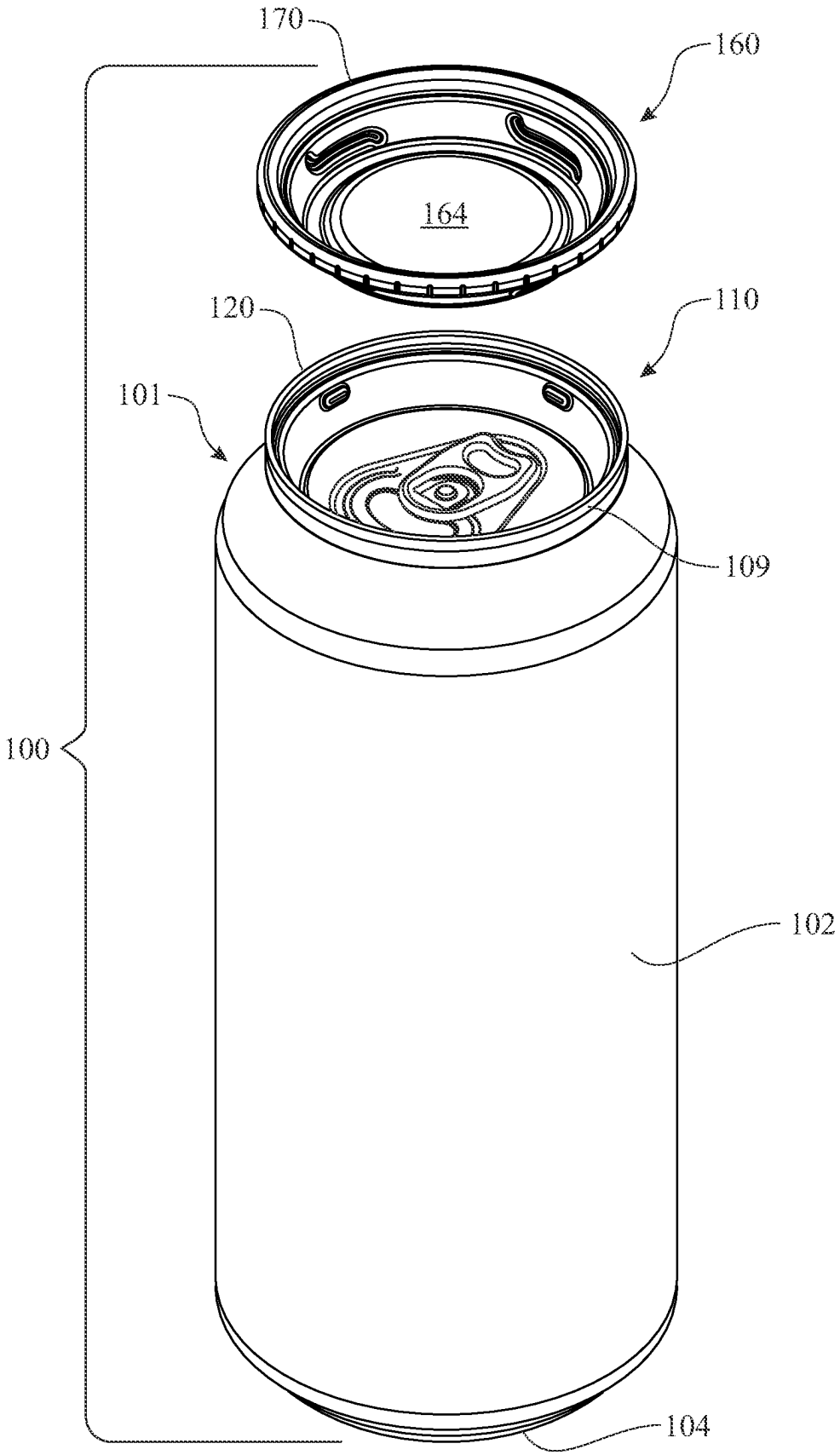


*FIG. 16*

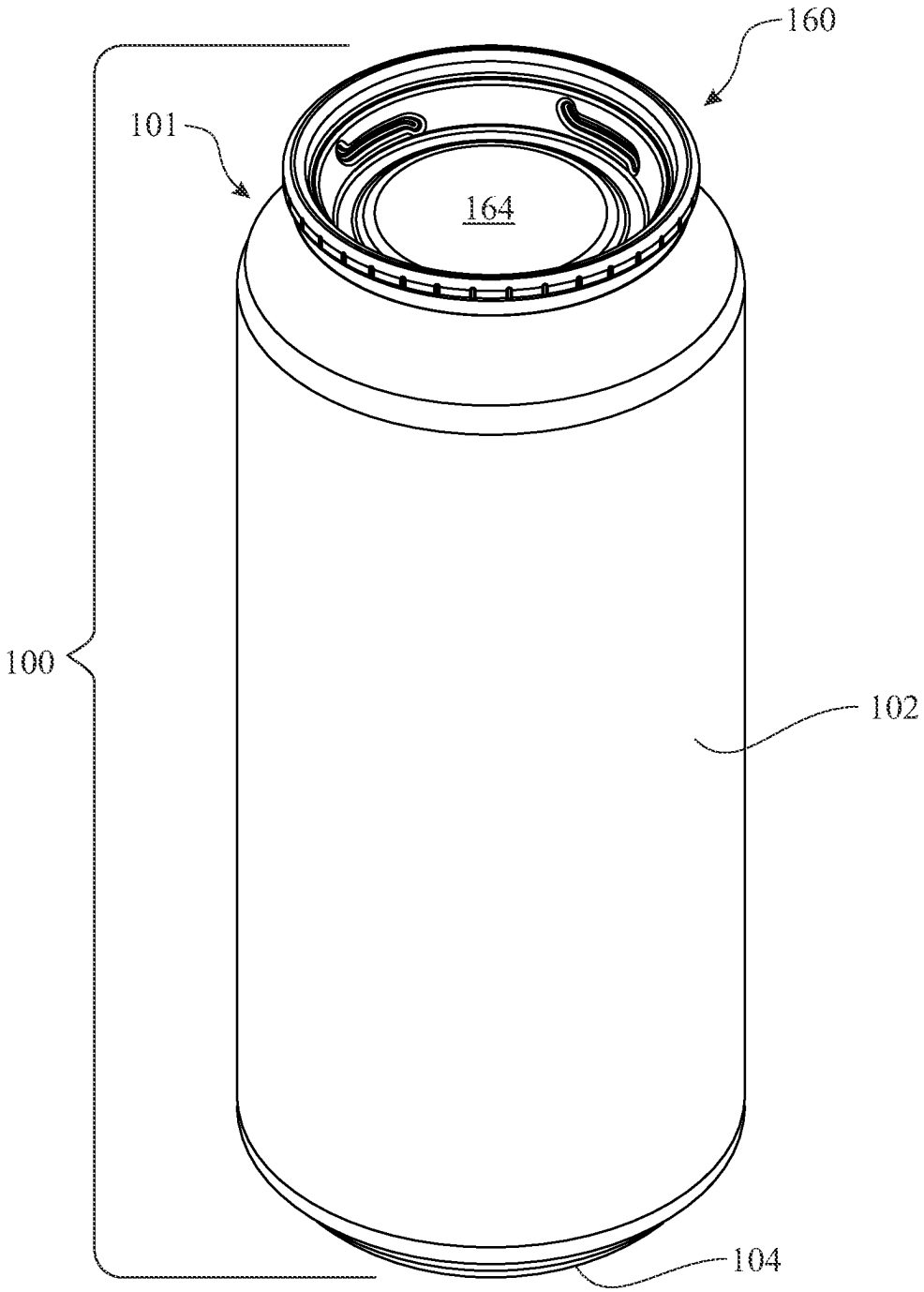


*FIG. 17*

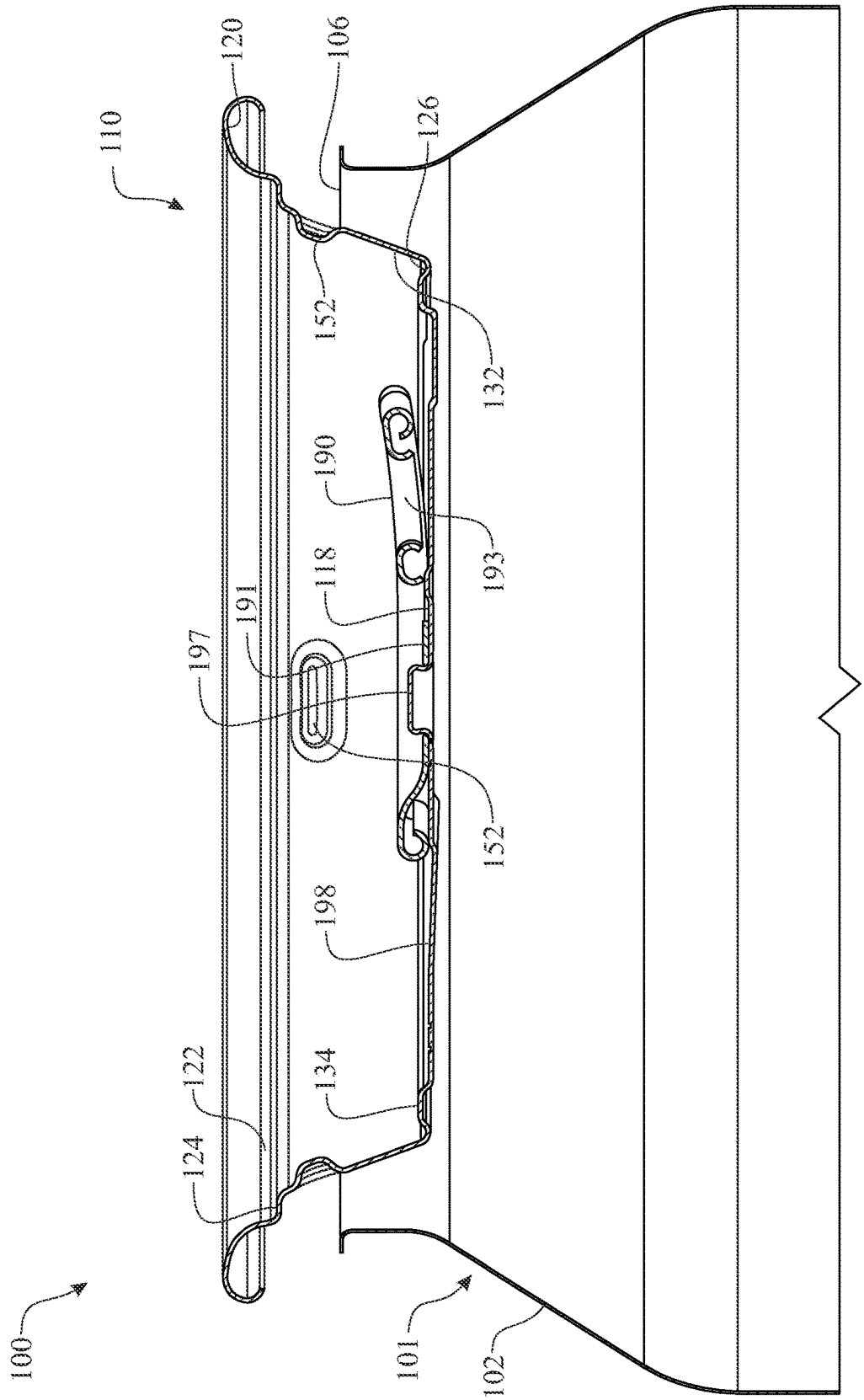
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FIG. 18

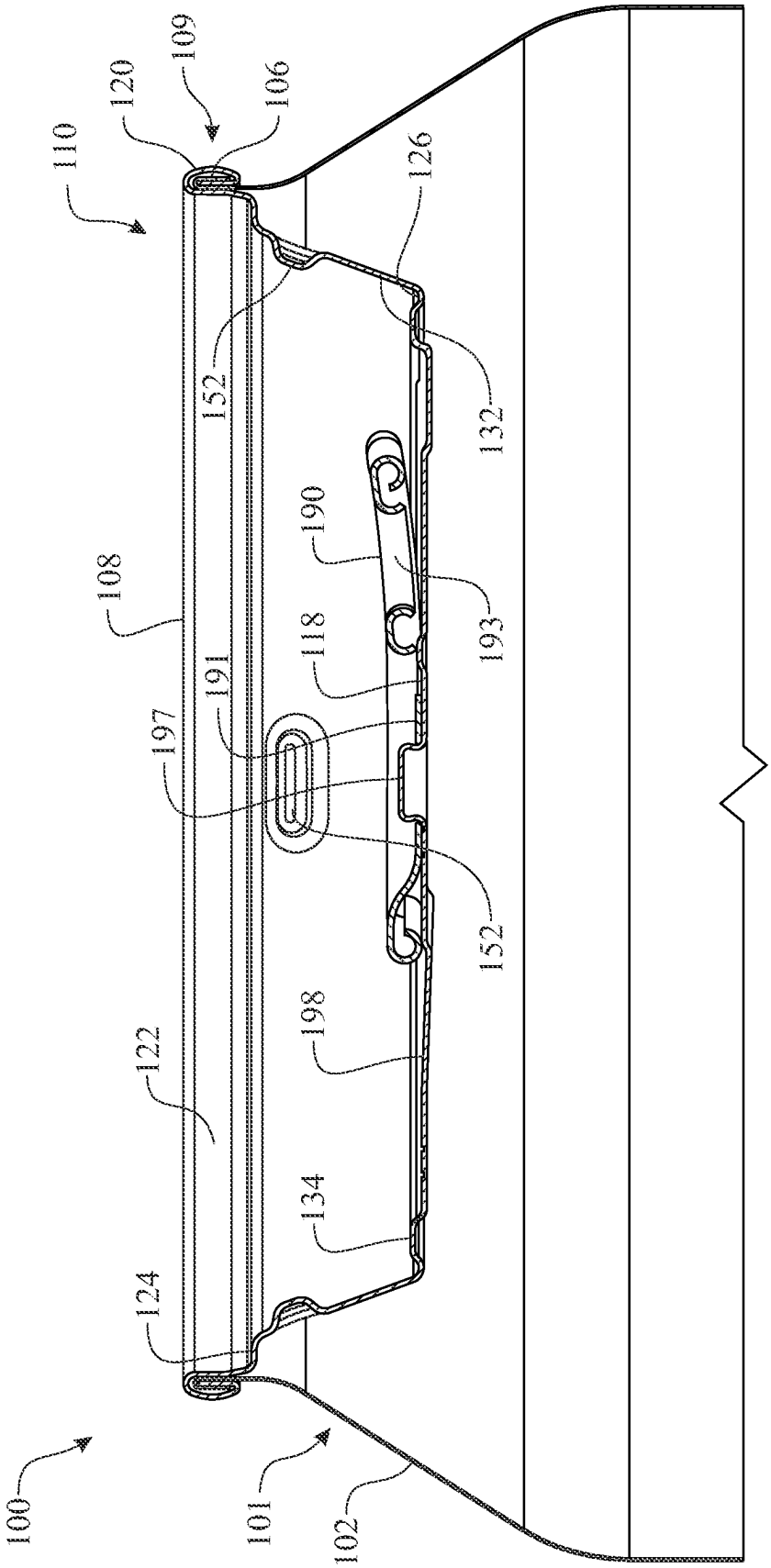
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FIG. 19

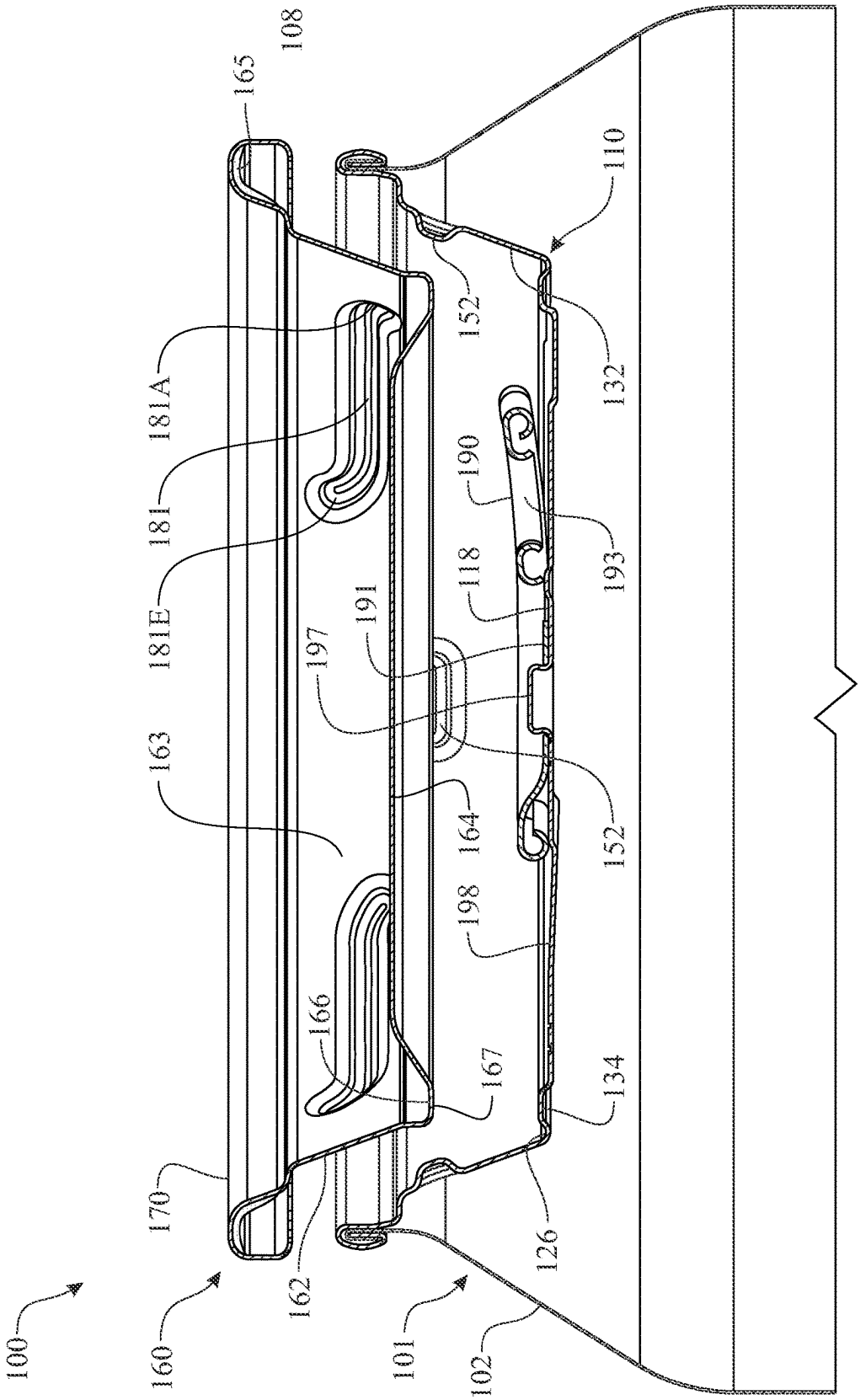
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FIG. 20

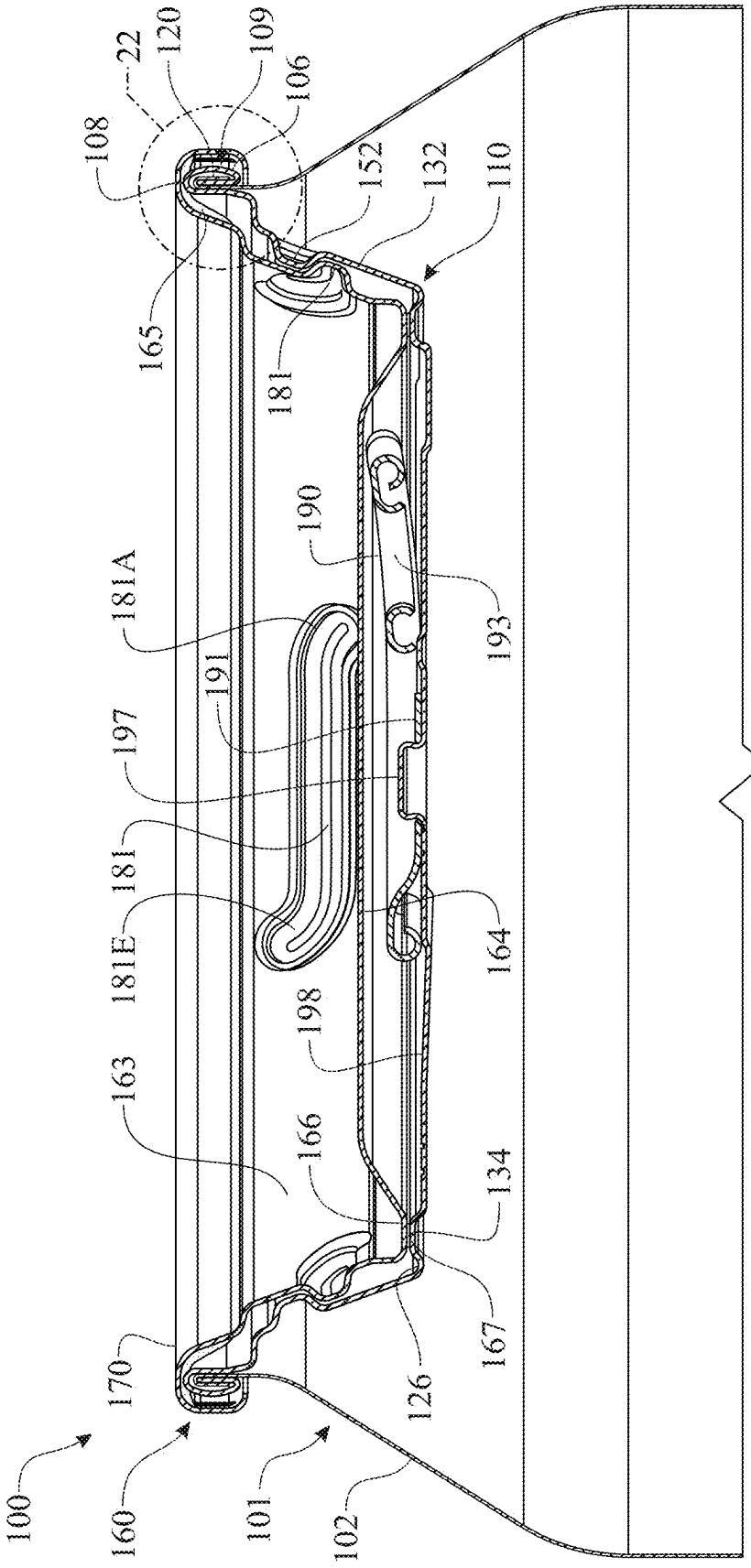
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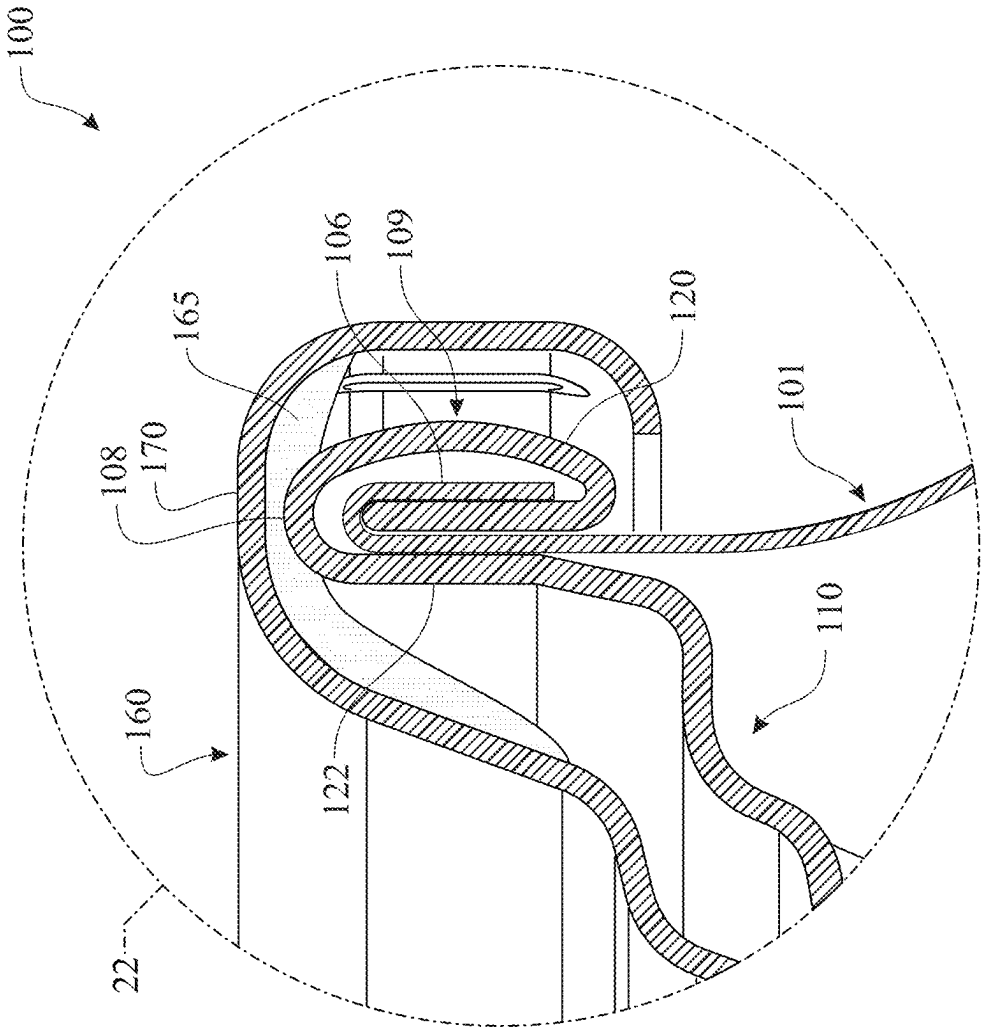
FIG. 21

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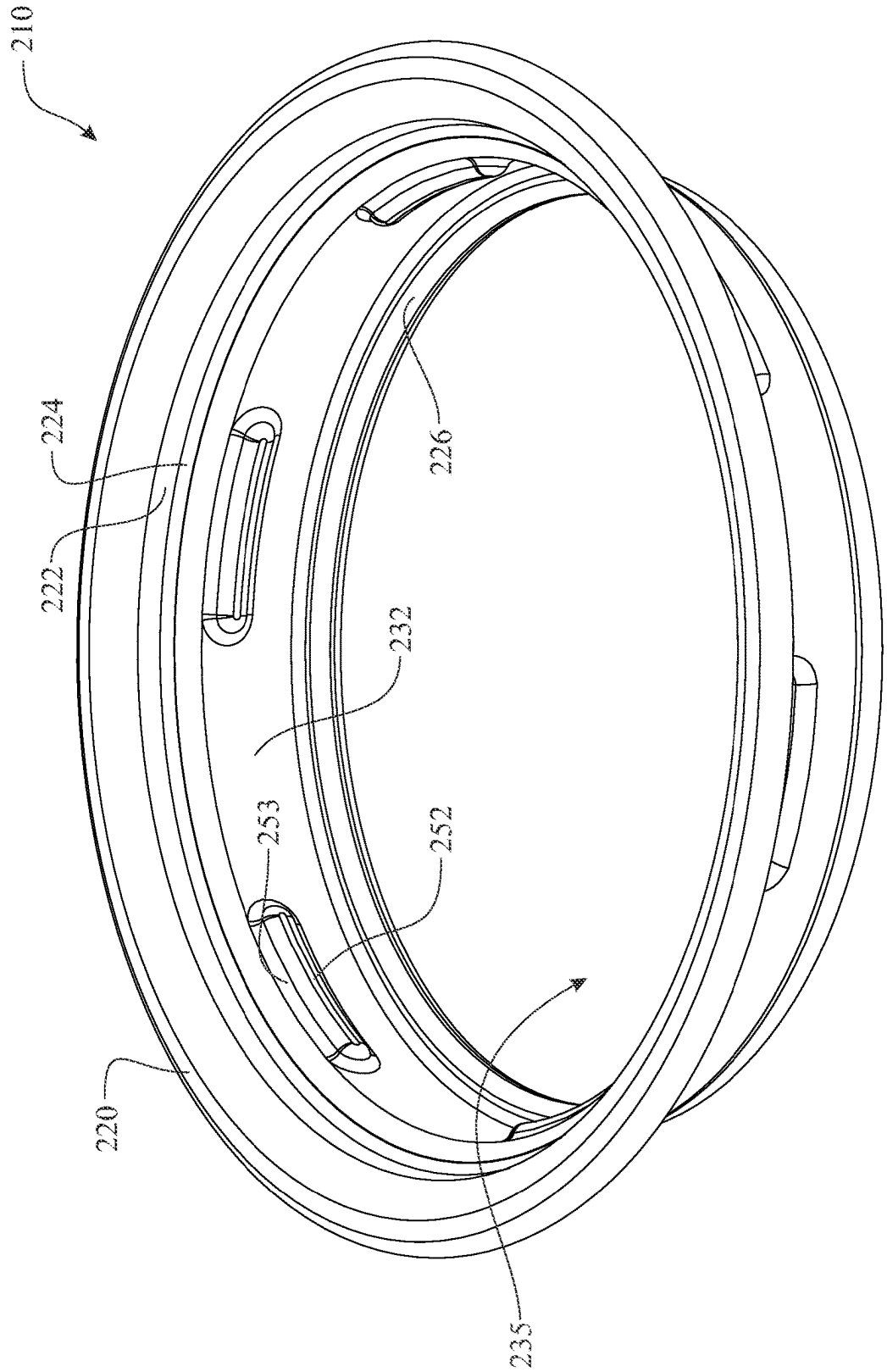


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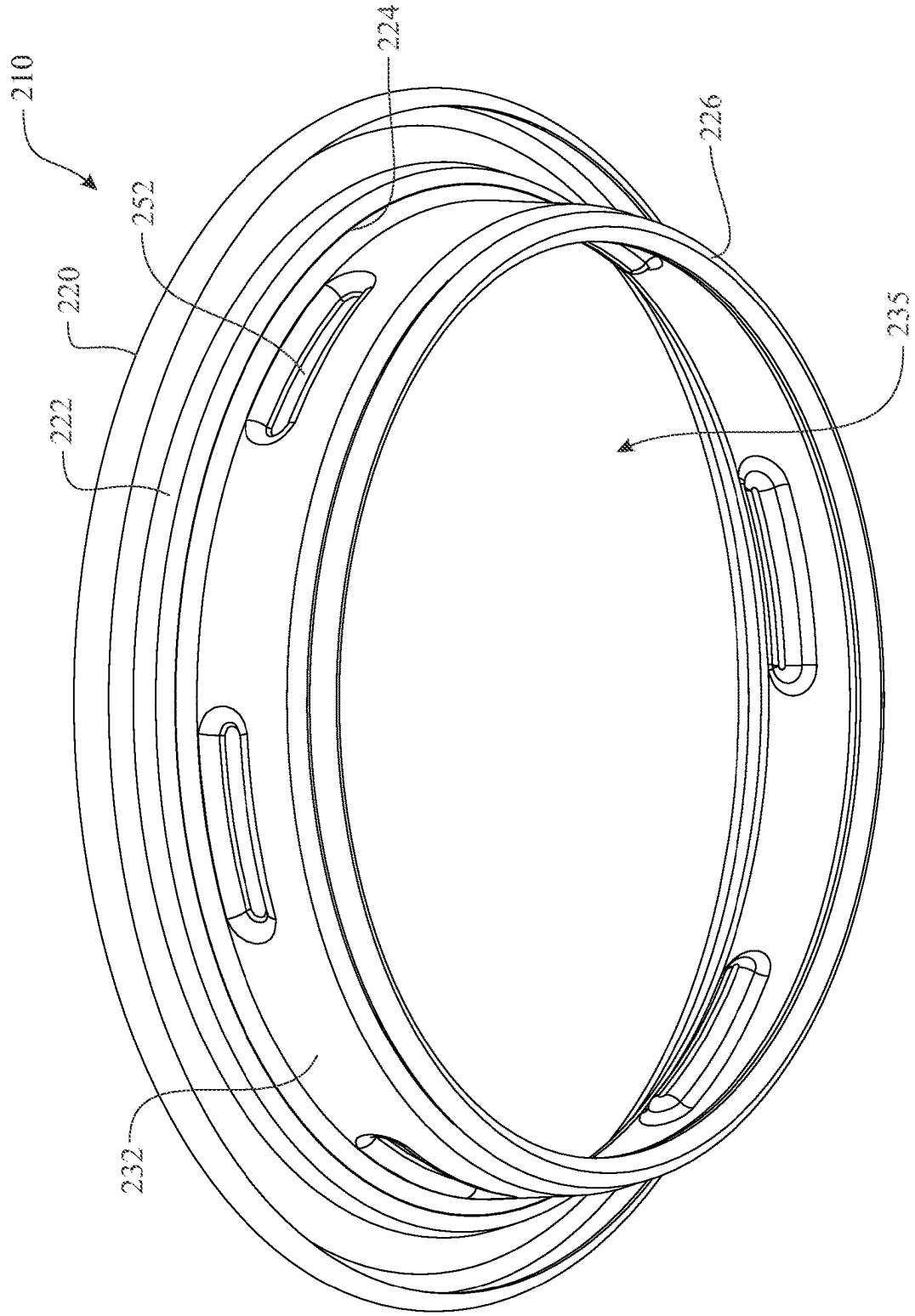


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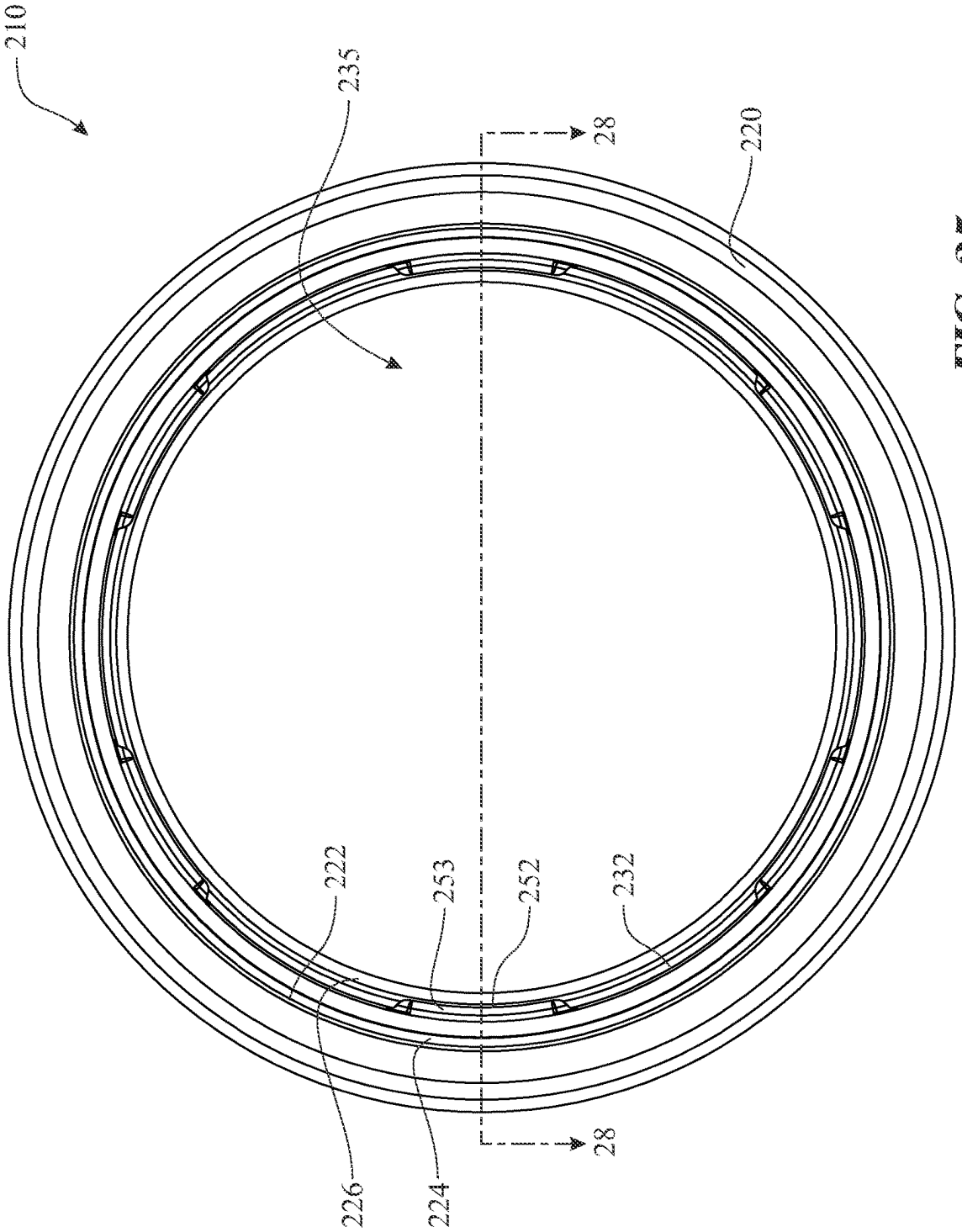


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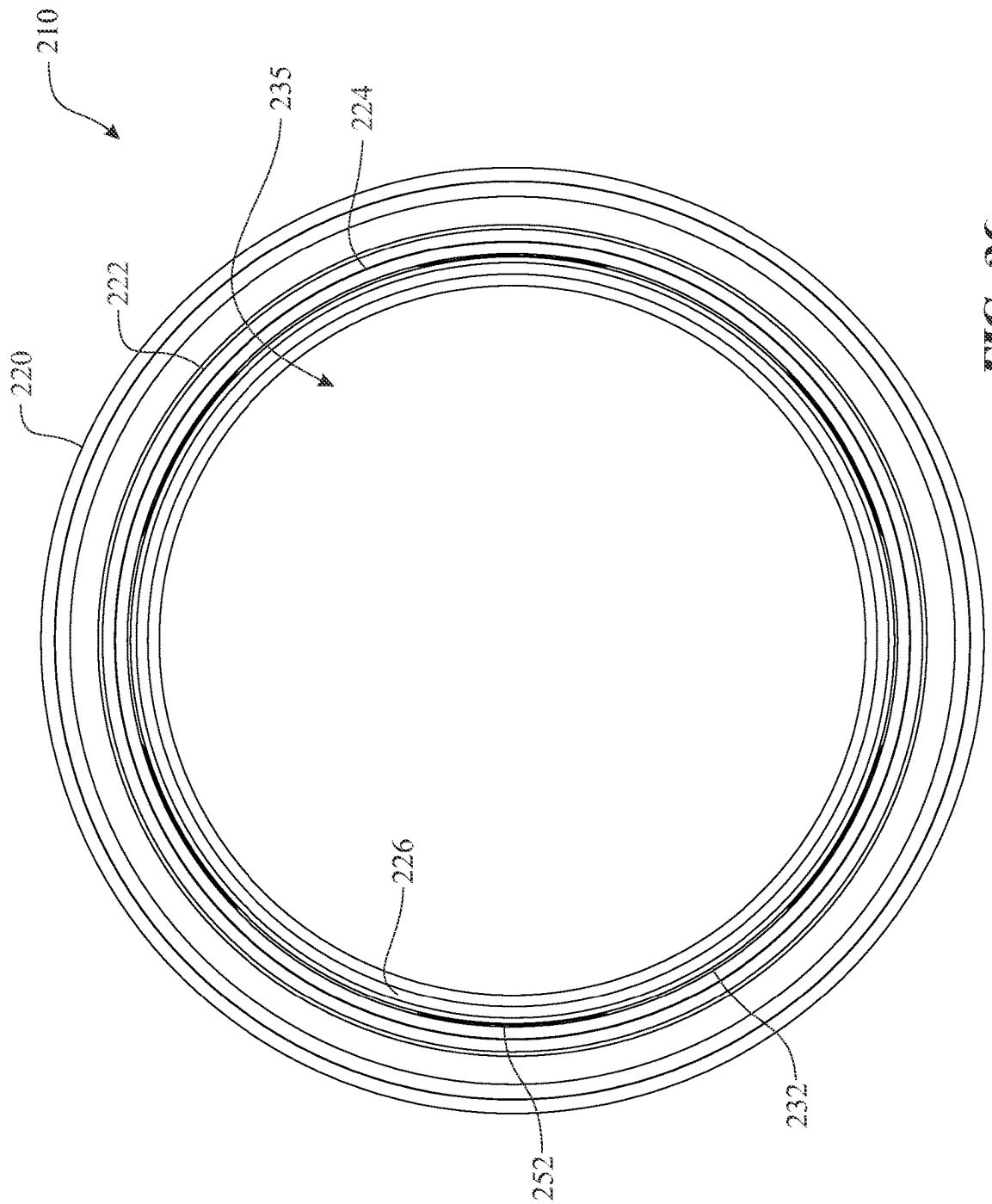


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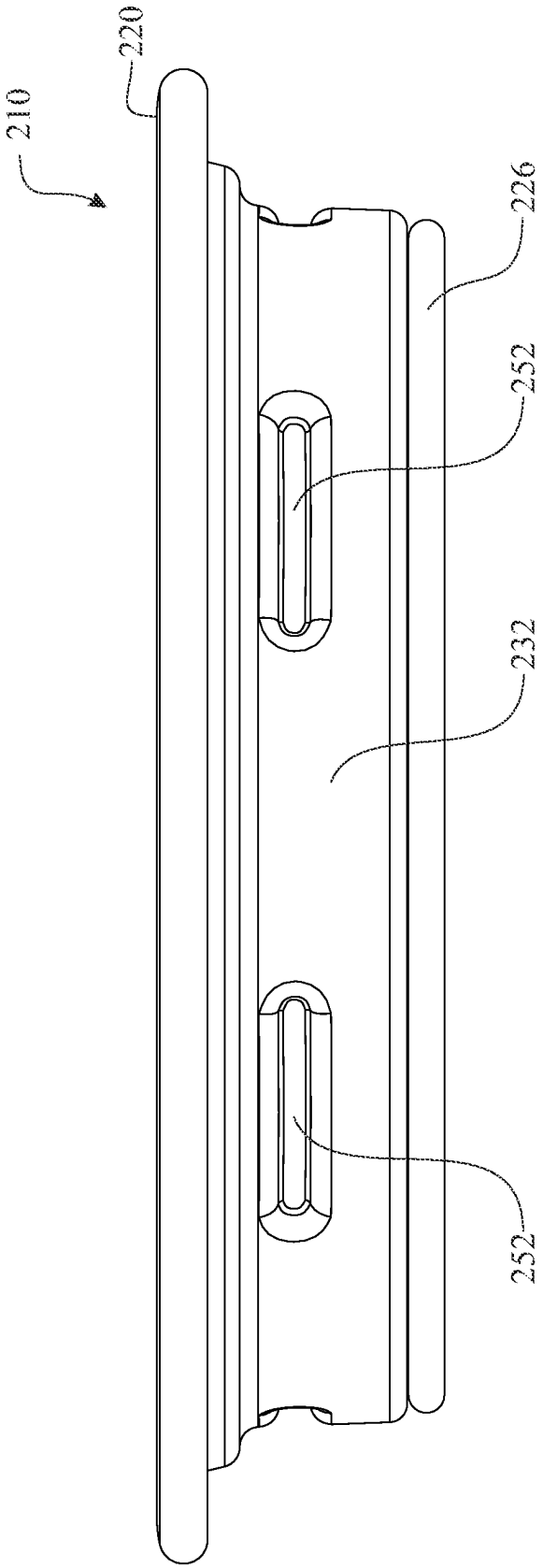


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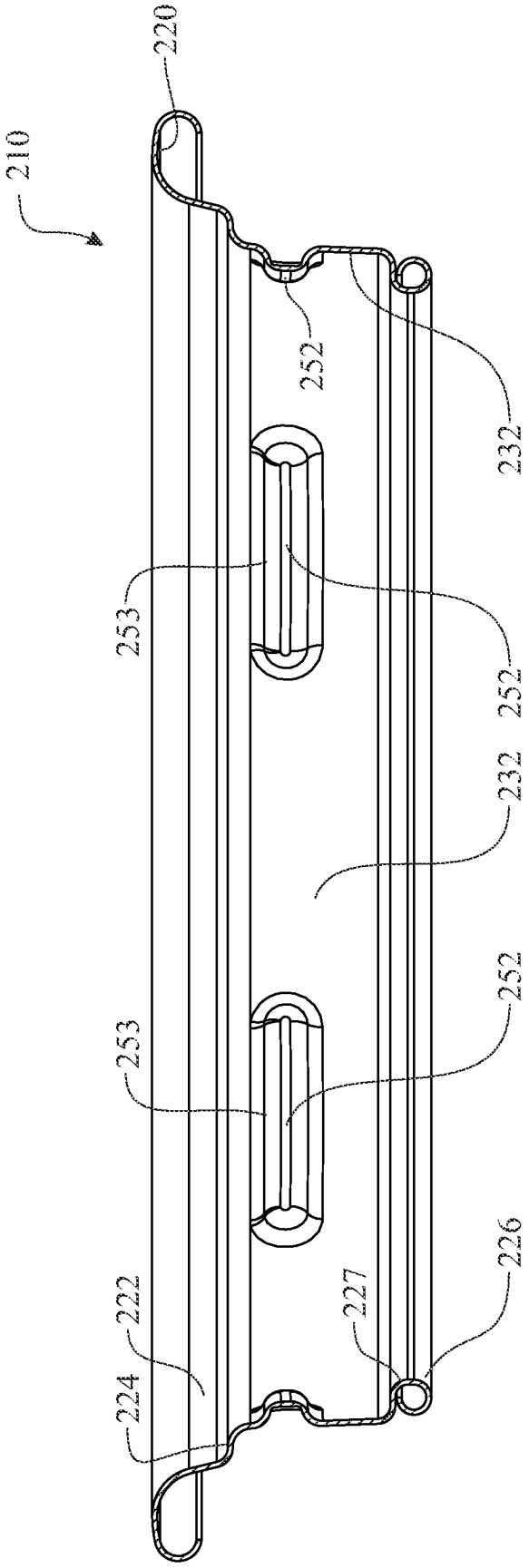


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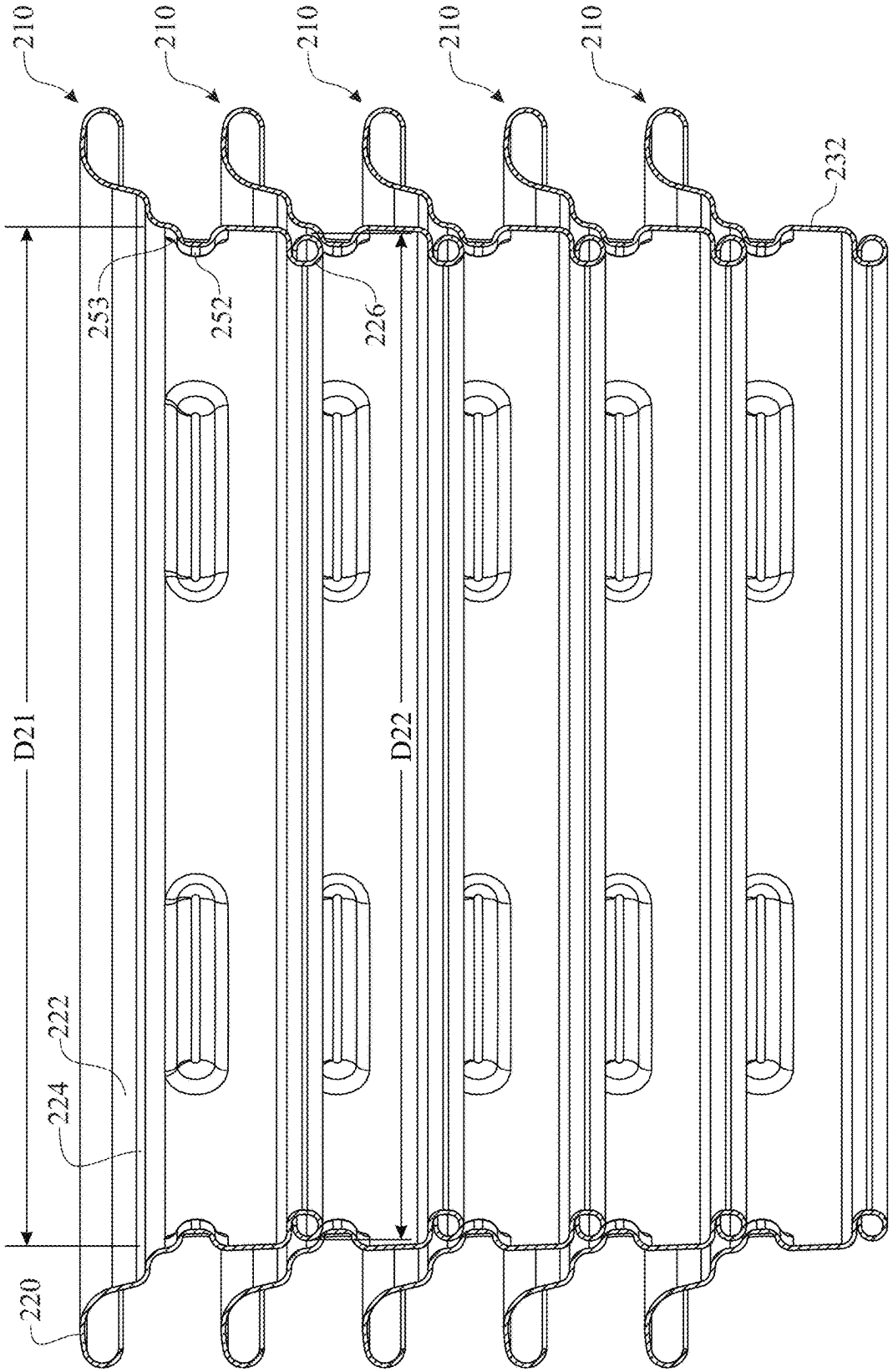


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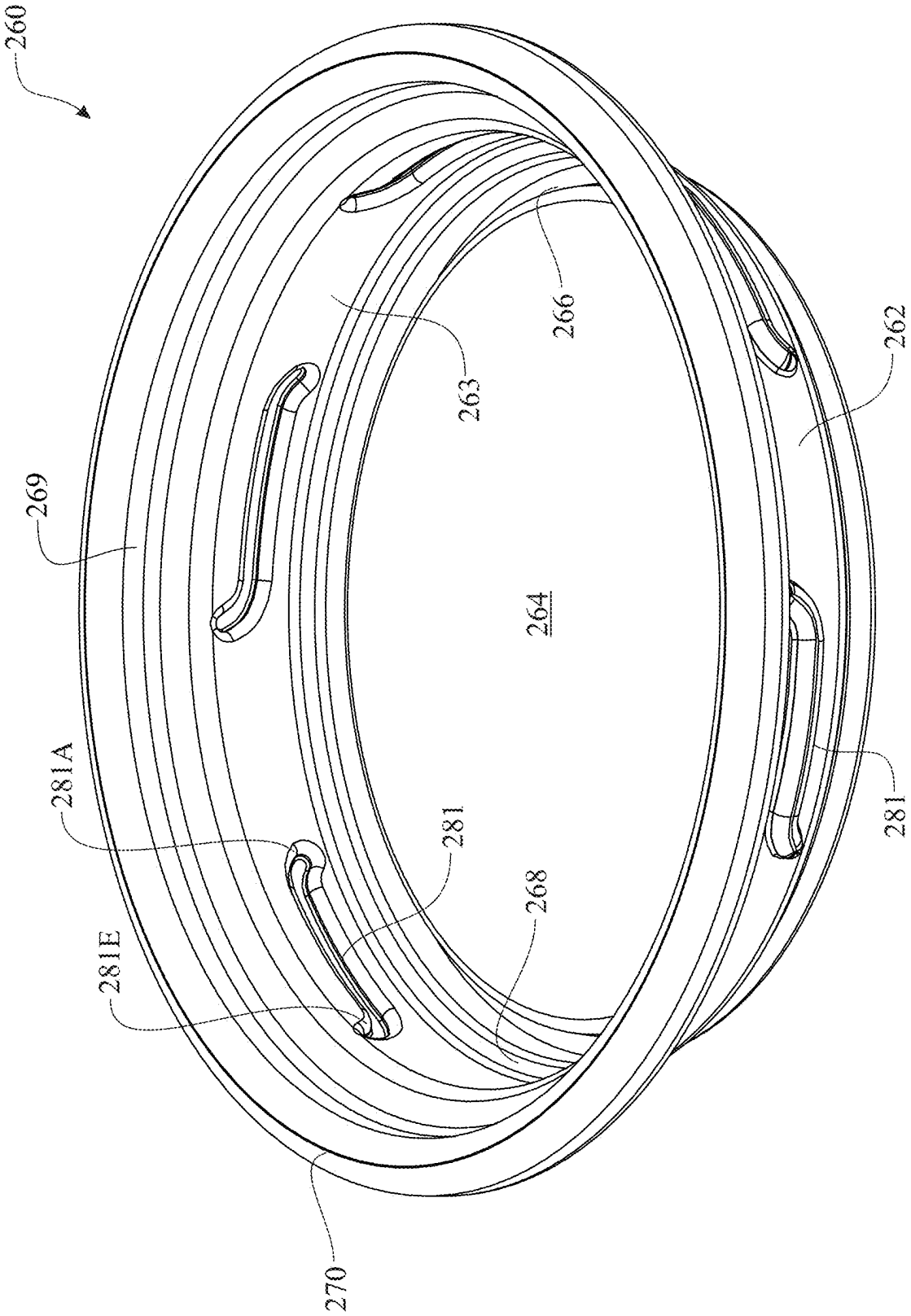


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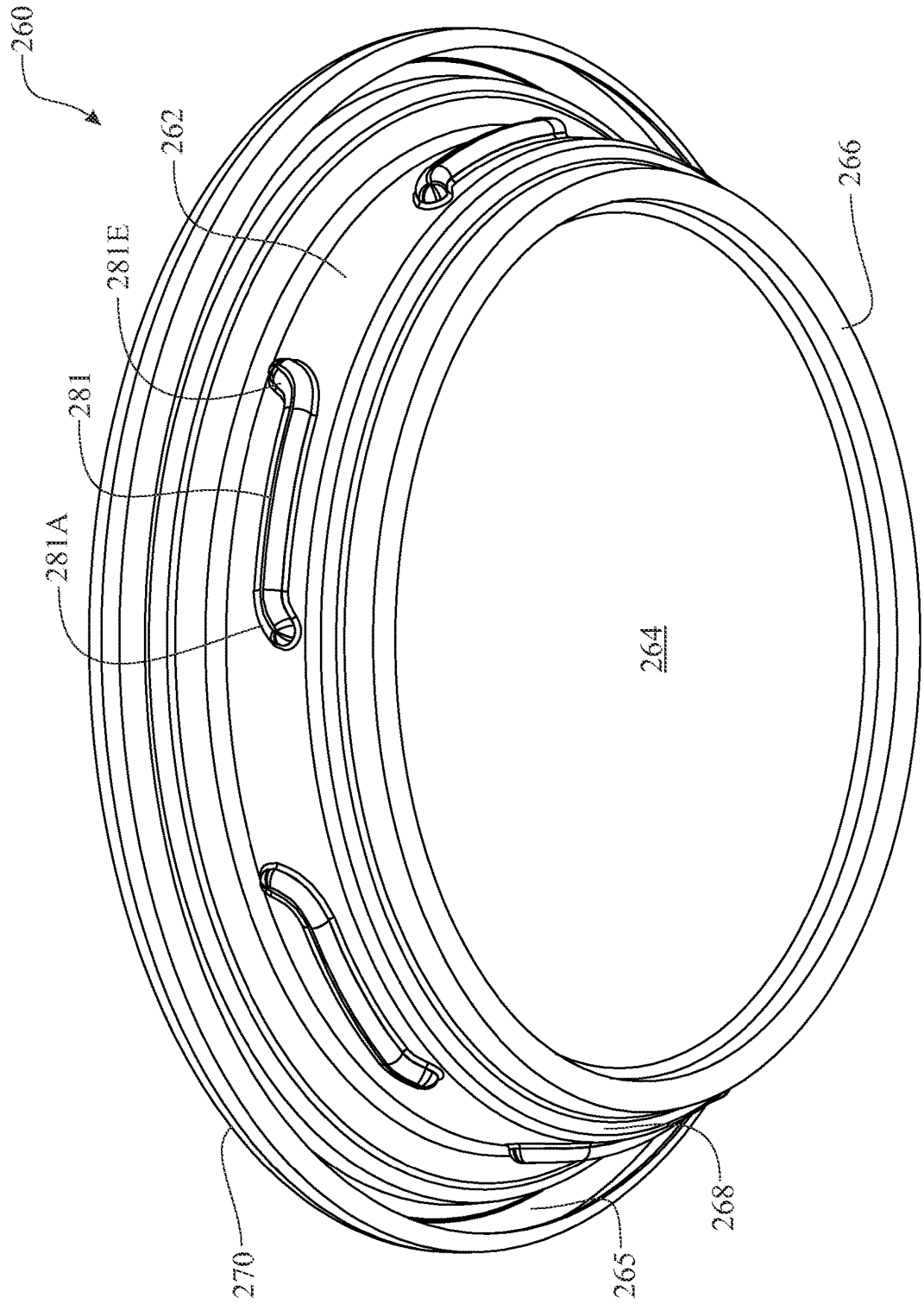


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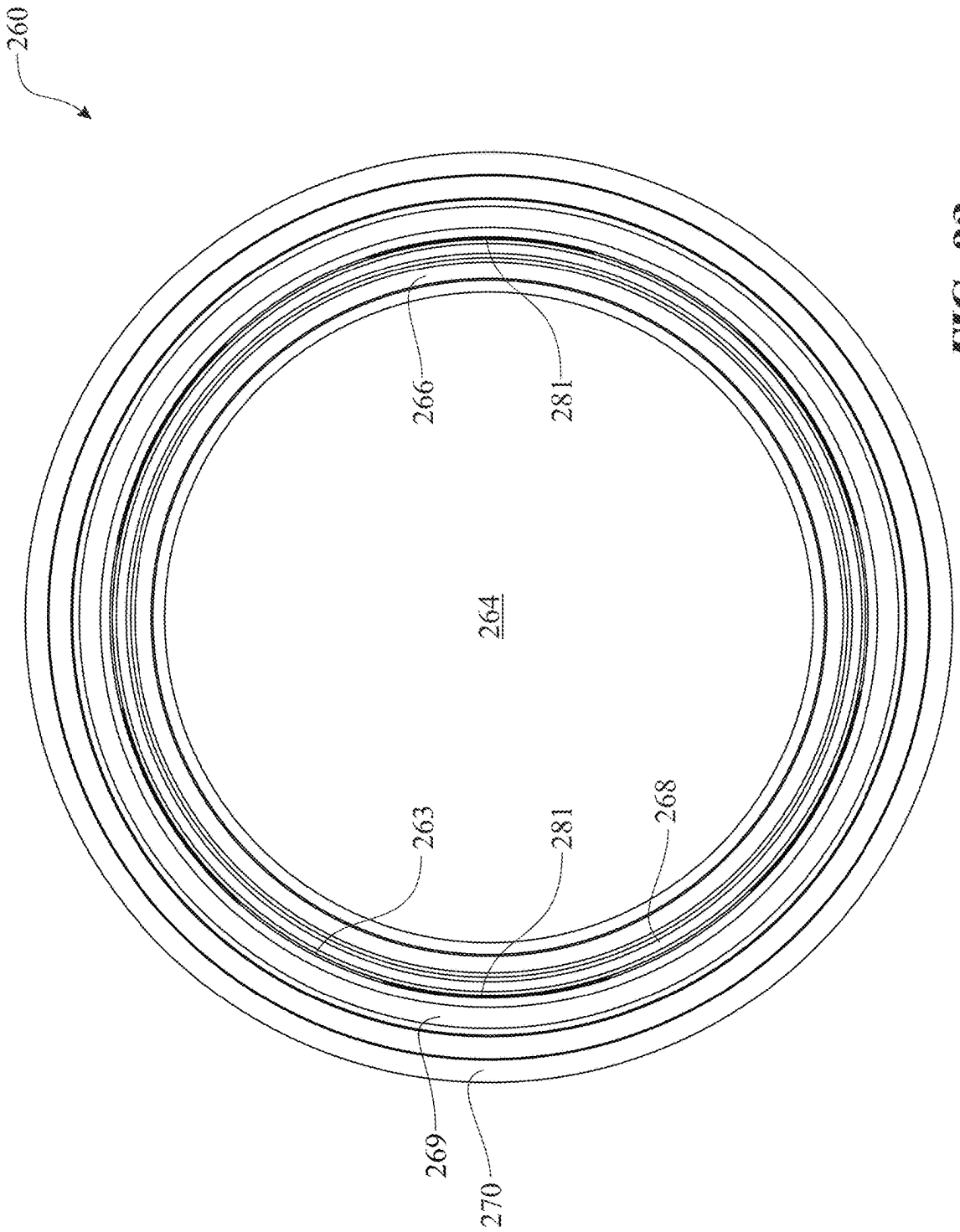


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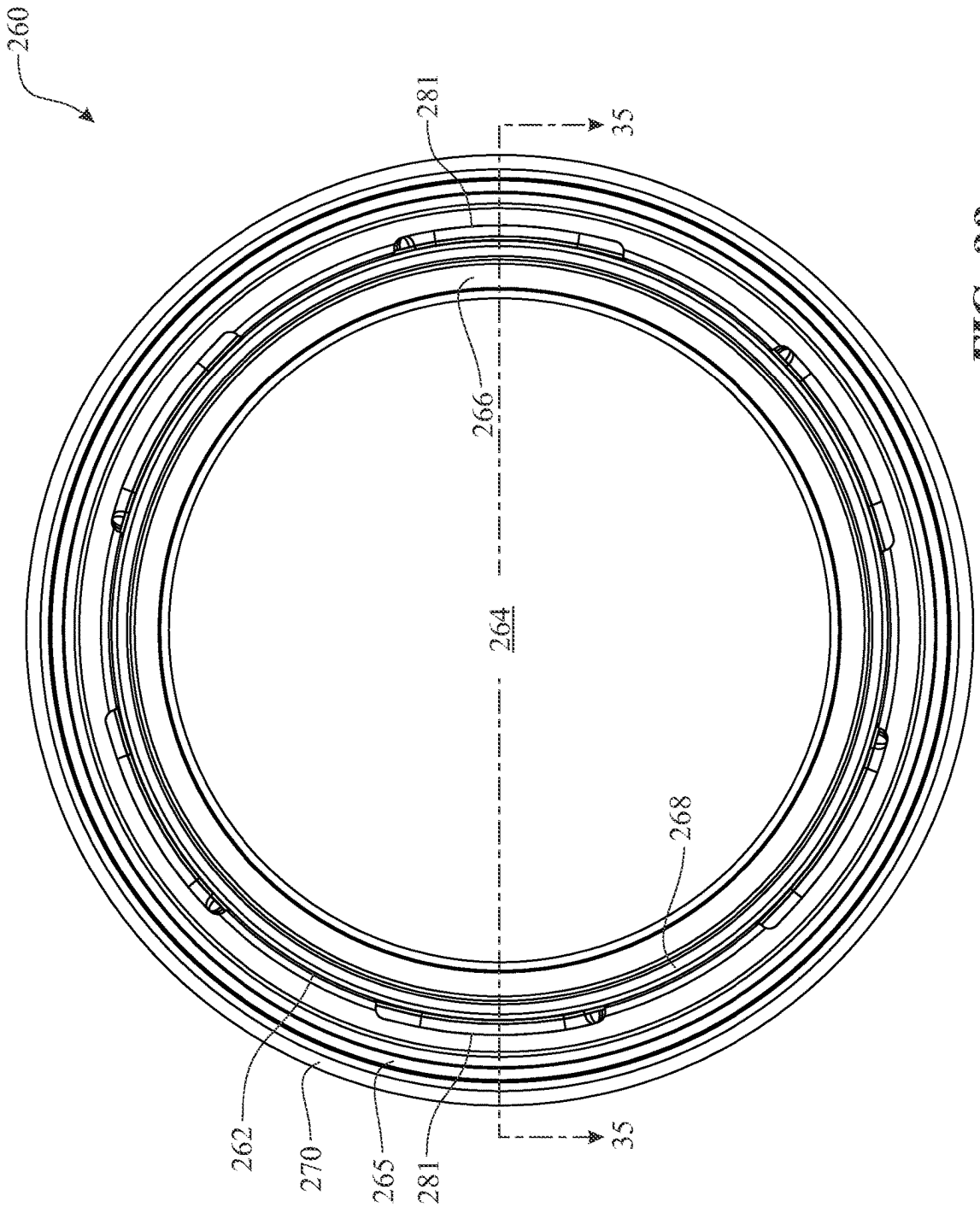


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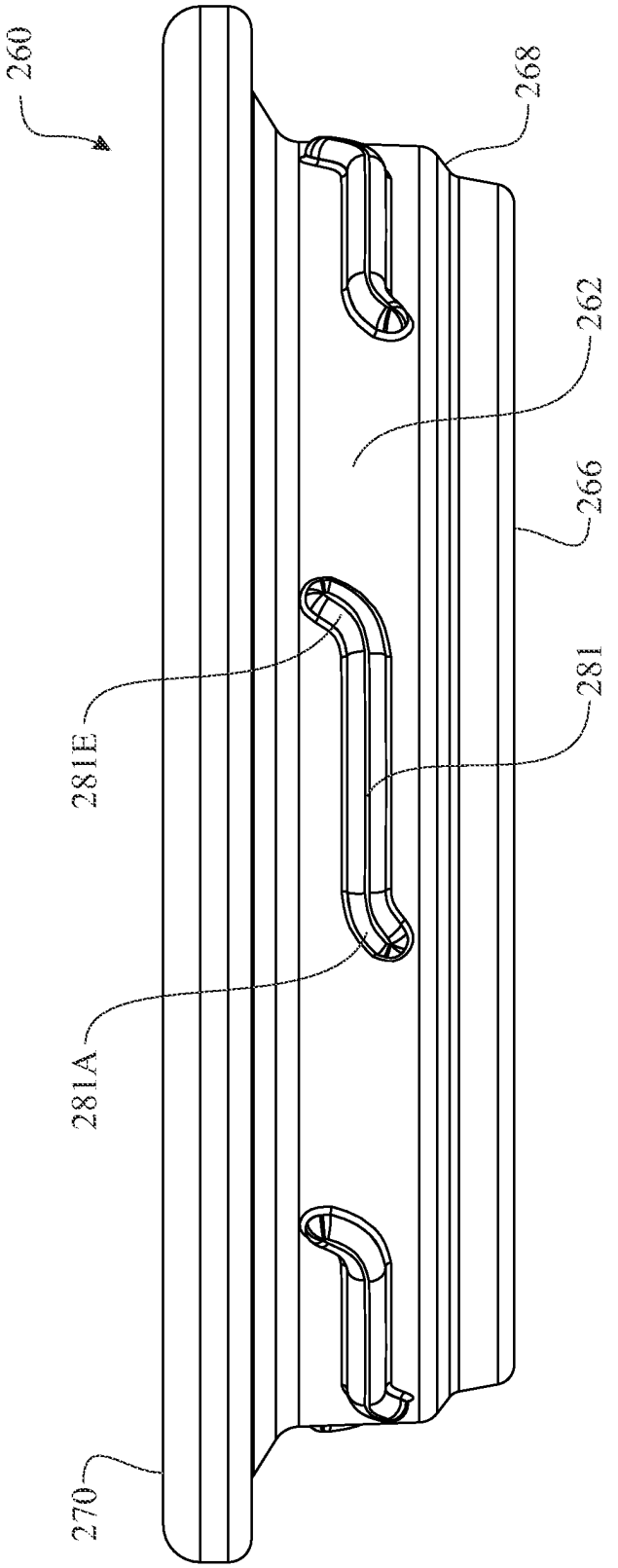


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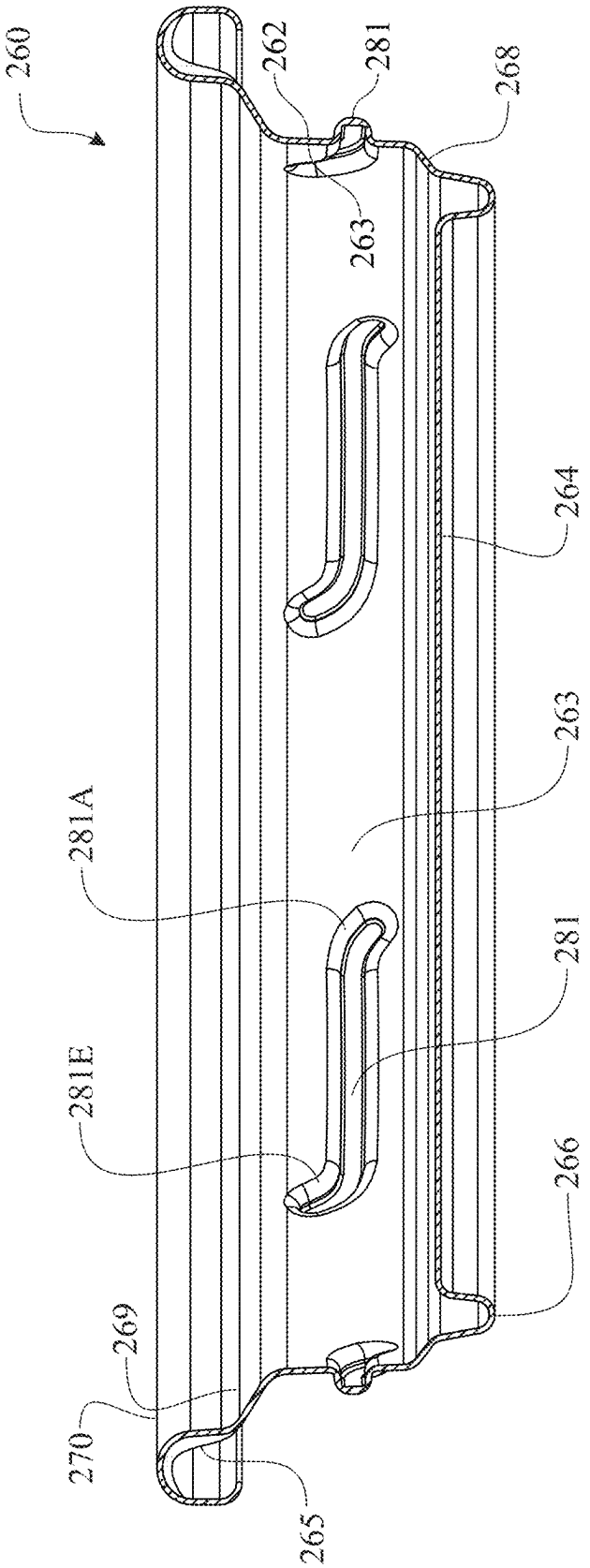


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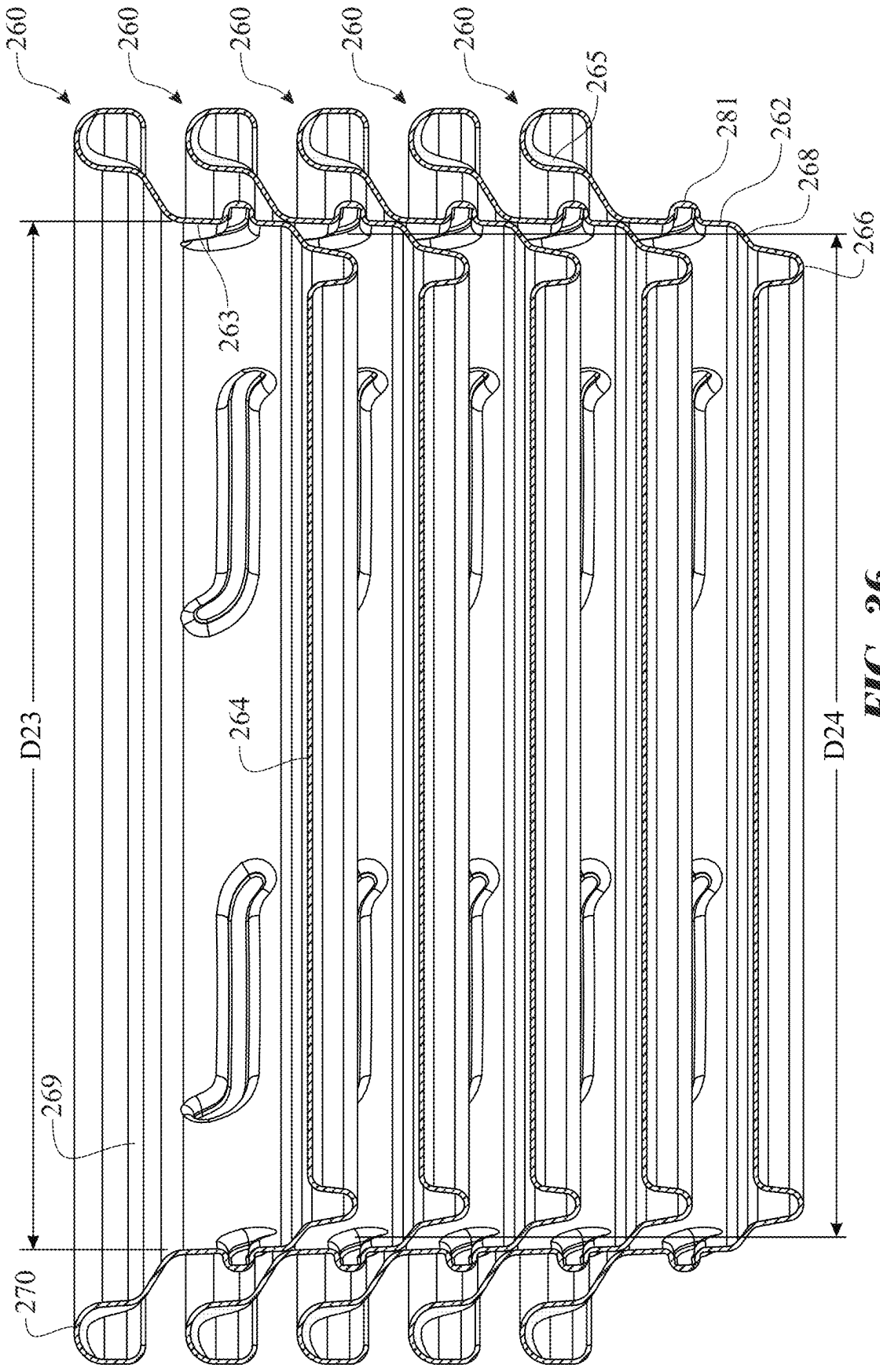


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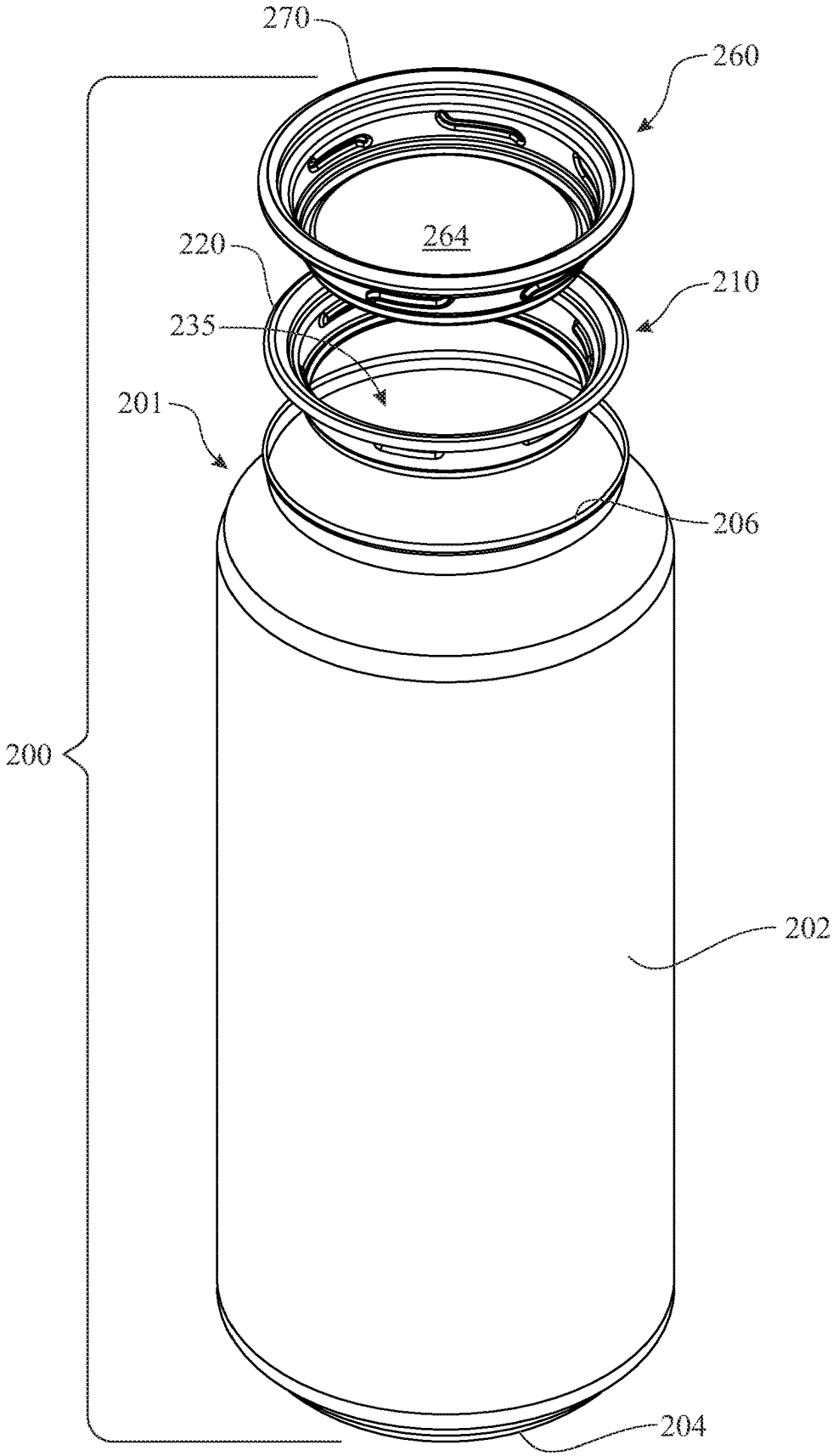


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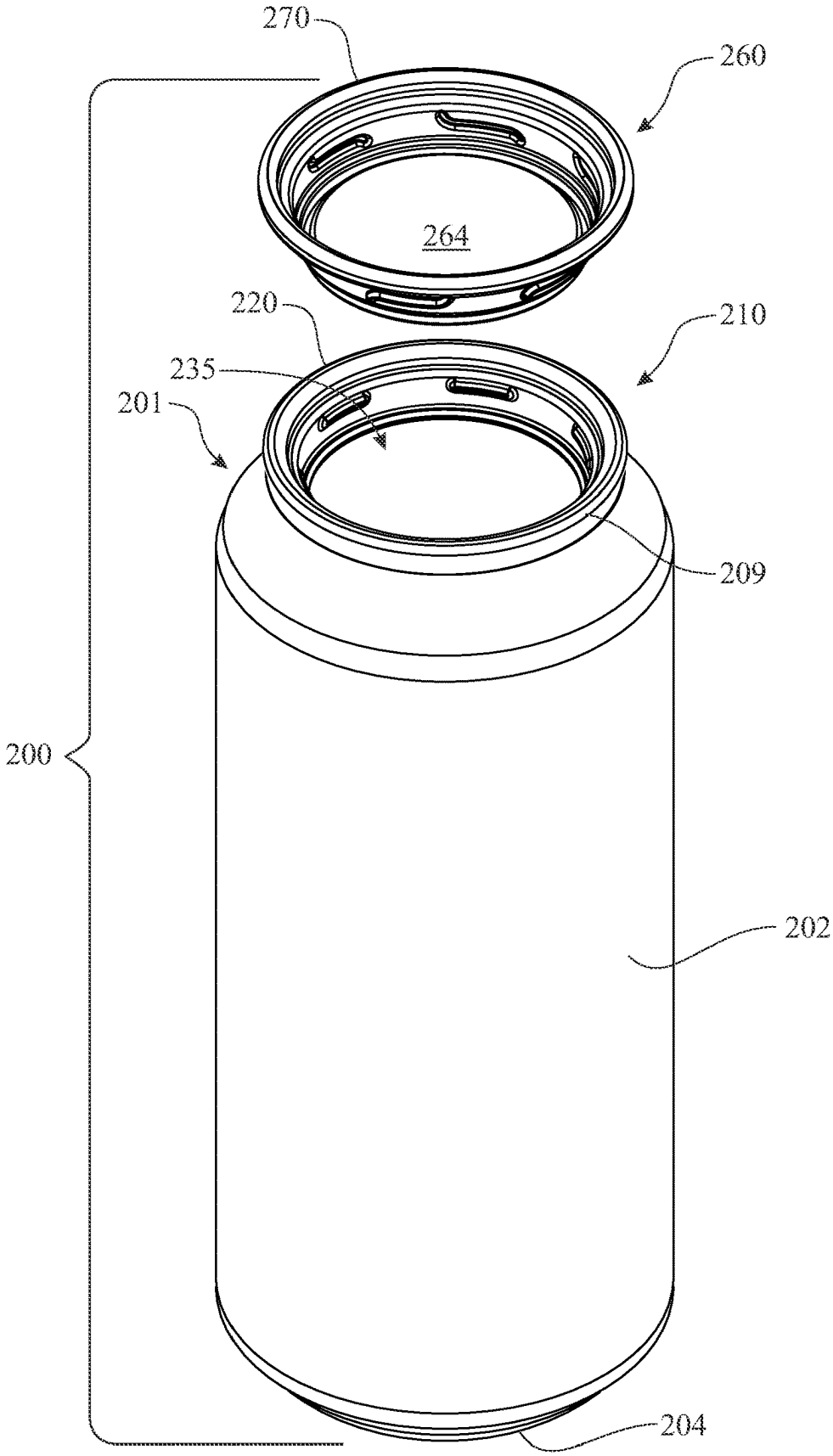


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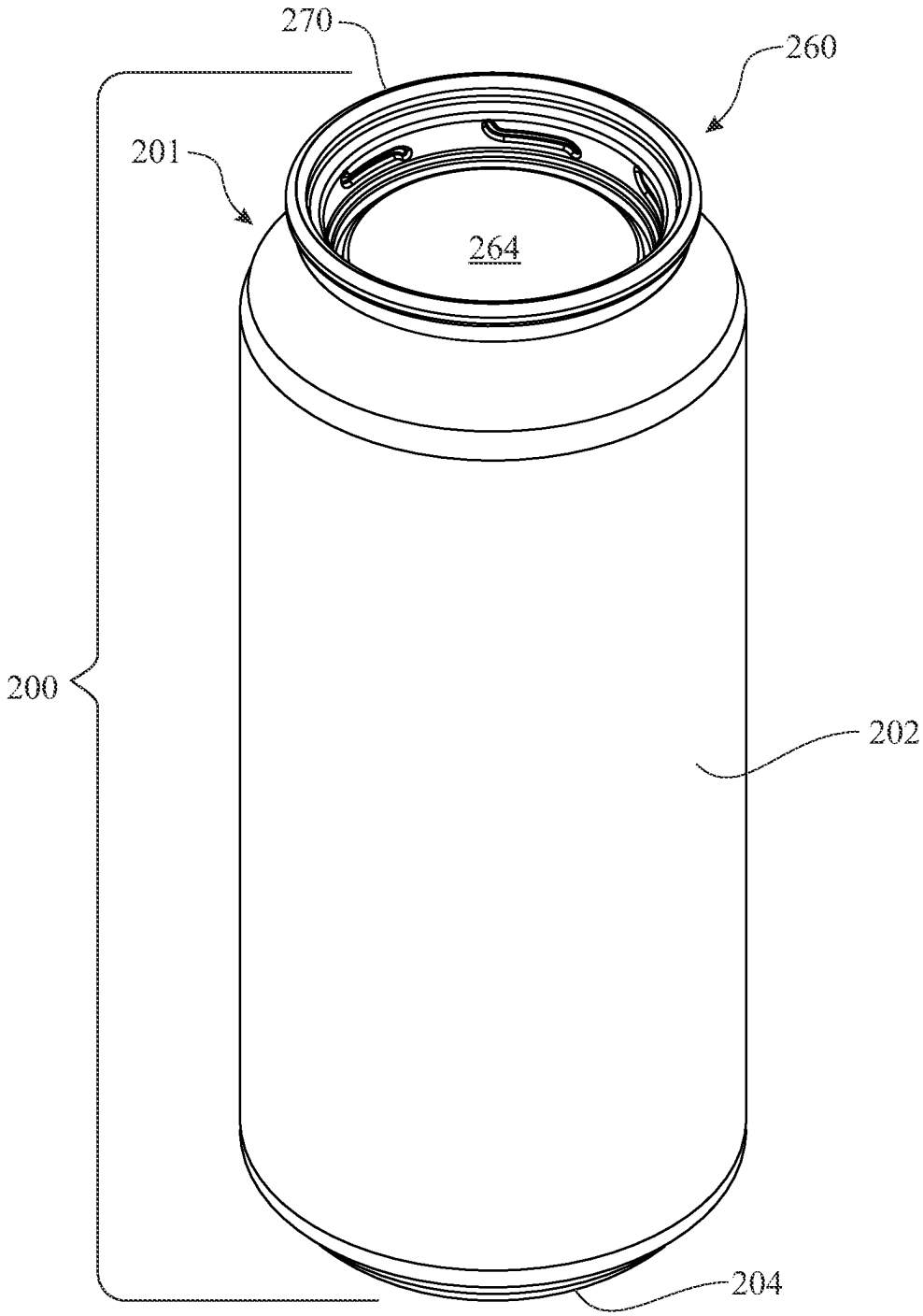


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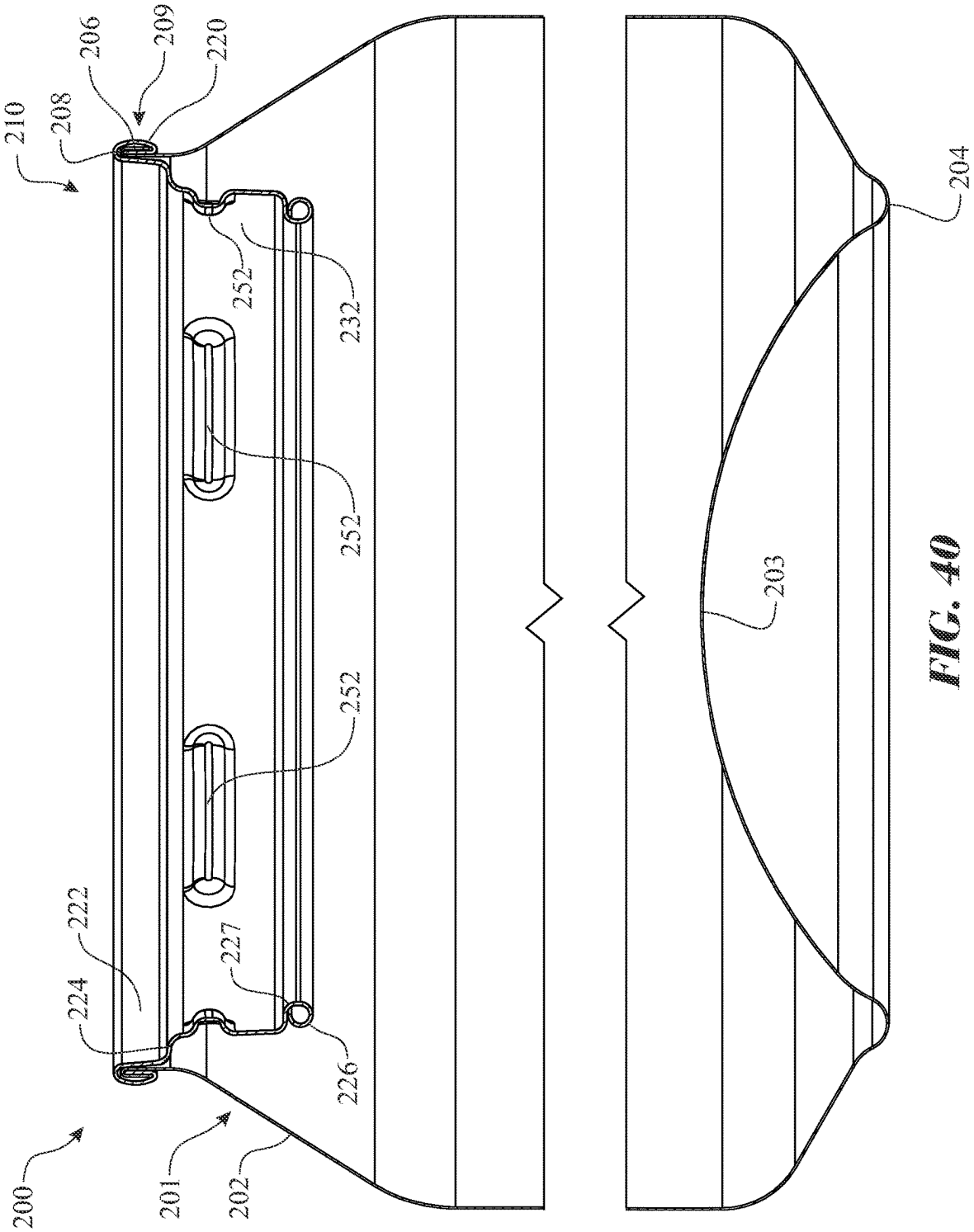
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FIG. 40

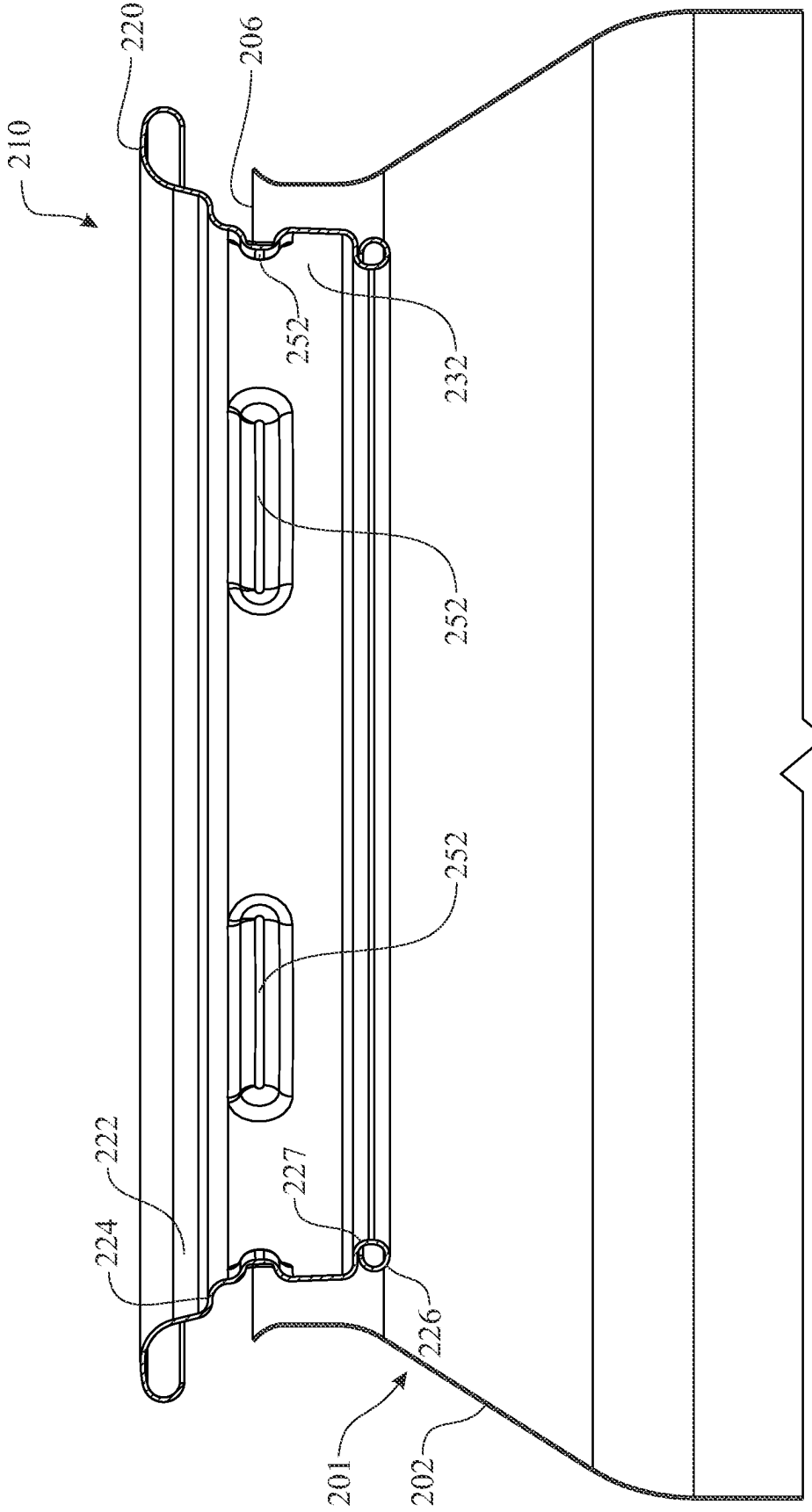



FIG. 41

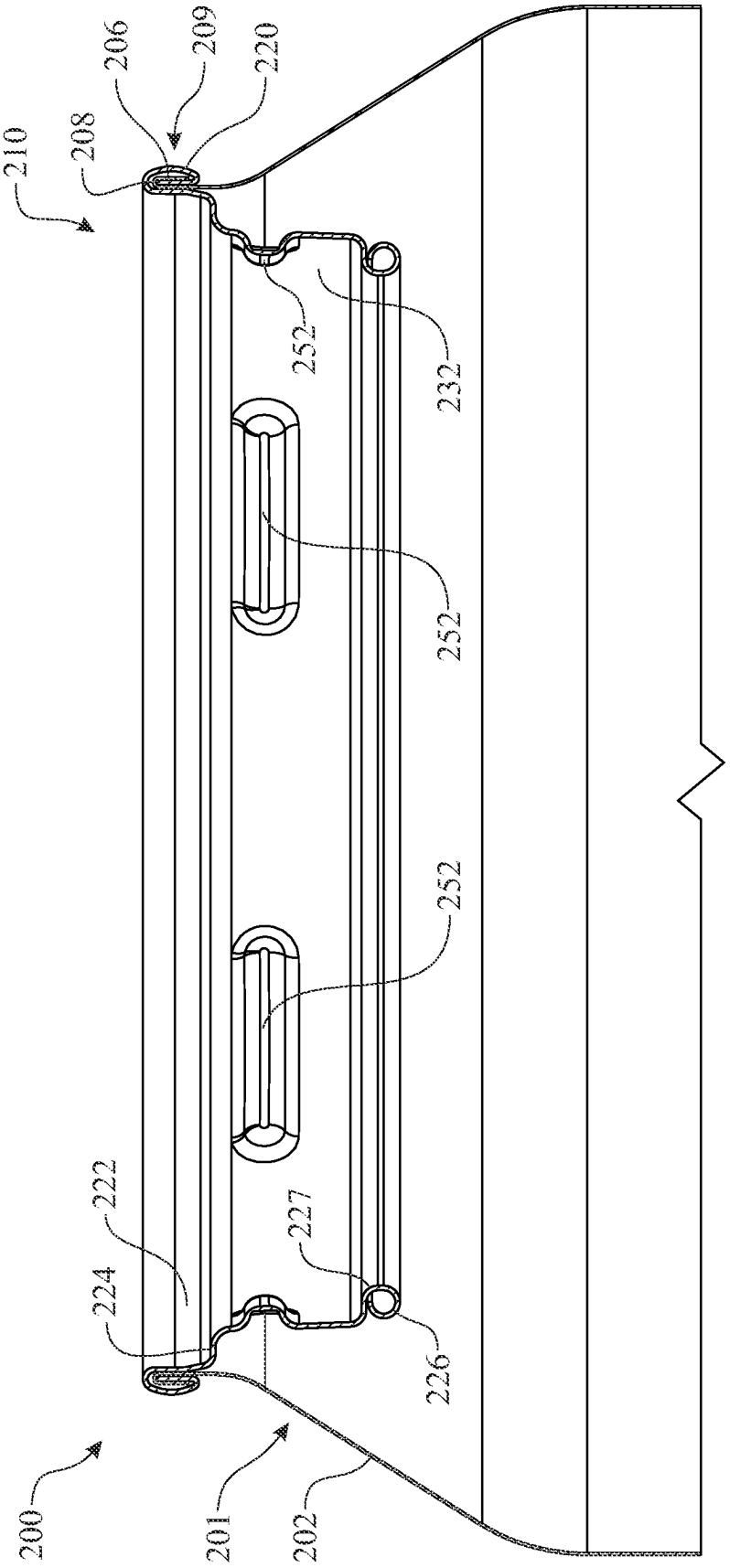



FIG. 42

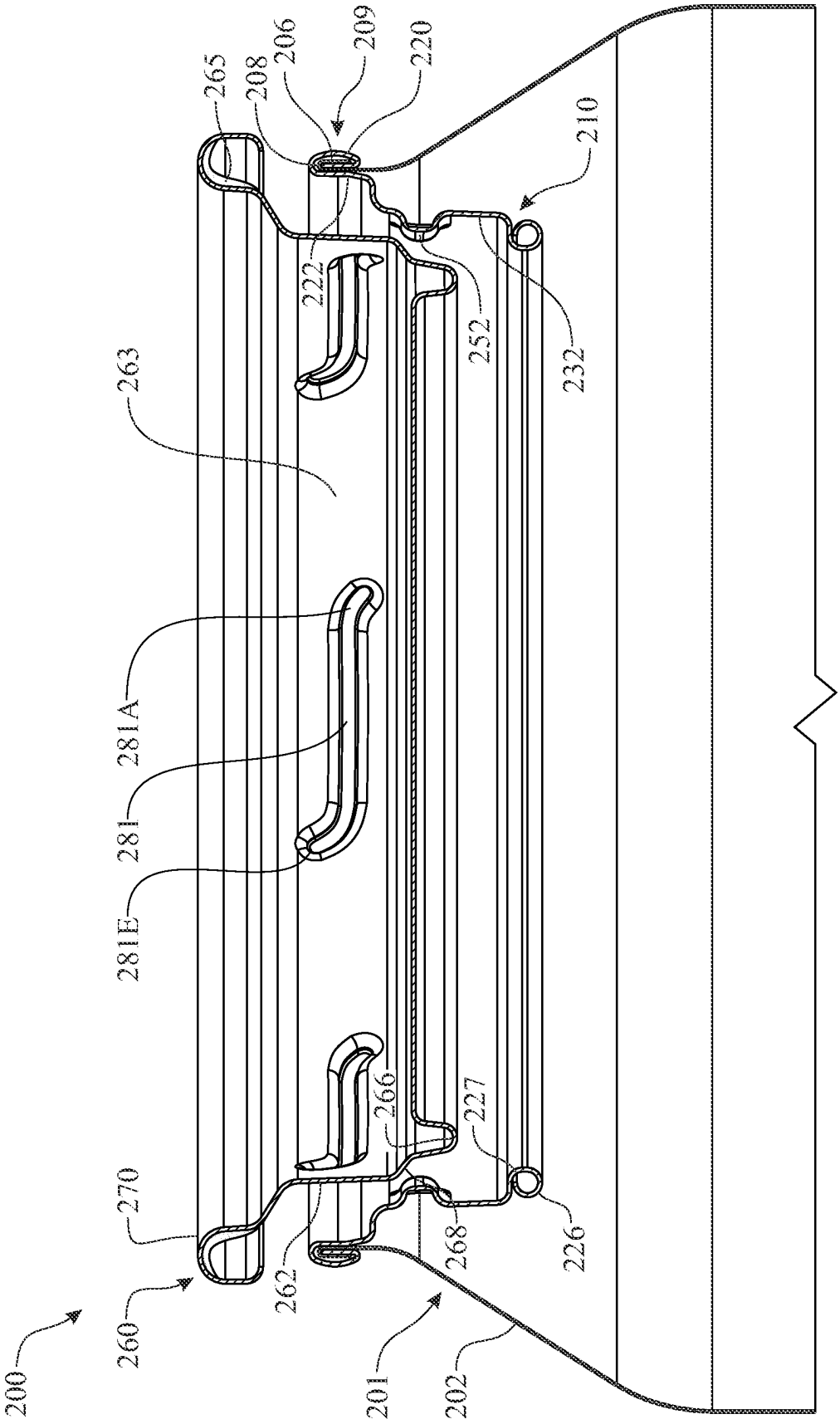
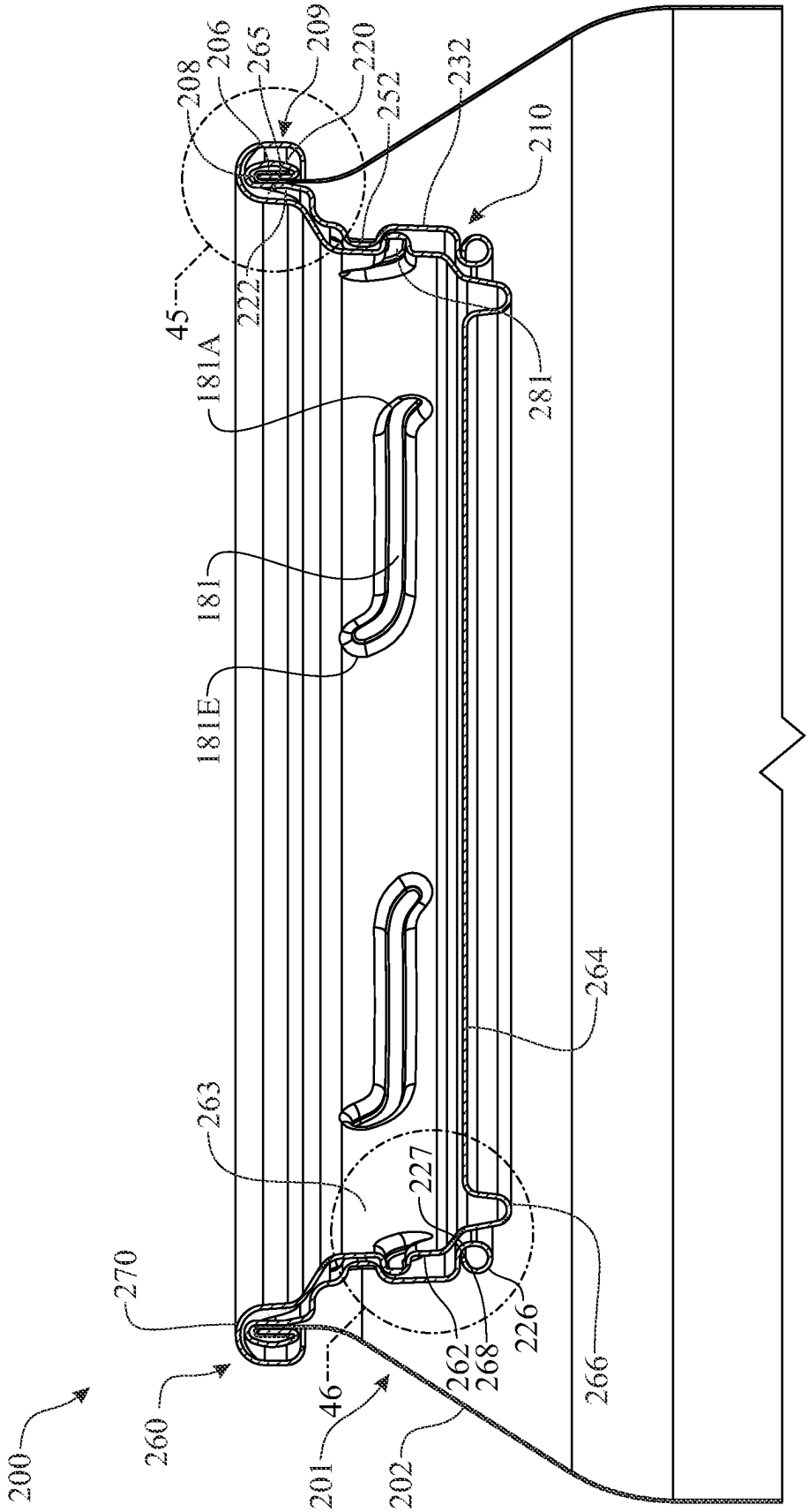

200
260
270
262
263
265
208
206
209
220
210
222
252
232
281A
281
281E
266
227
268
226
201
202

FIG. 43


208
206
265
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220
252
232
210
222
45
181A
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181E
264
263
227
270
226
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268
266
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260
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202

FIG. 44

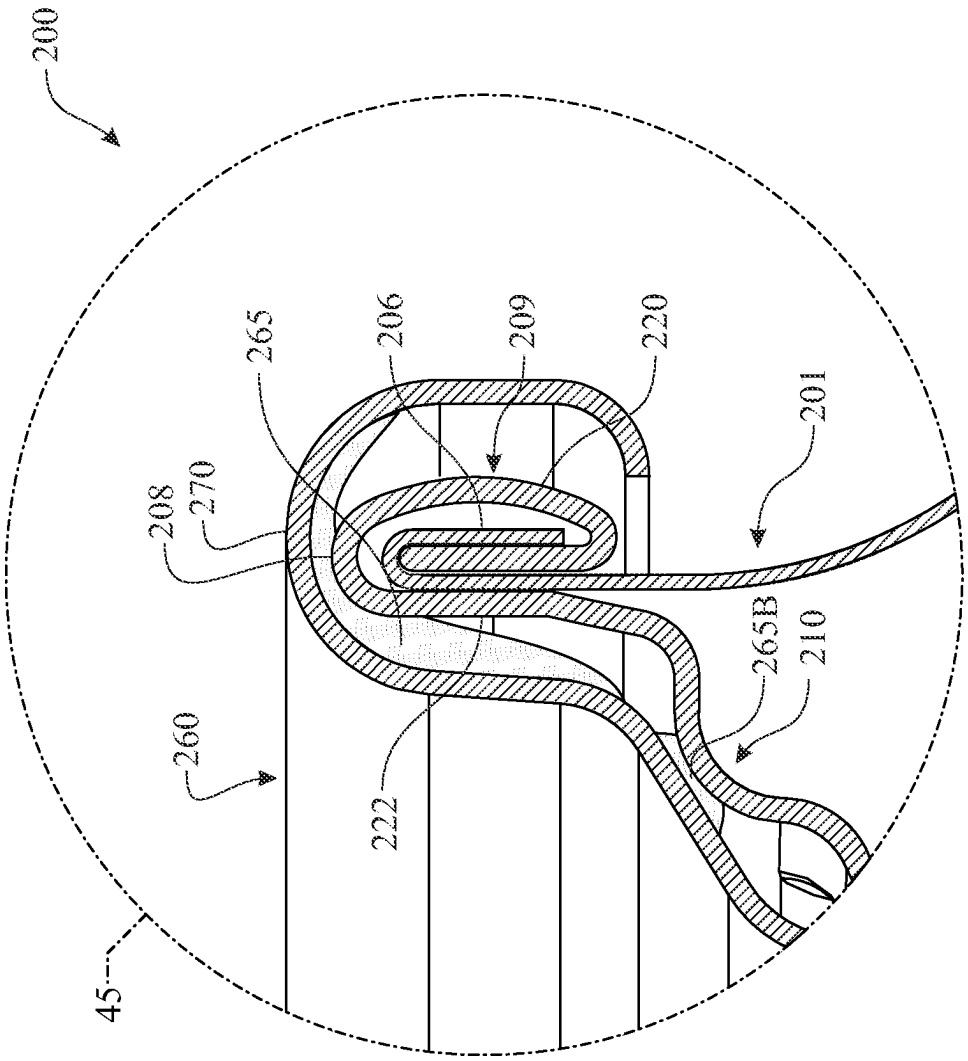



FIG. 45

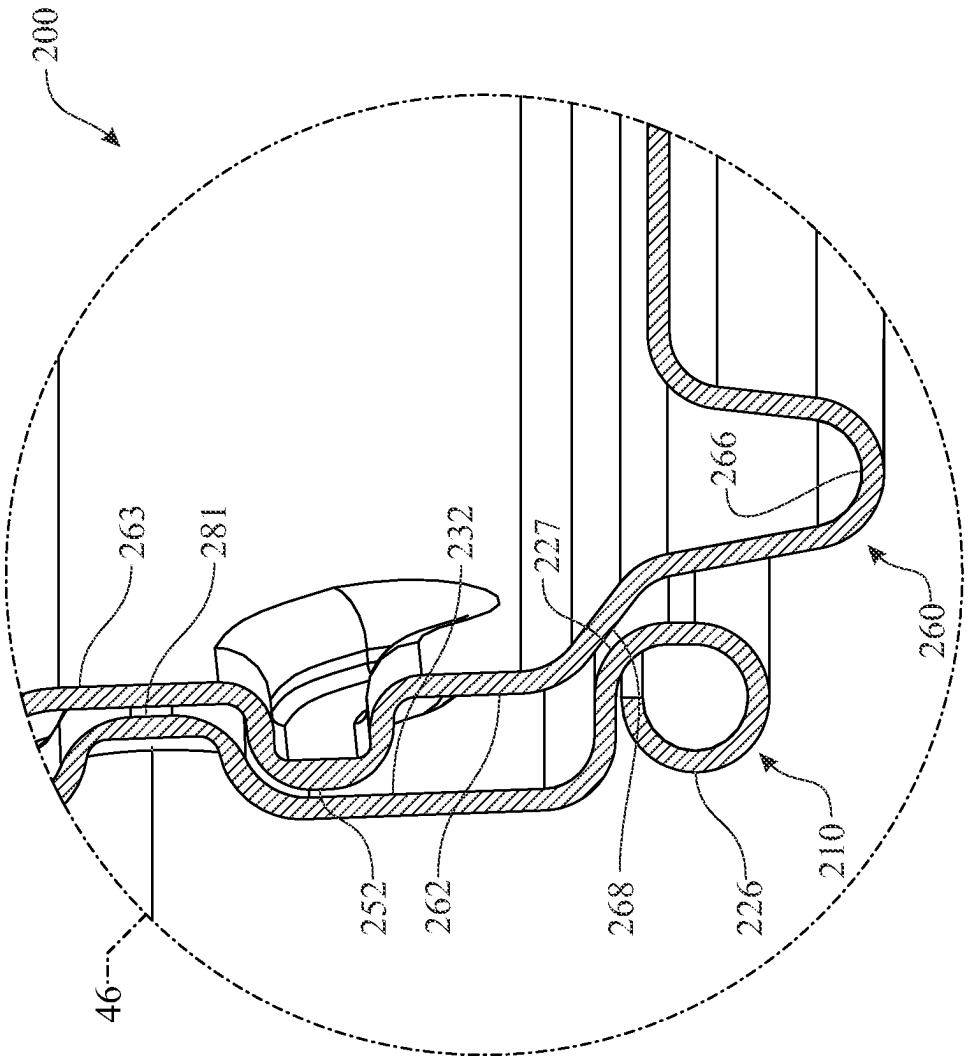



FIG. 46

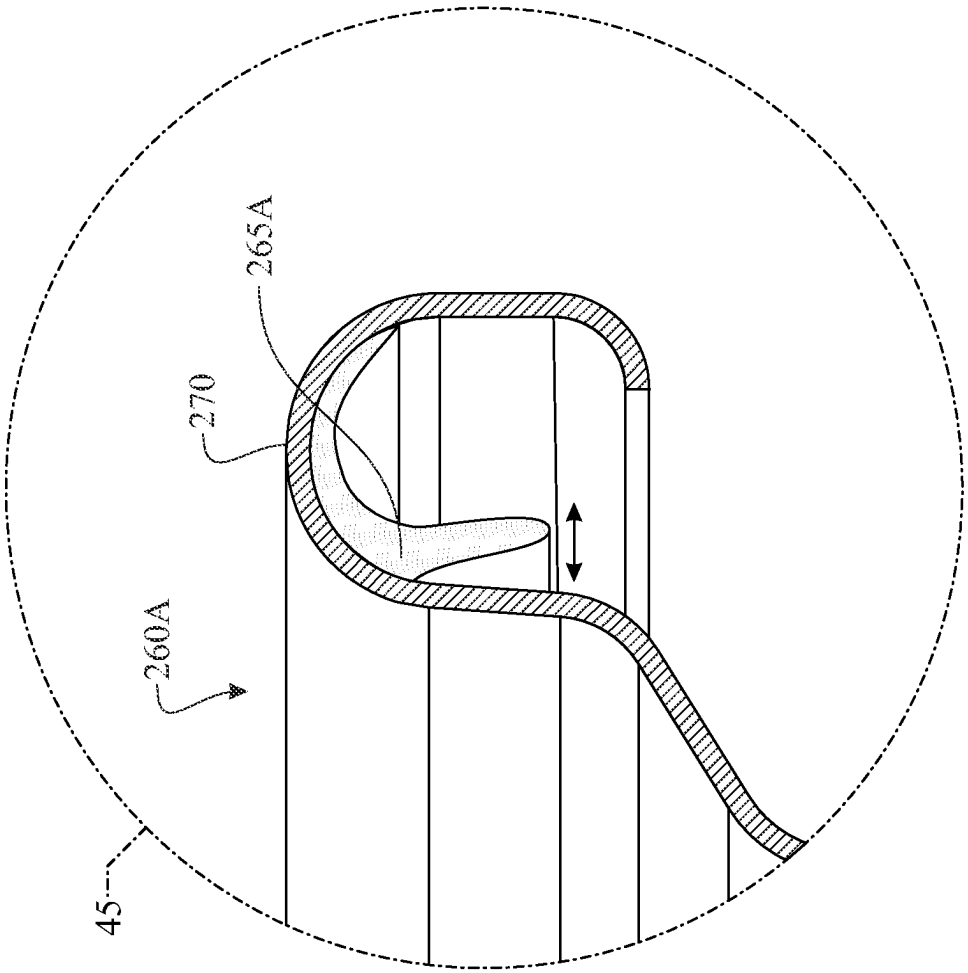



FIG. 47

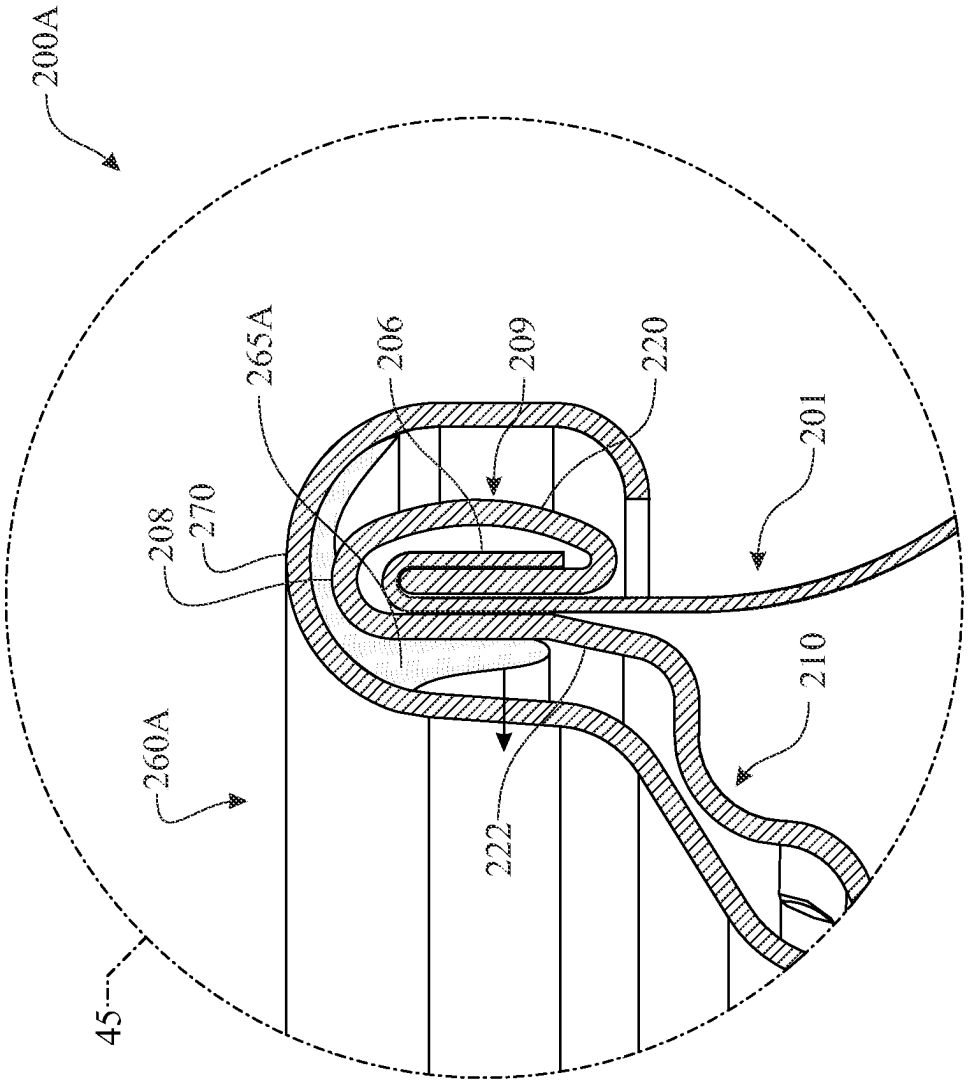



FIG. 48

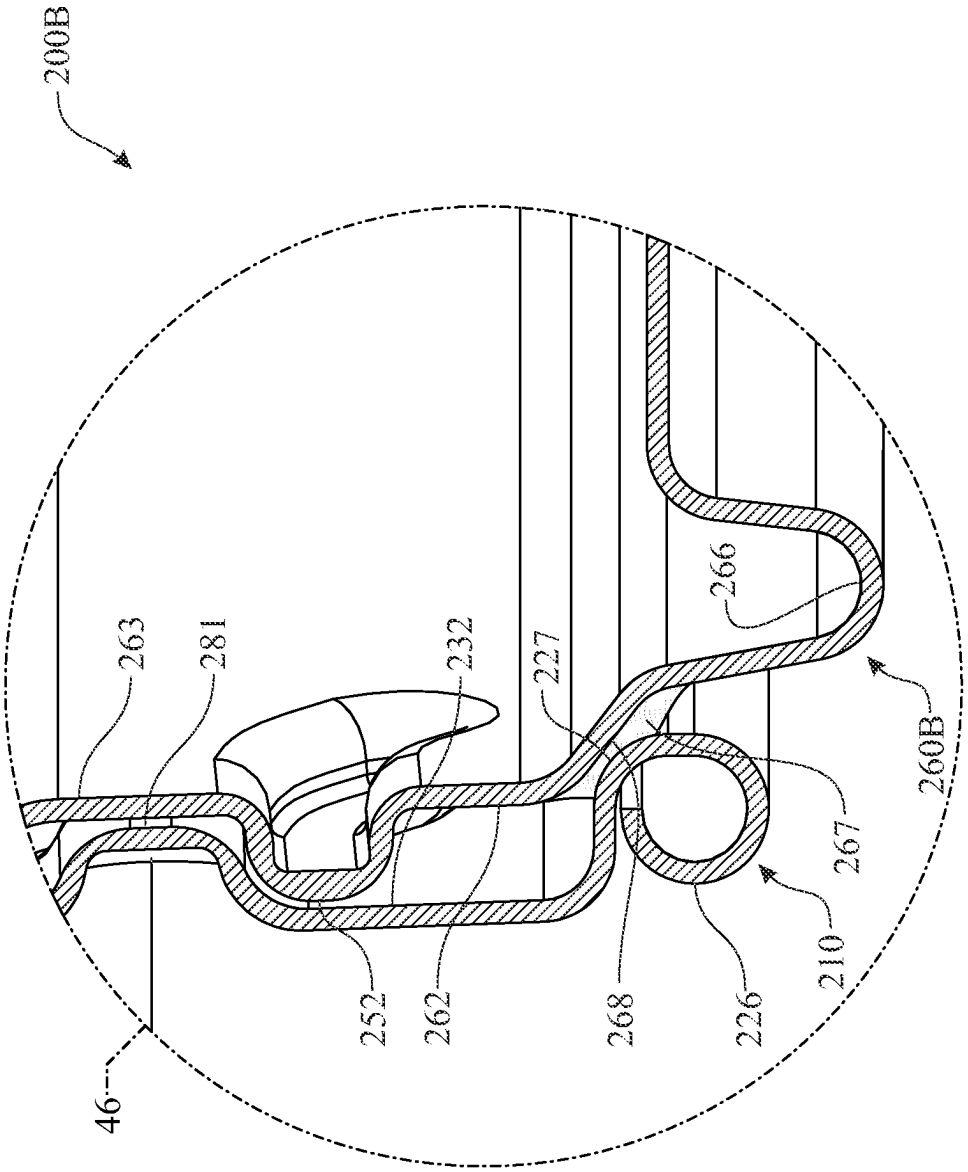



FIG. 49

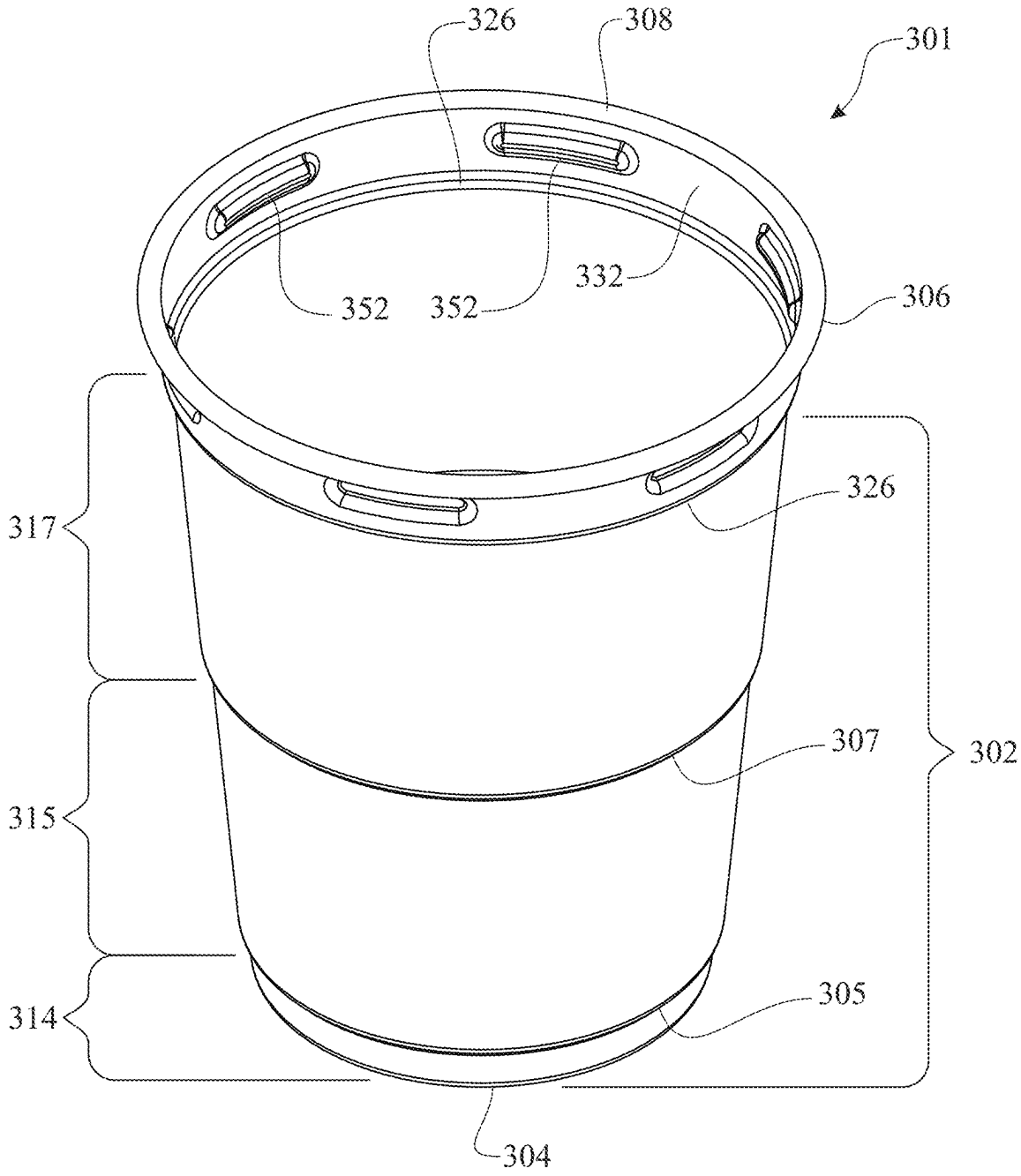



*FIG. 50*

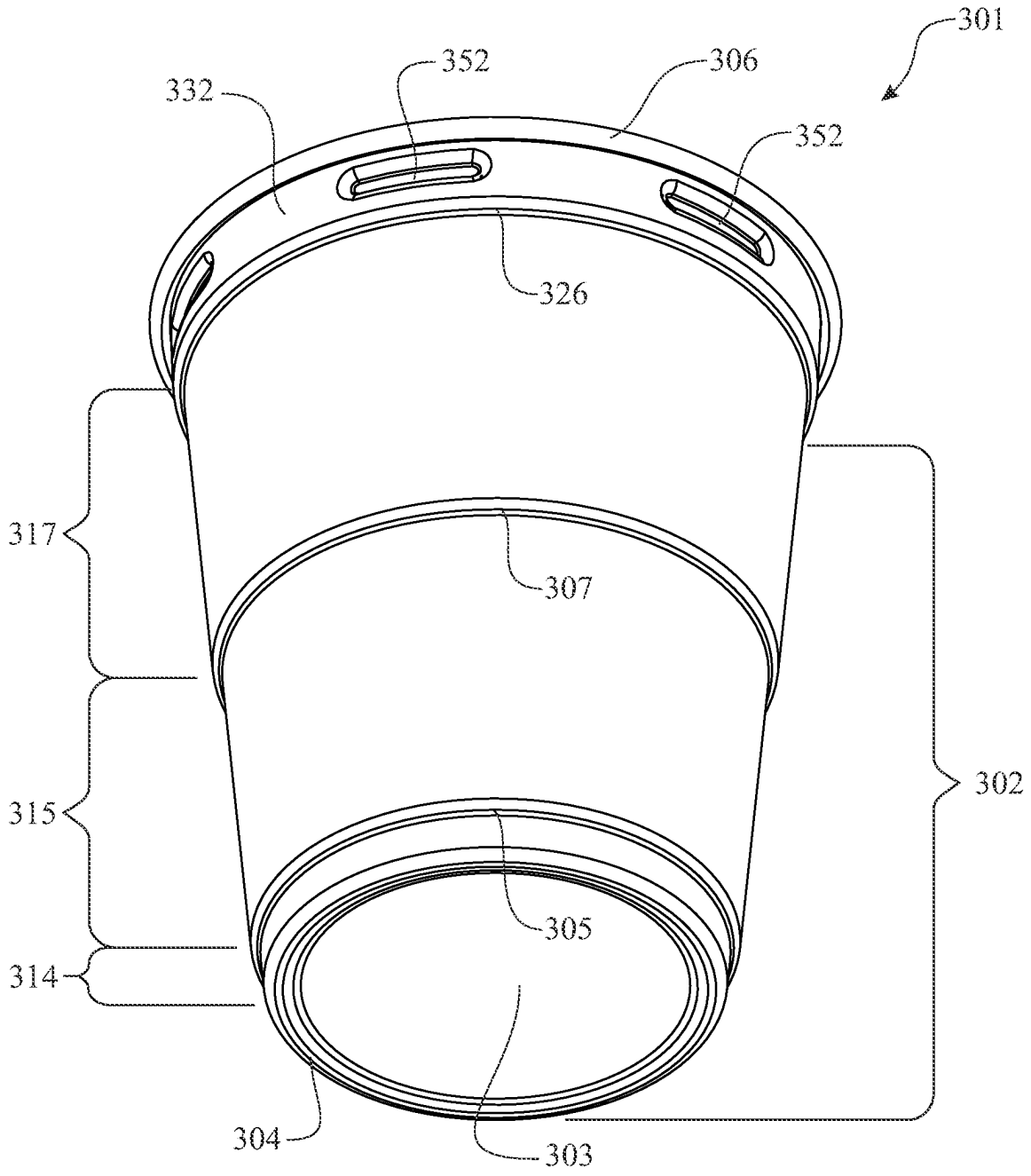



*FIG. 51*

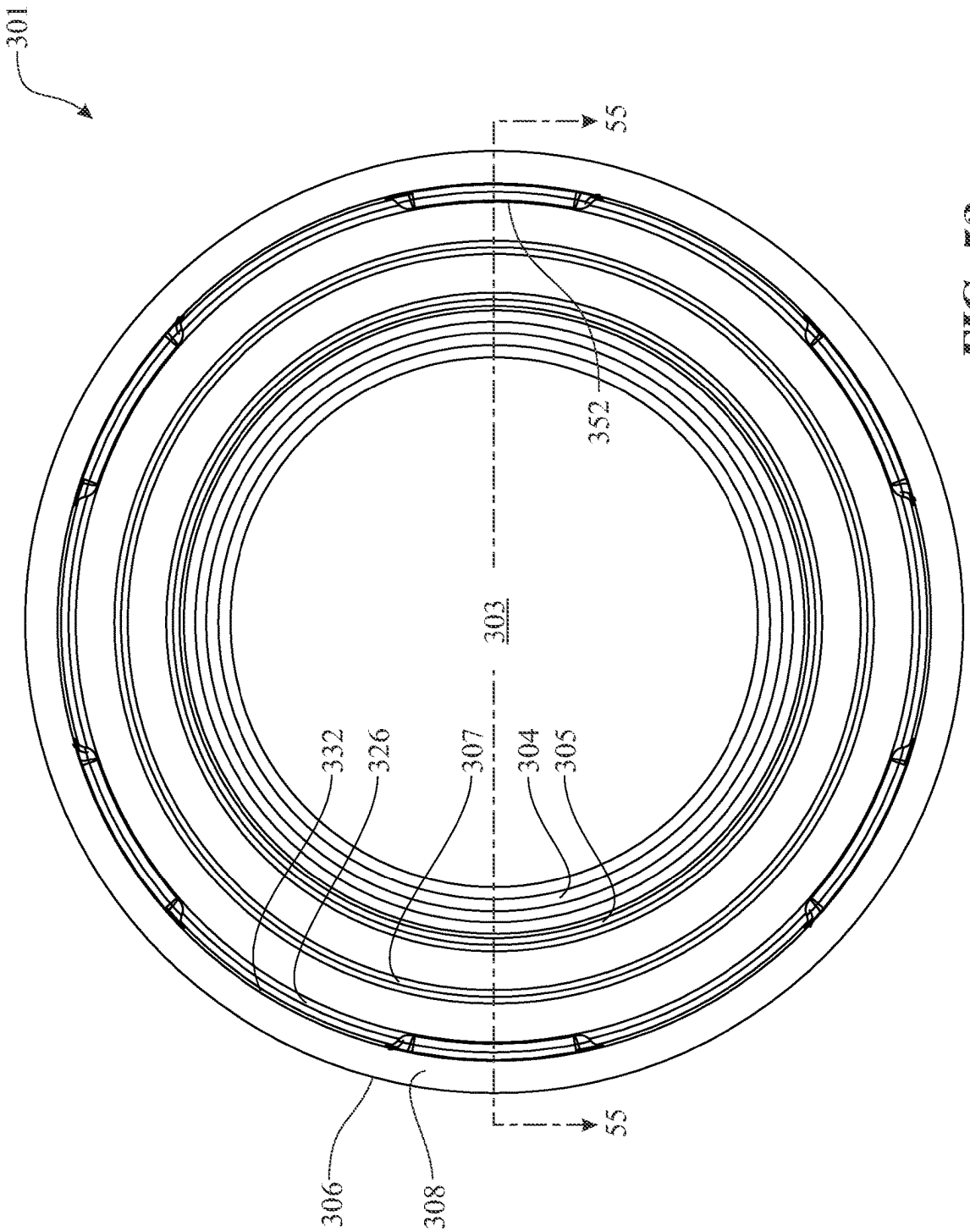



FIG. 52

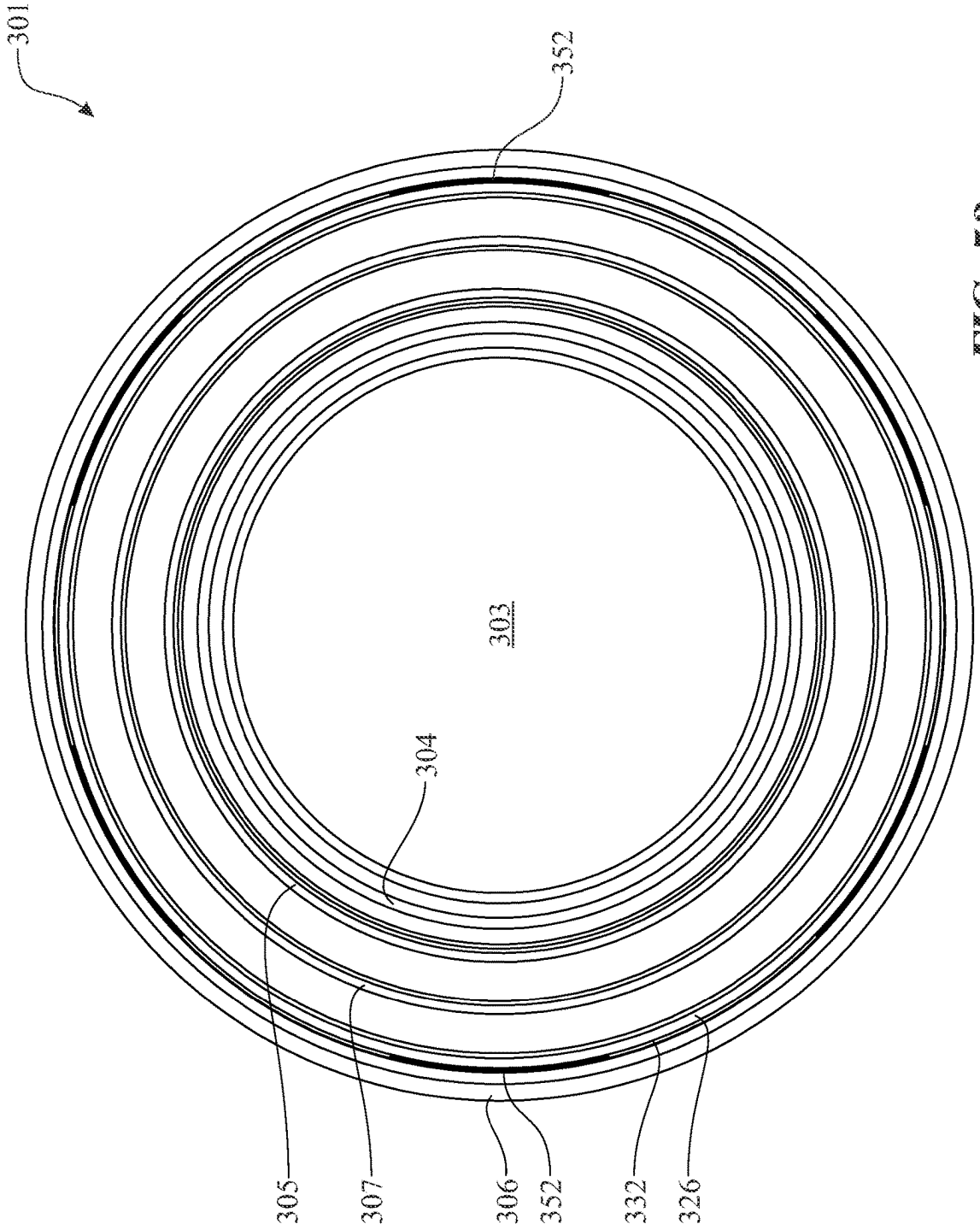



FIG. 53

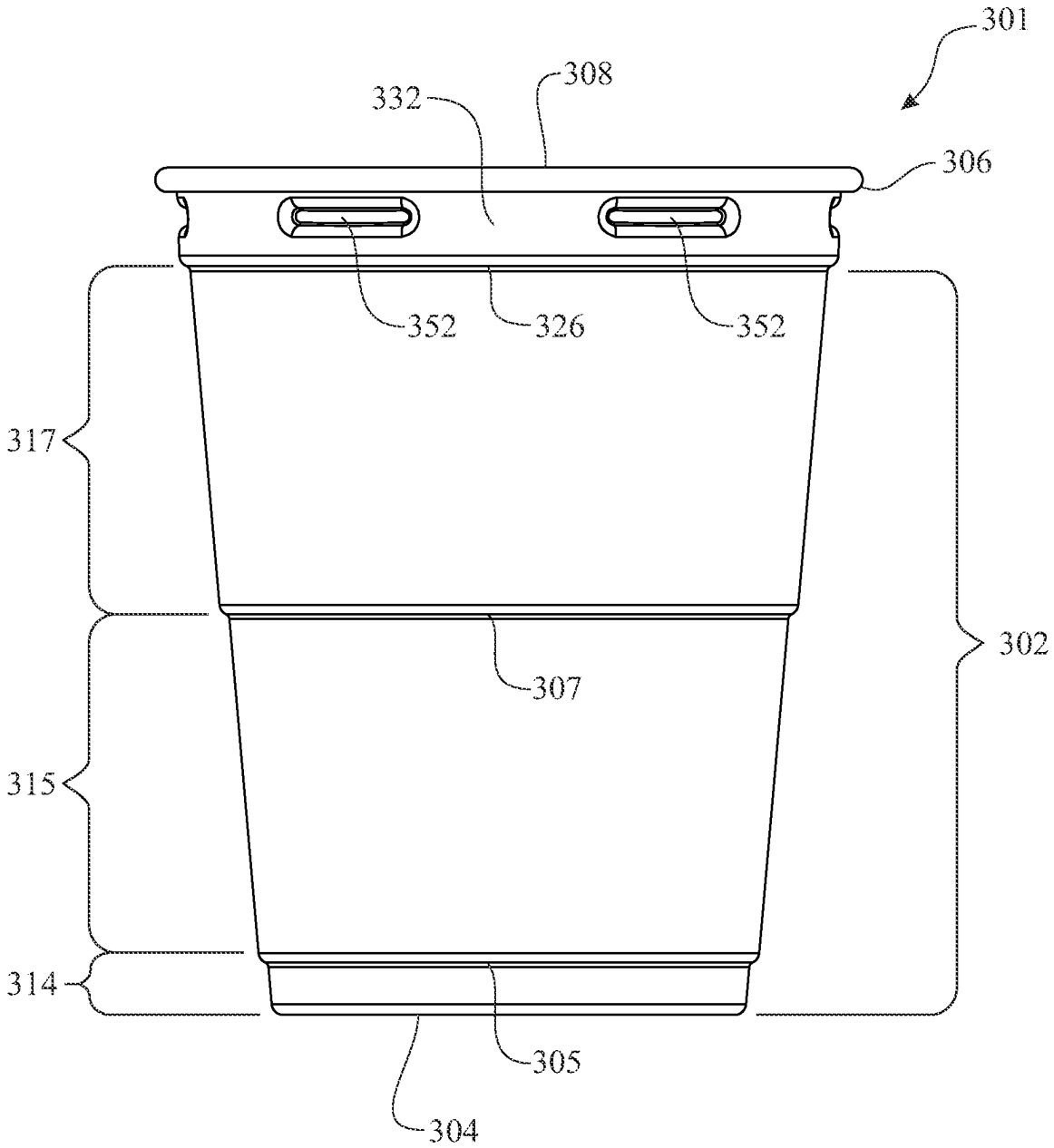



*FIG. 54*

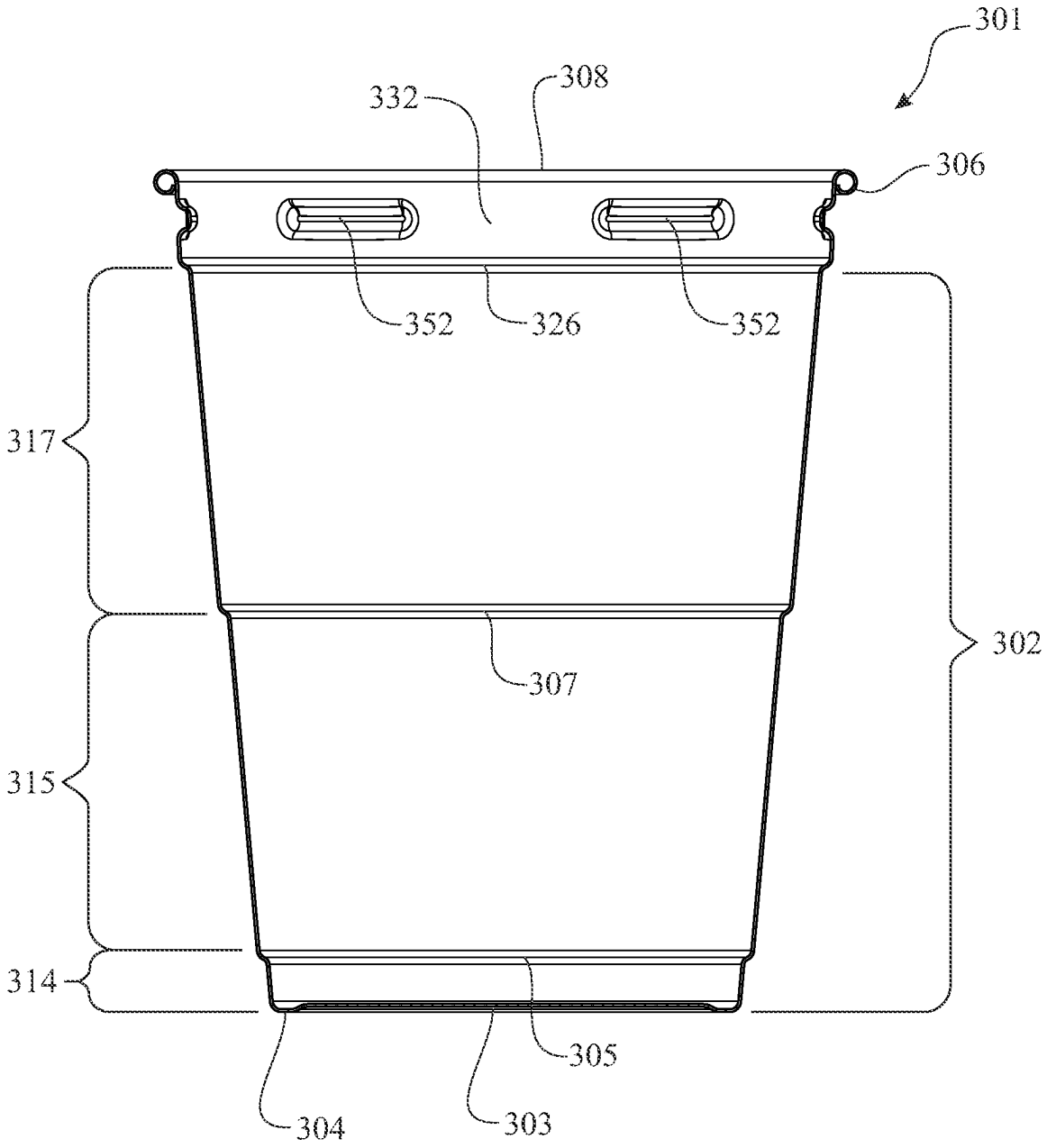
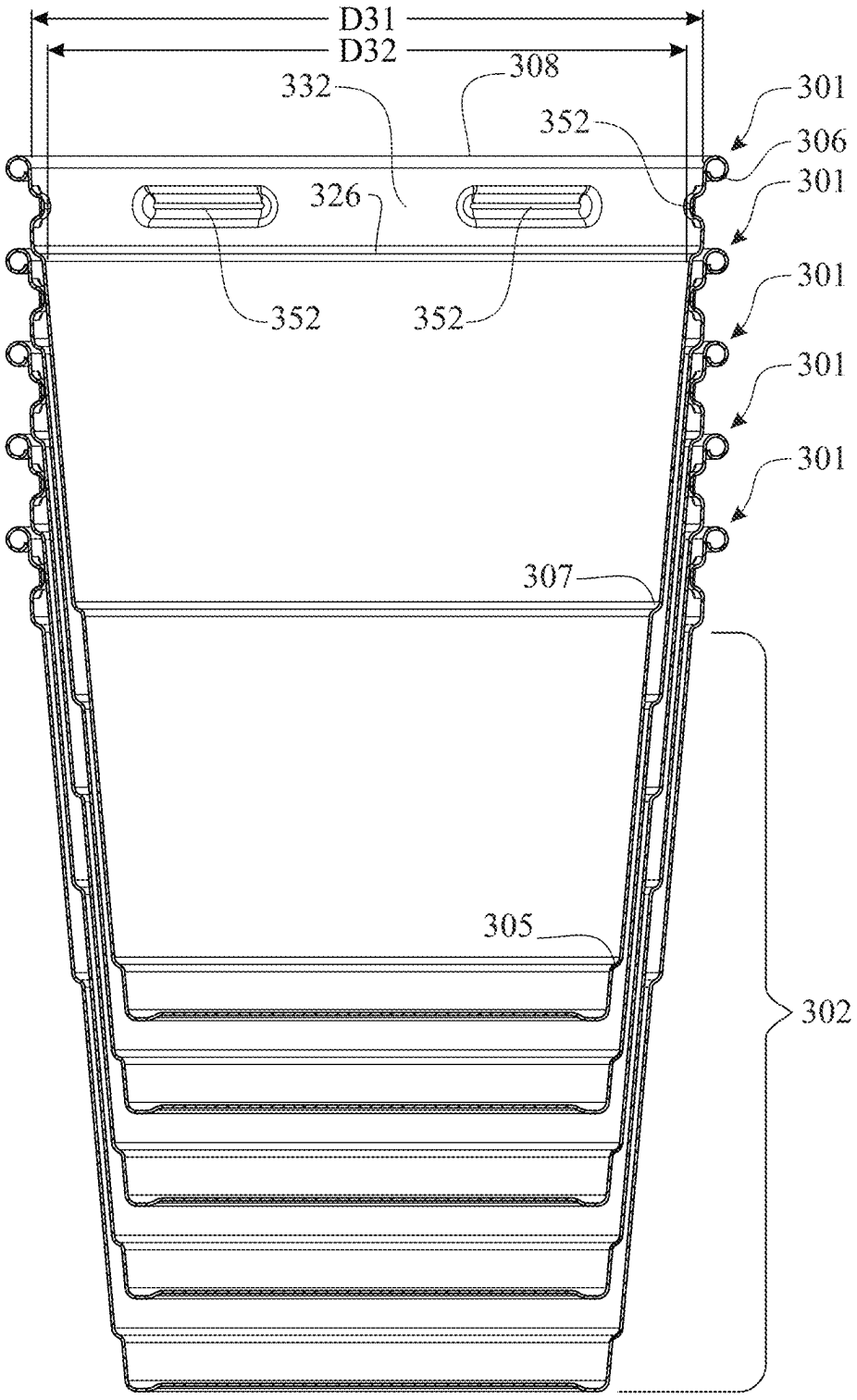



*FIG. 55*


D31
D32
332
308
301
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302

*FIG. 56*

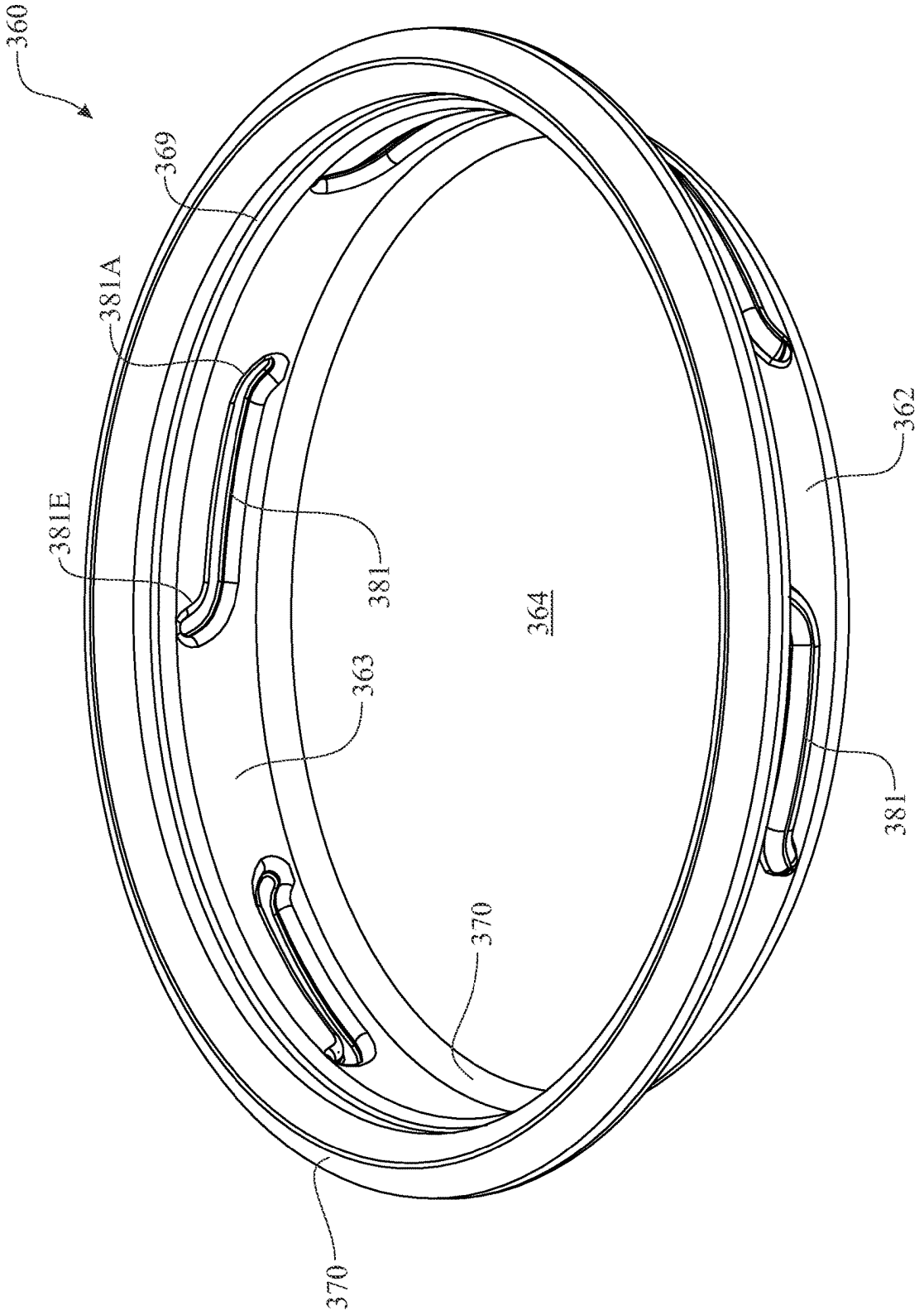



FIG. 57

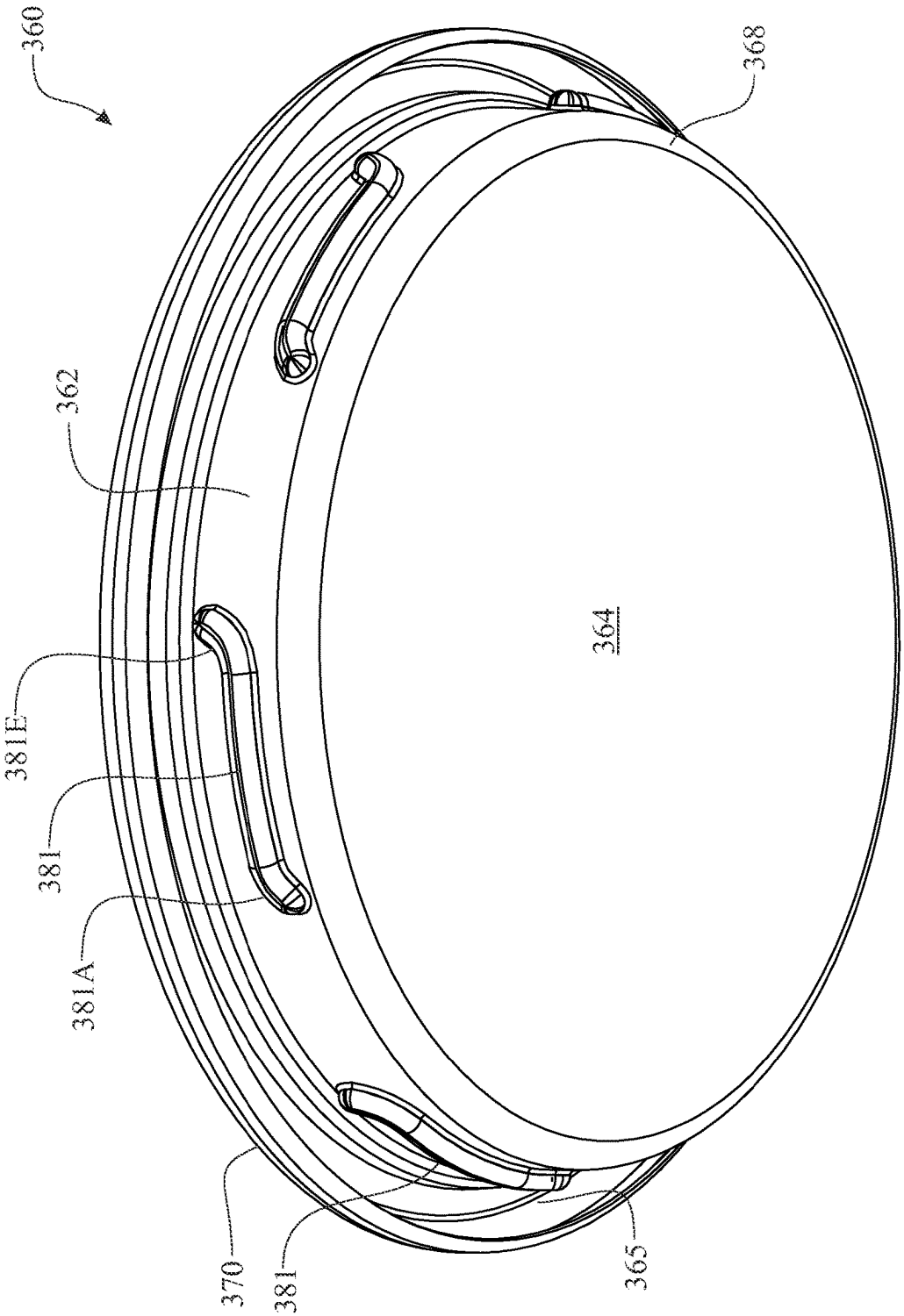



FIG. 58

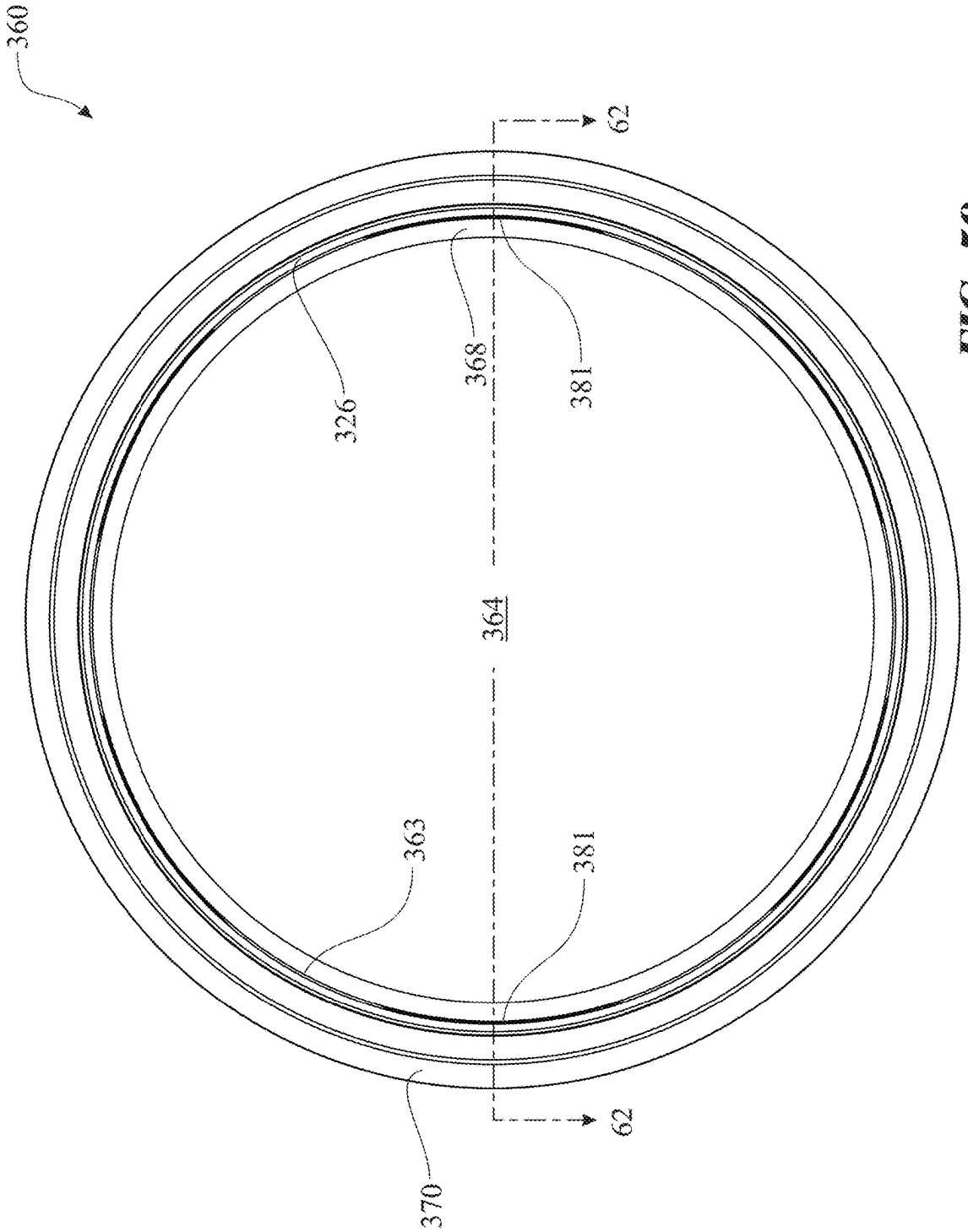



FIG. 59

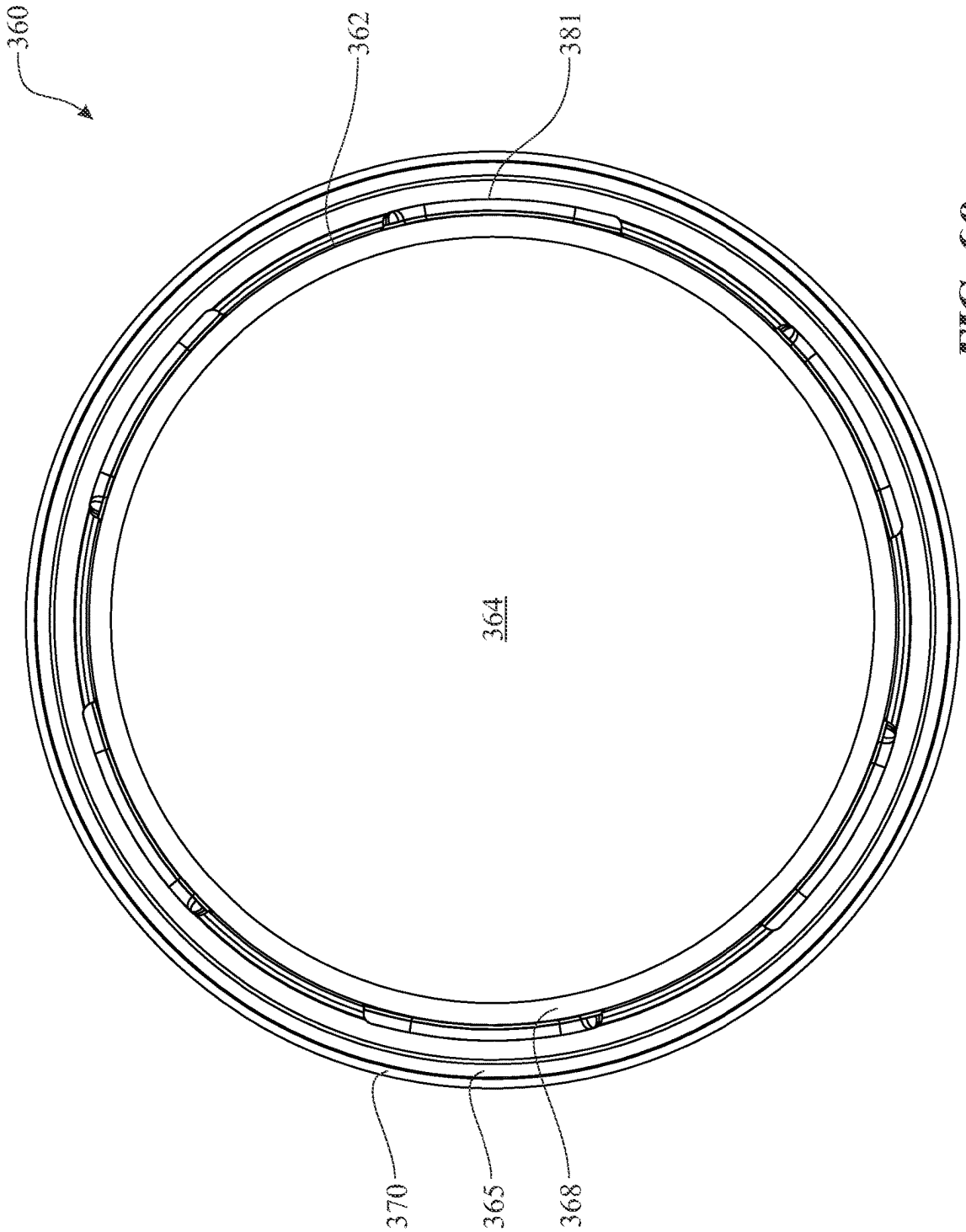



FIG. 60

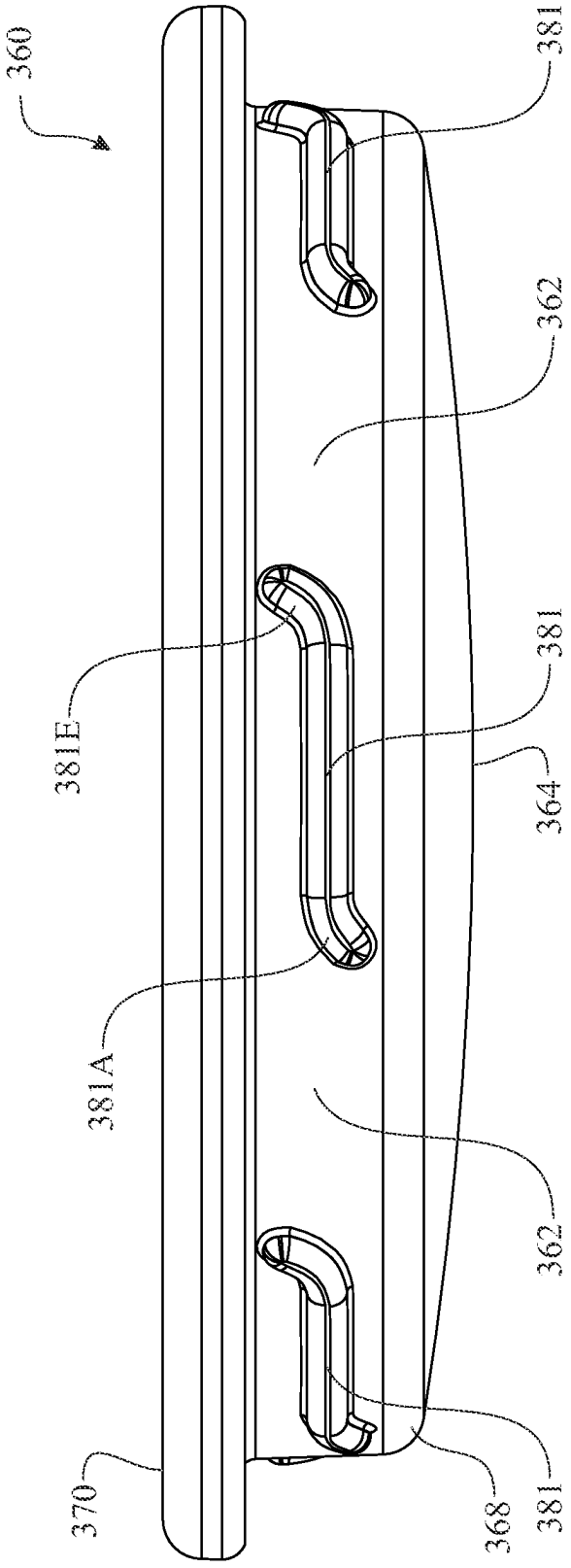



FIG. 61

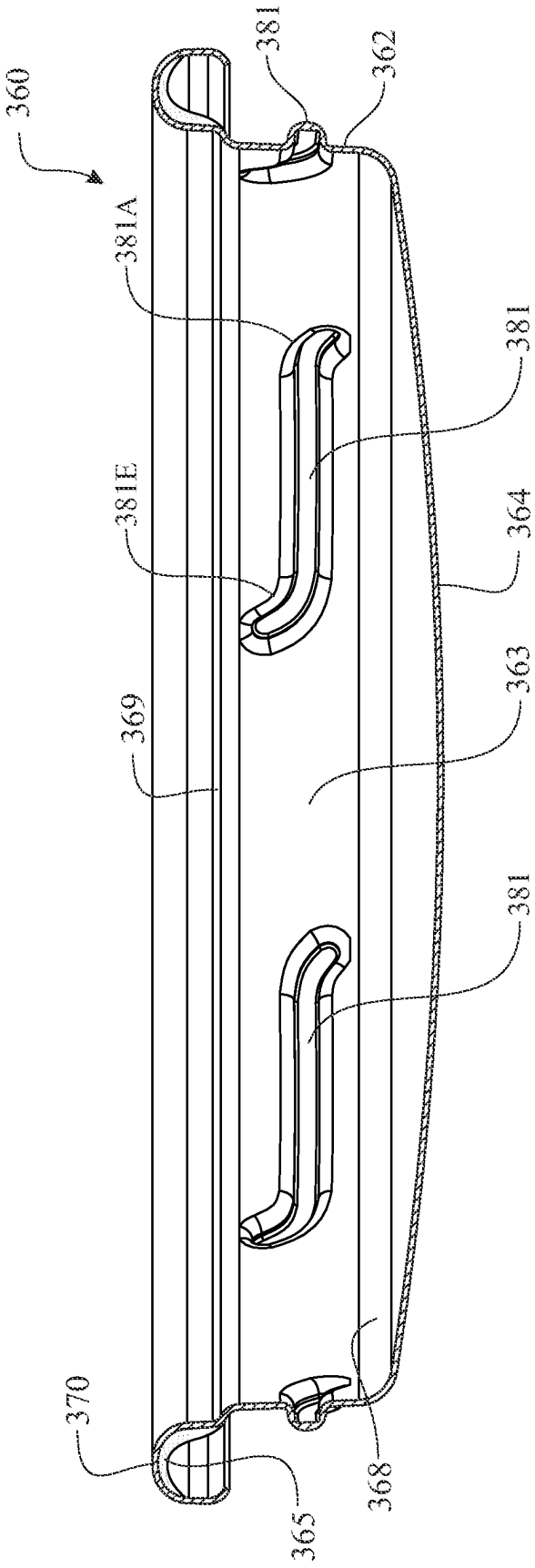



FIG. 62

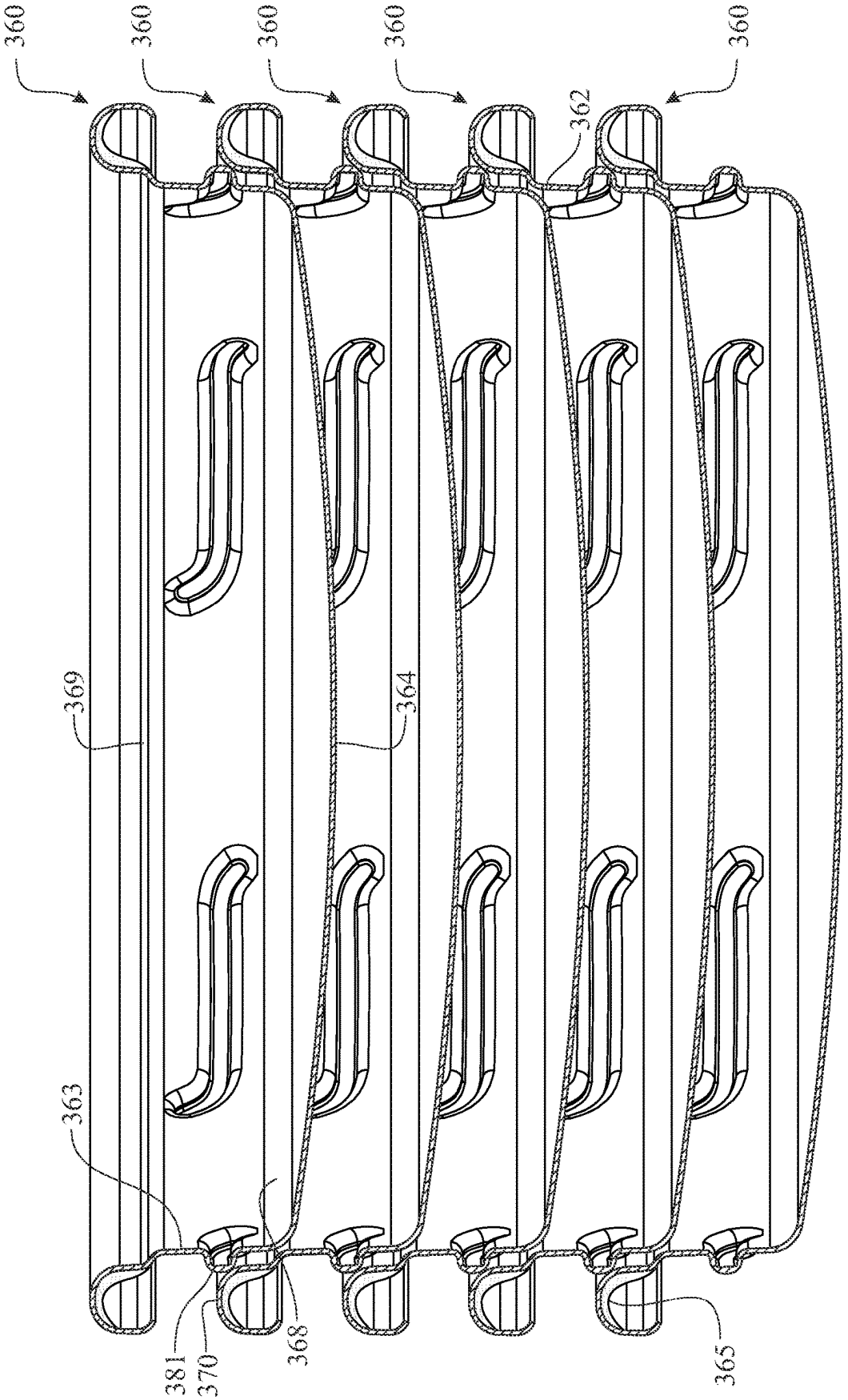
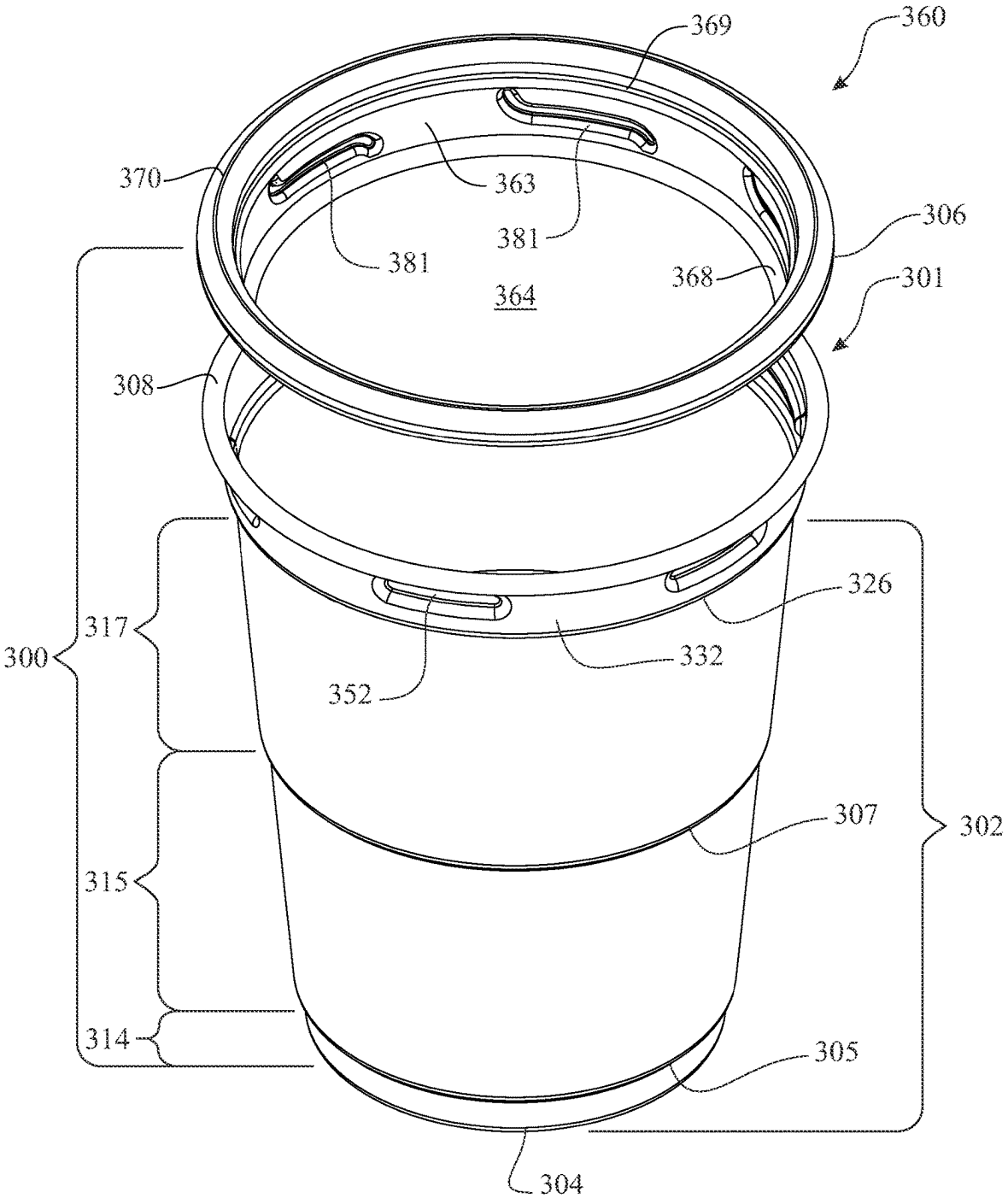



FIG. 63


369
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363
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308
326
317
300
332
352
307
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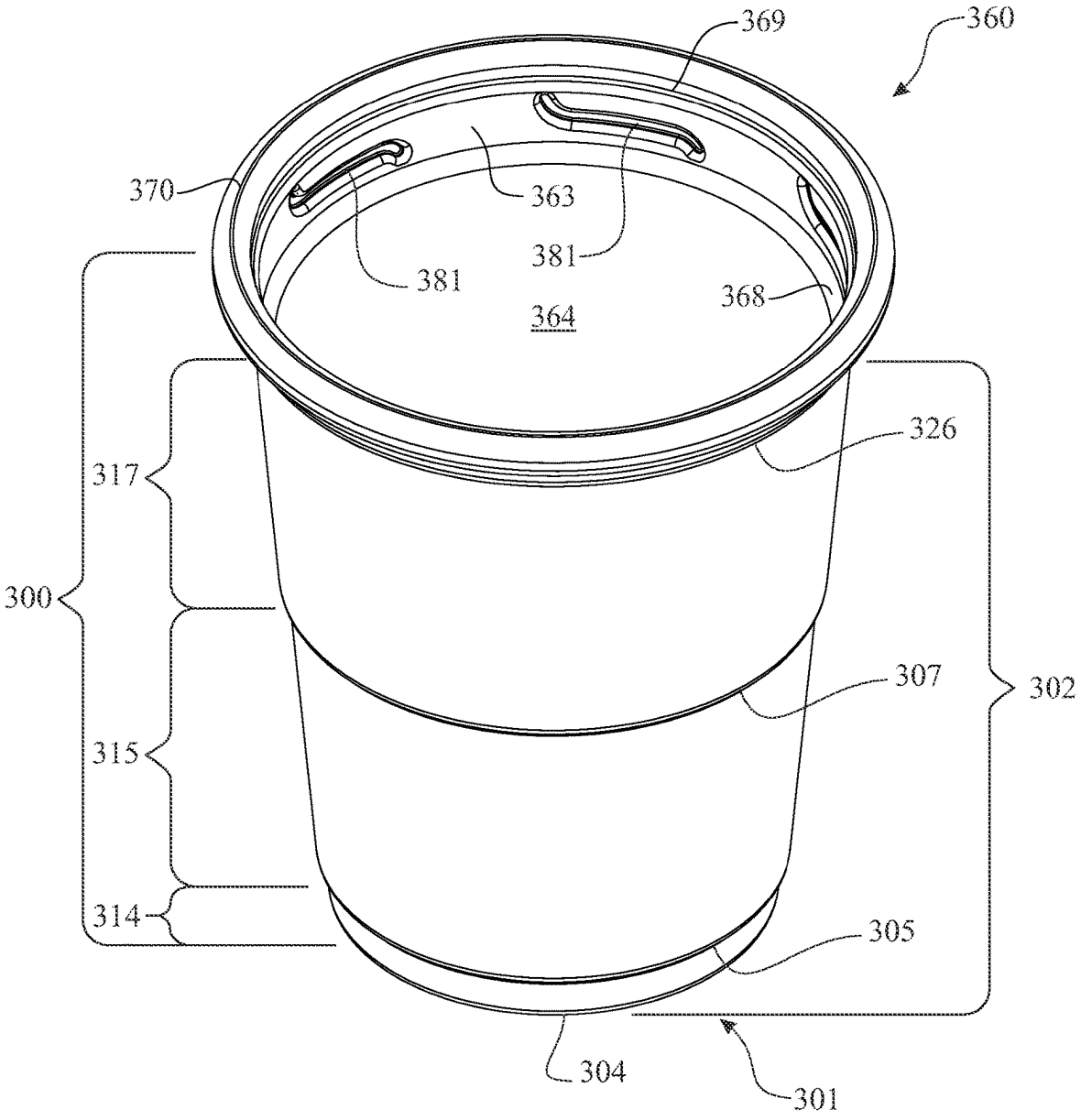
304

*FIG. 64*


369
360
370
363
381
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368
364
326
317
300
307
302
315
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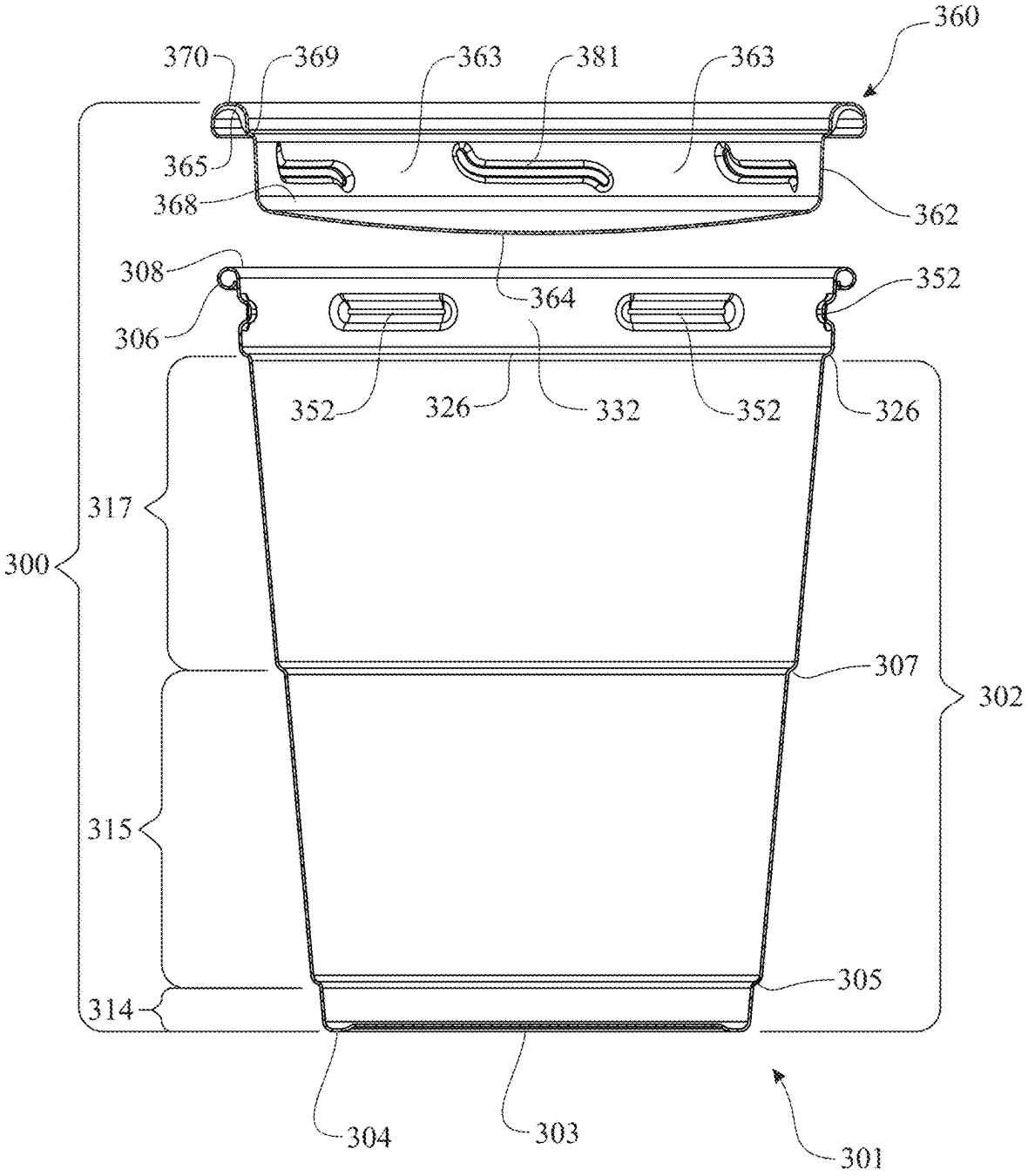
304
301

*FIG. 65*


360
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332
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315
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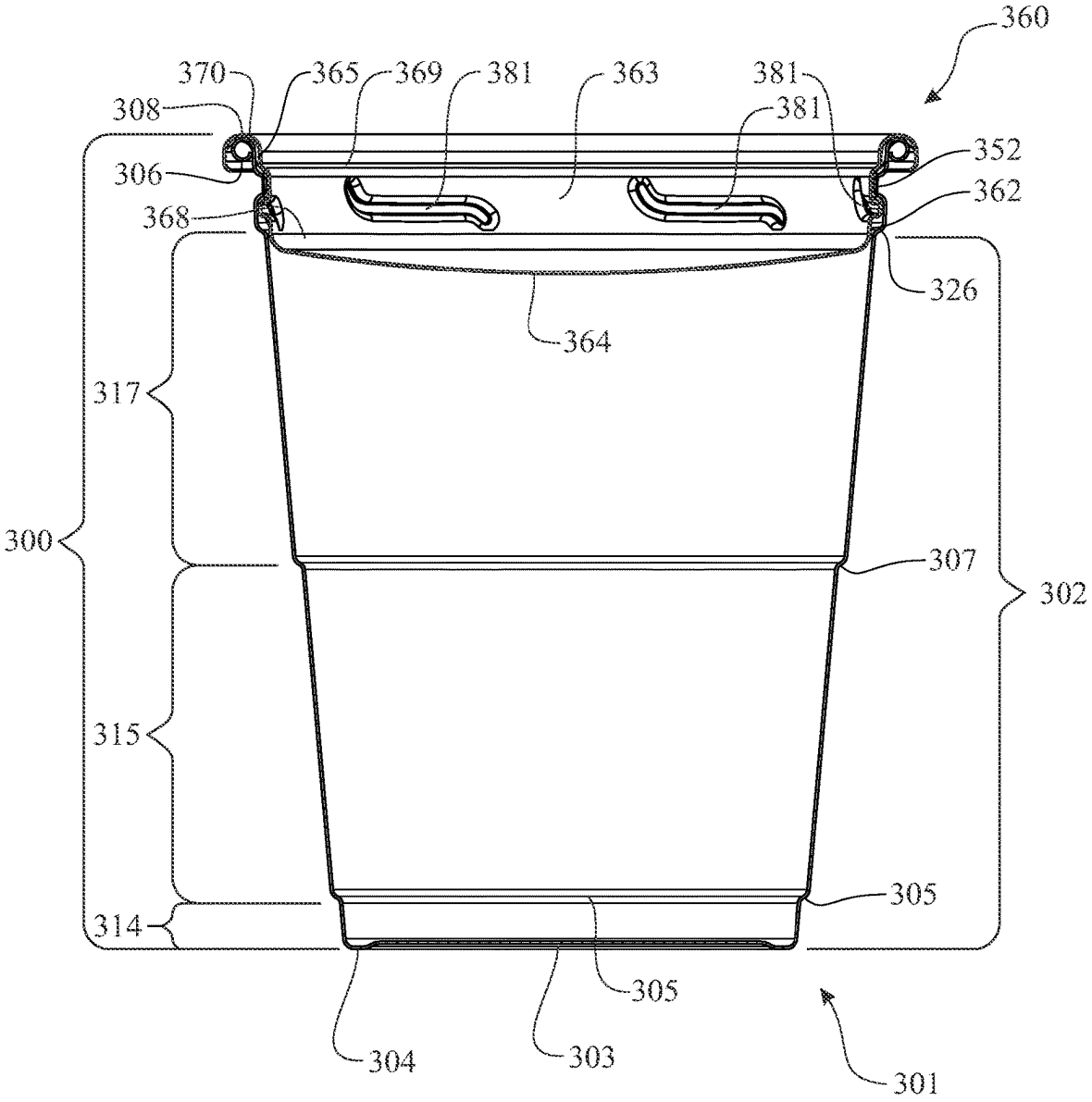
301

*FIG. 66*


360
370
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381
363
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352
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368
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*FIG. 67*

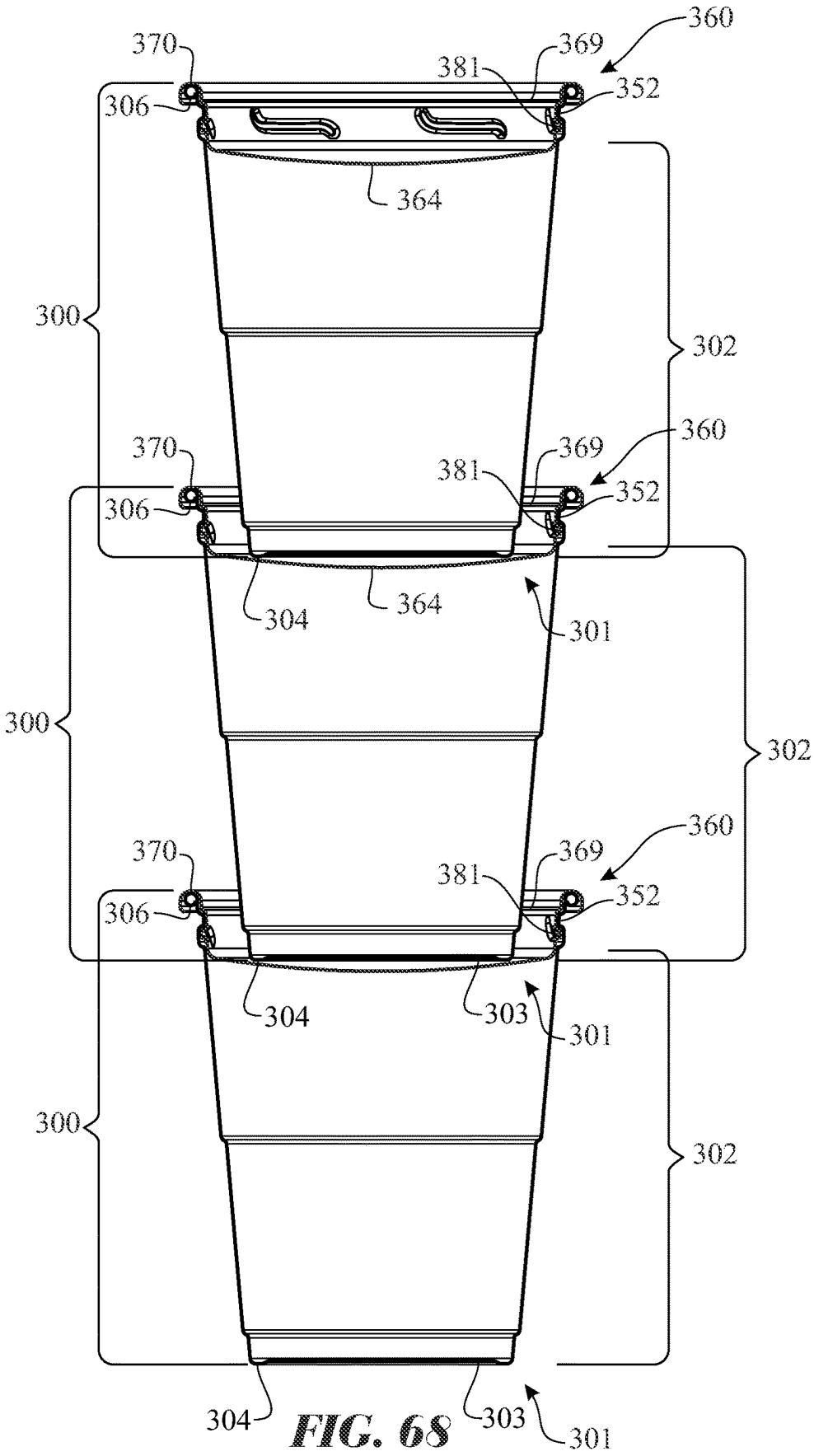

360
370
369
381
352
306
364
300
302
360
370
369
381
352
306
304
364
301
300
302
360
370
369
381
352
306
304
303
301
300
302
304
303
301

FIG. 68

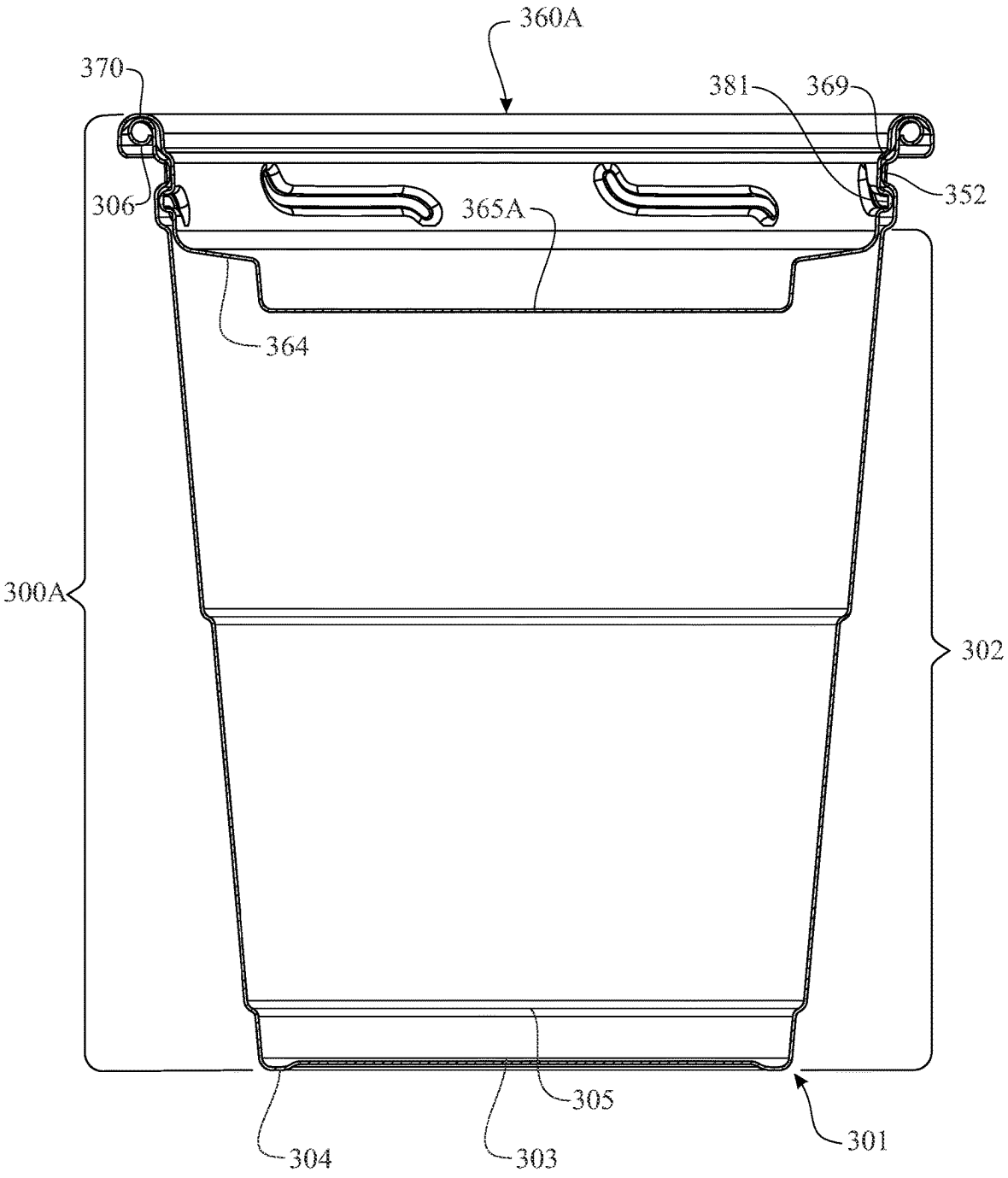



*FIG. 69*

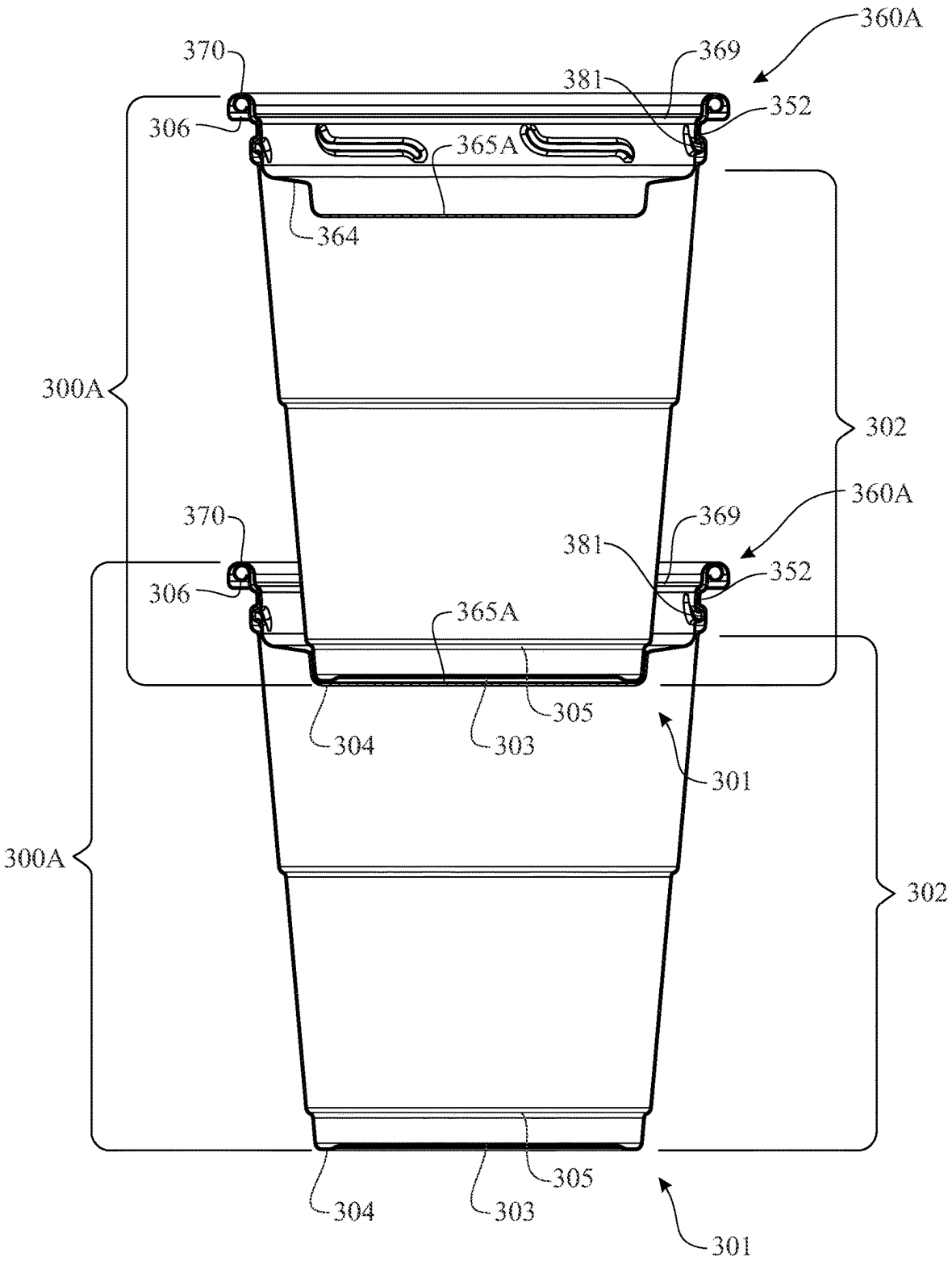

360A
370
369
381
352
306
365A
364
300A
302
360A
370
369
381
352
306
365A
305
304
303
301
300A
302
305
304
303
301

*FIG. 70*

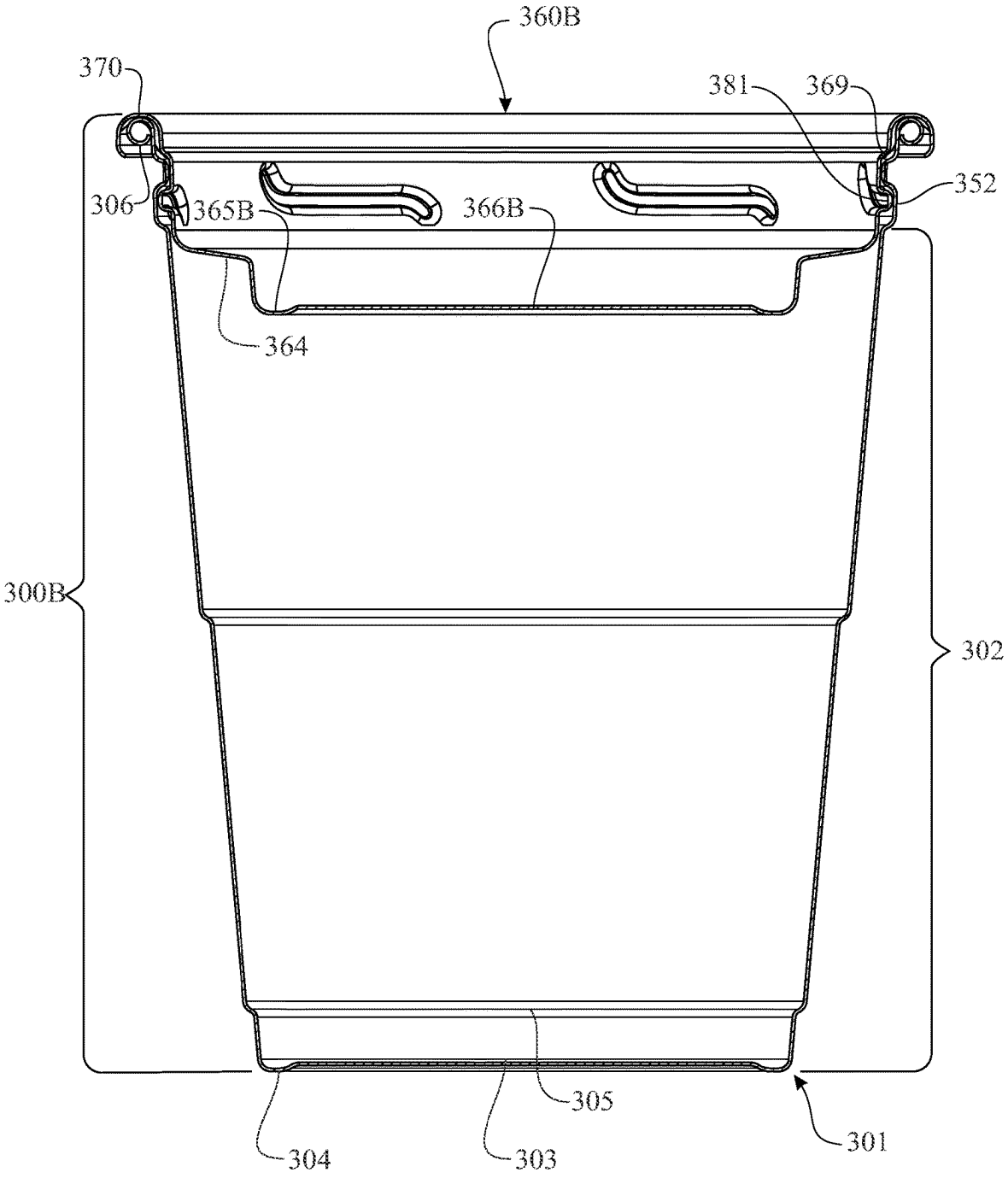



*FIG. 71*

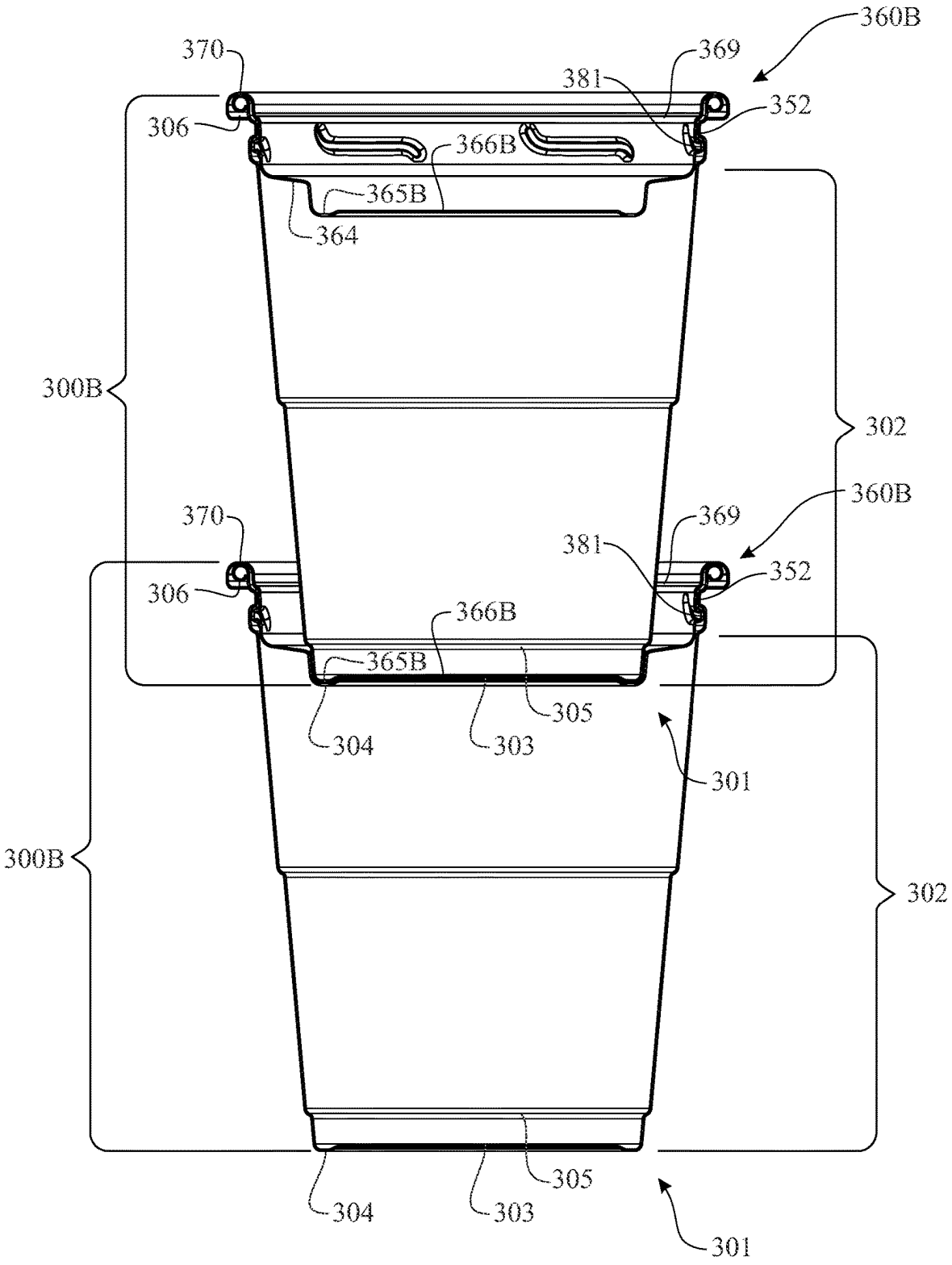

360B
370
369
381
352
306
366B
365B
364
300B
302
360B
370
369
381
352
306
366B
365B
305
304
303
301
300B
302
305
304
303
301

*FIG. 72*

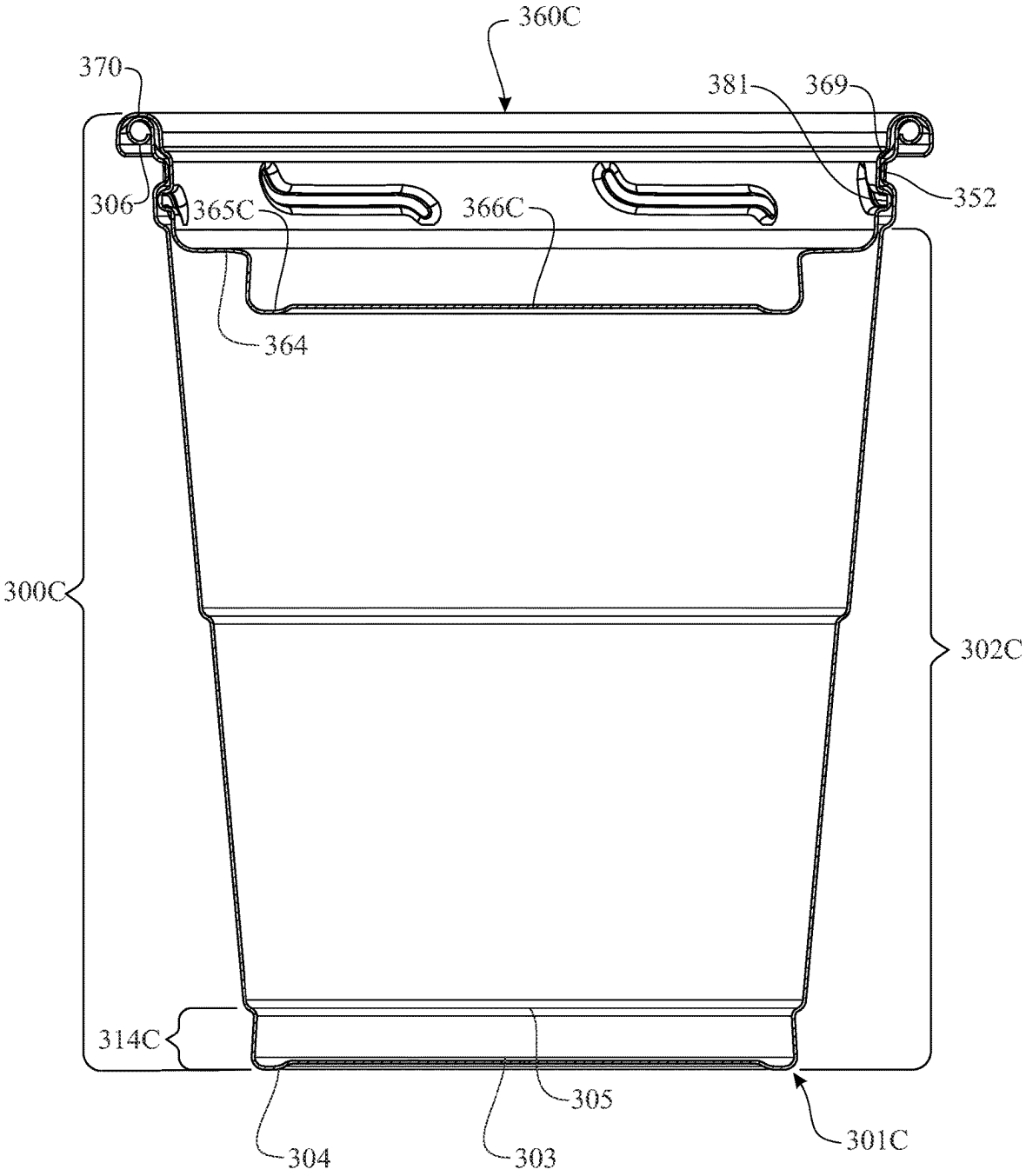

360C
370
381
369
306
365C
366C
352
364
300C
302C
314C
305
304
303
301C

*FIG. 73*

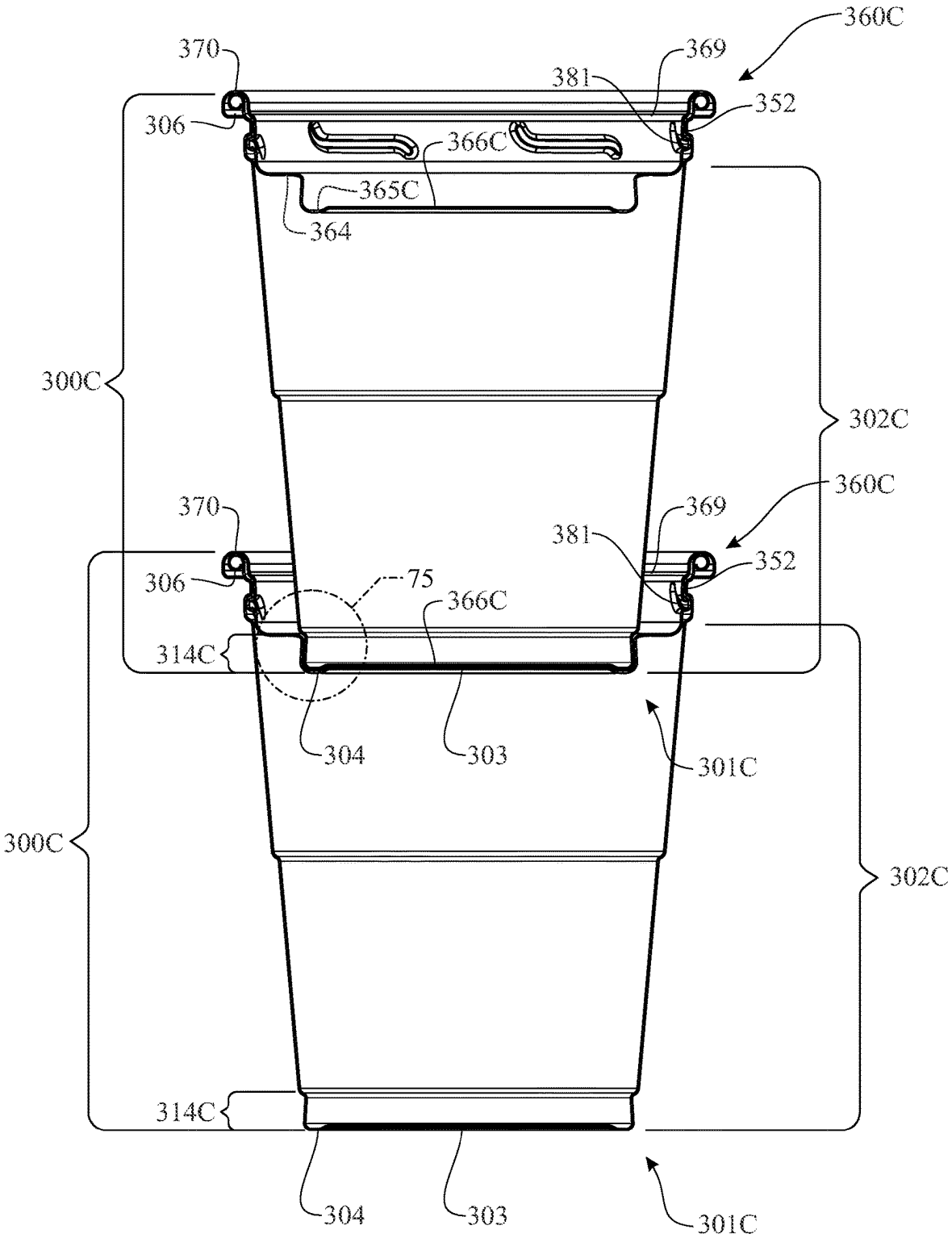

360C
370
369
381
352
306
366C
365C
364
300C
302C
360C
370
369
381
352
306
75
366C
314C
304
303
301C
300C
302C
314C
304
303
301C

*FIG. 74*

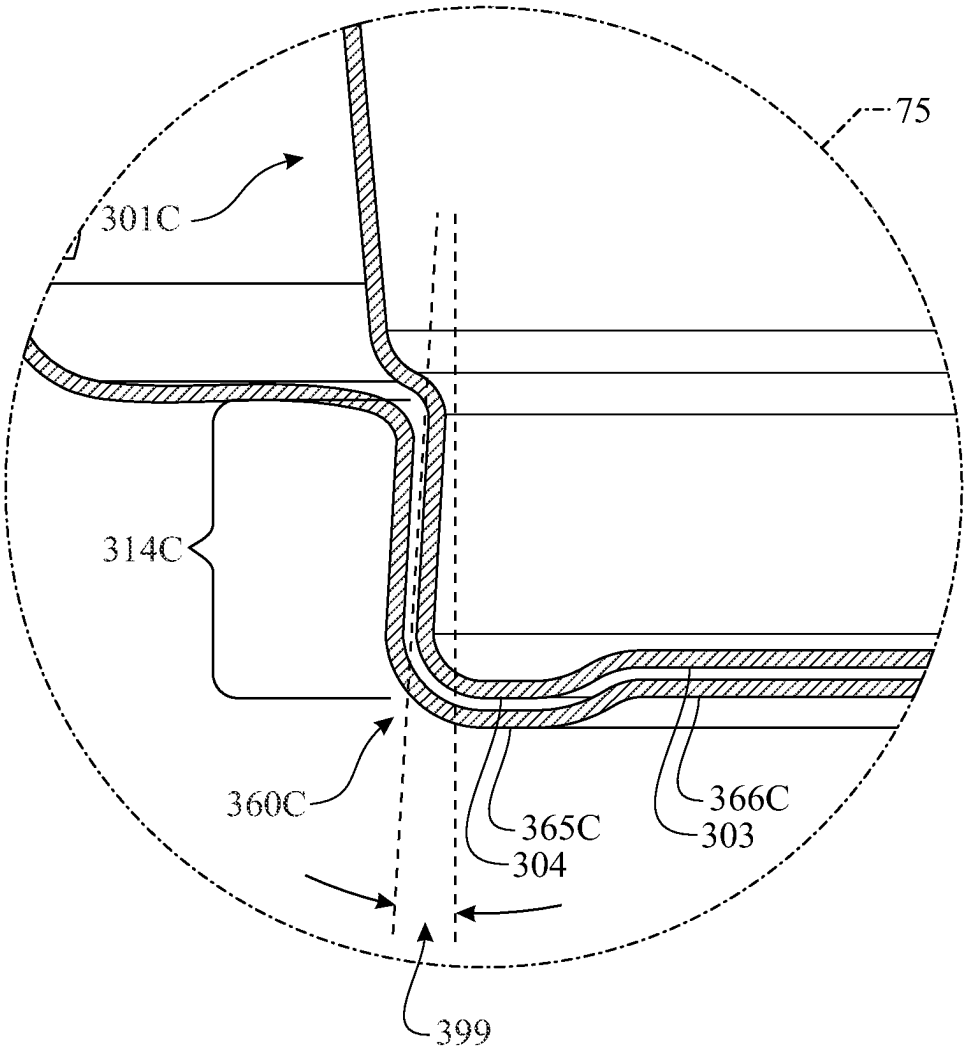



*FIG. 75*

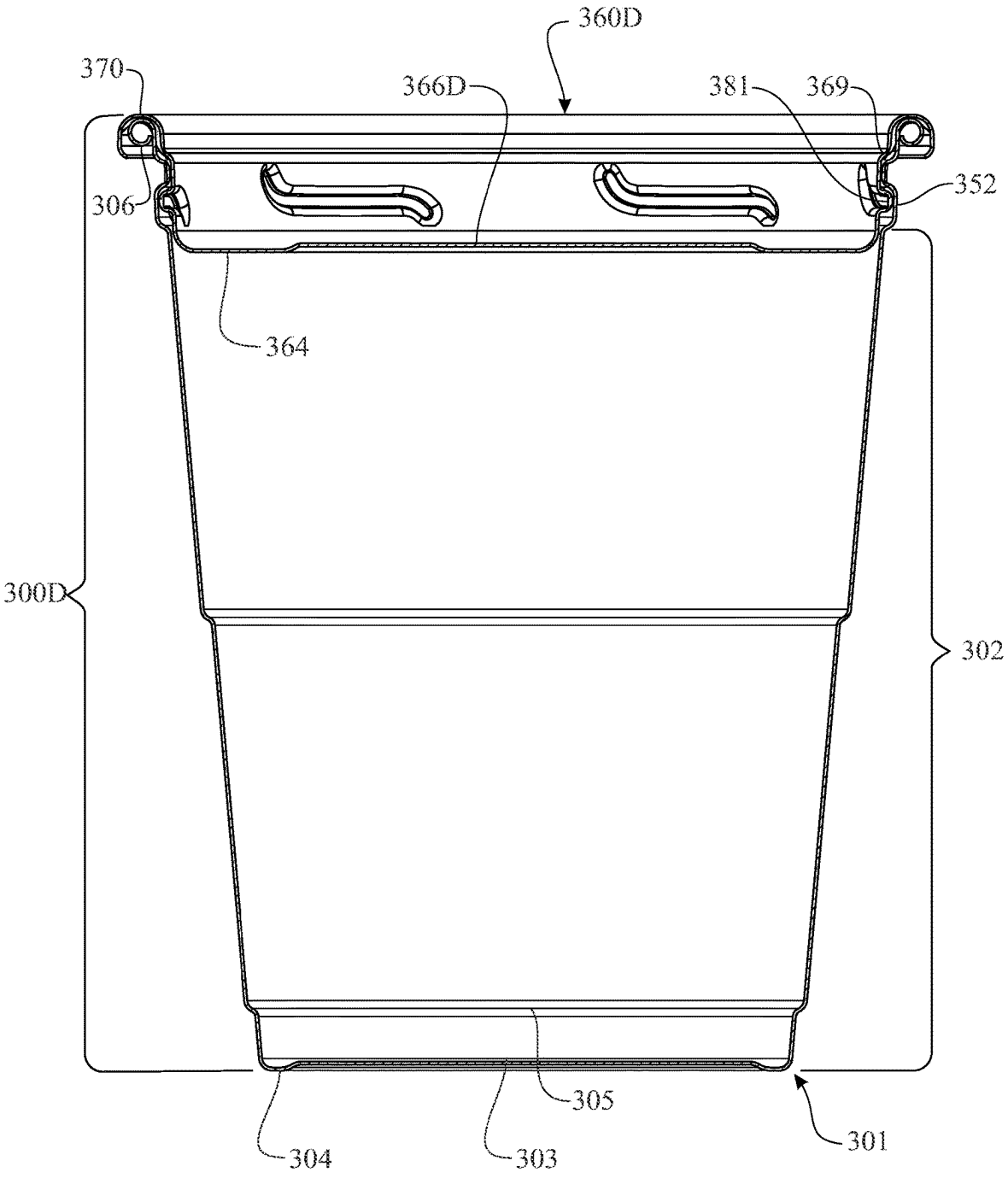



*FIG. 76*

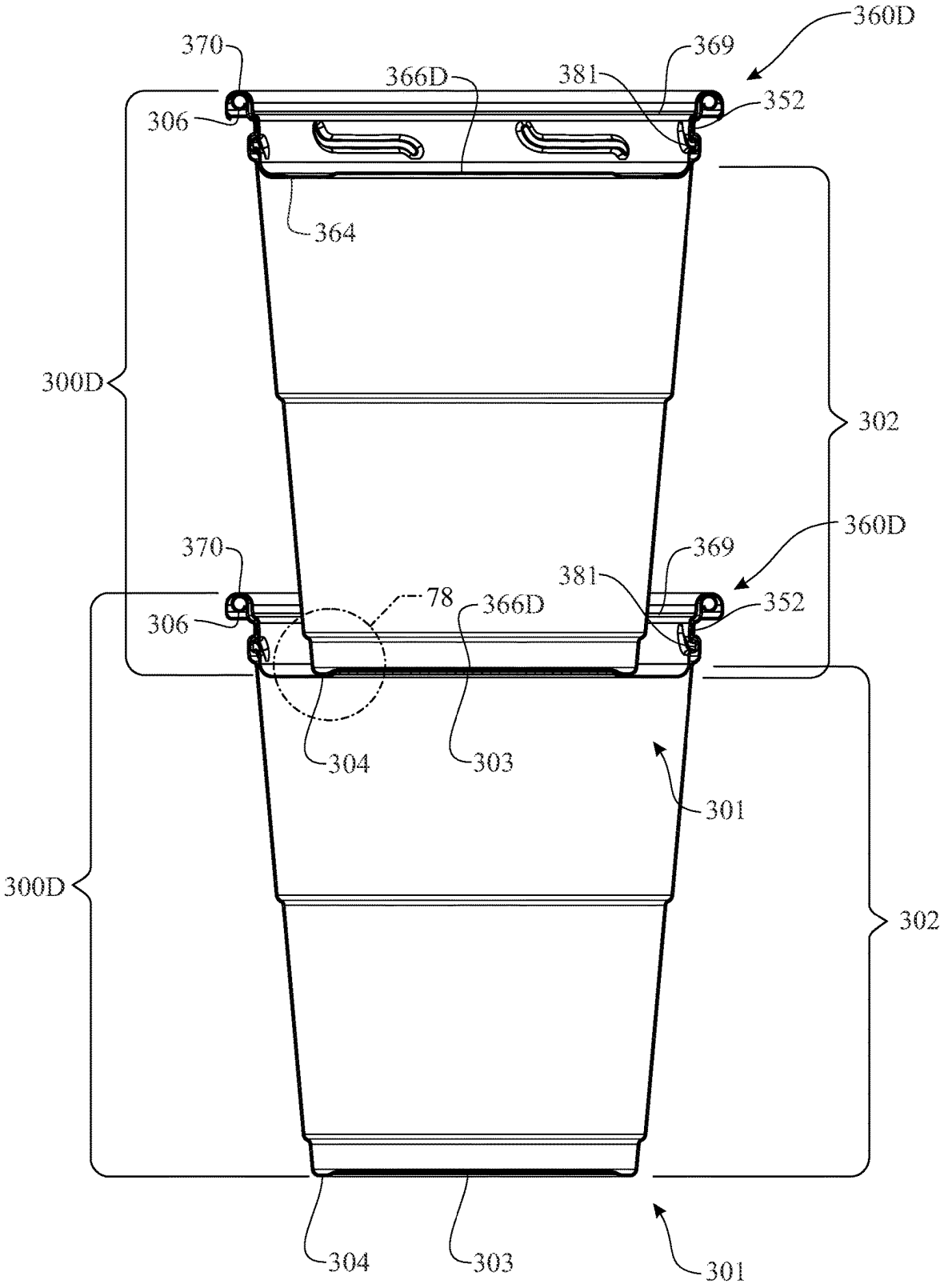

360D
370
369
366D
381
352
306
364
300D
302
360D
370
369
381
78
366D
352
306
304
303
301
300D
302
304
303
301

*FIG. 77*

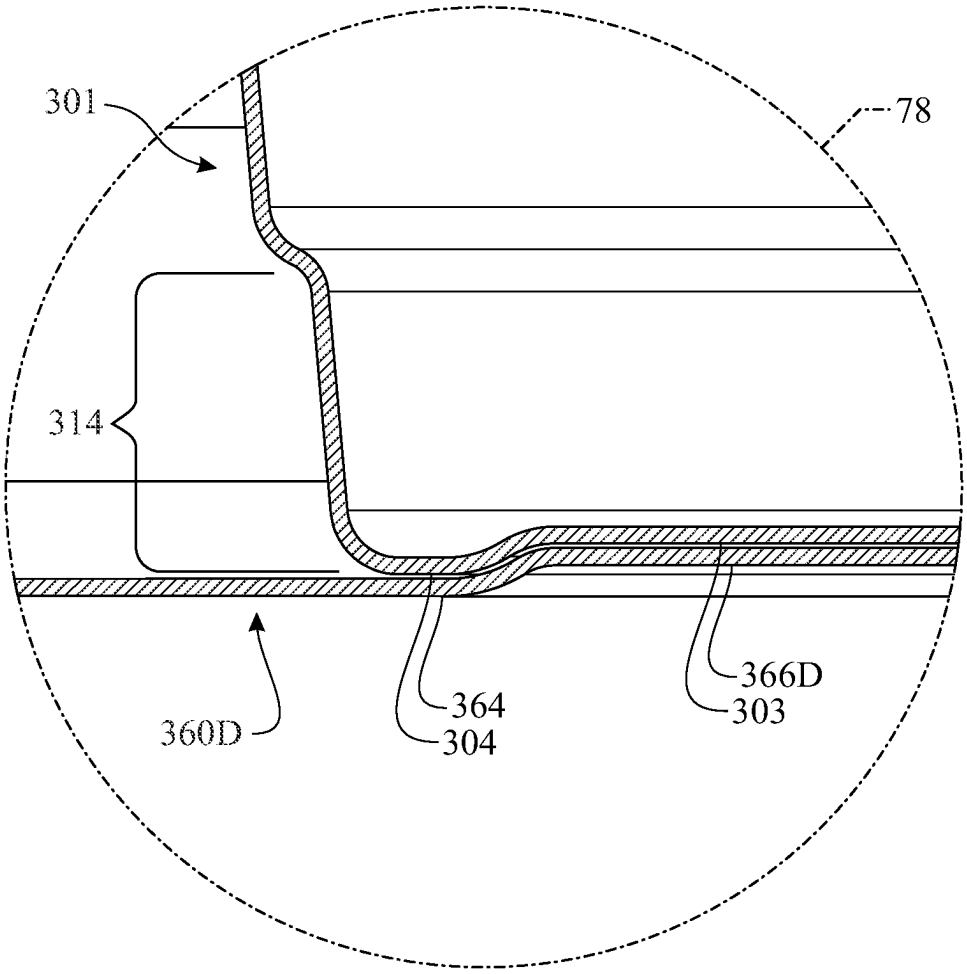
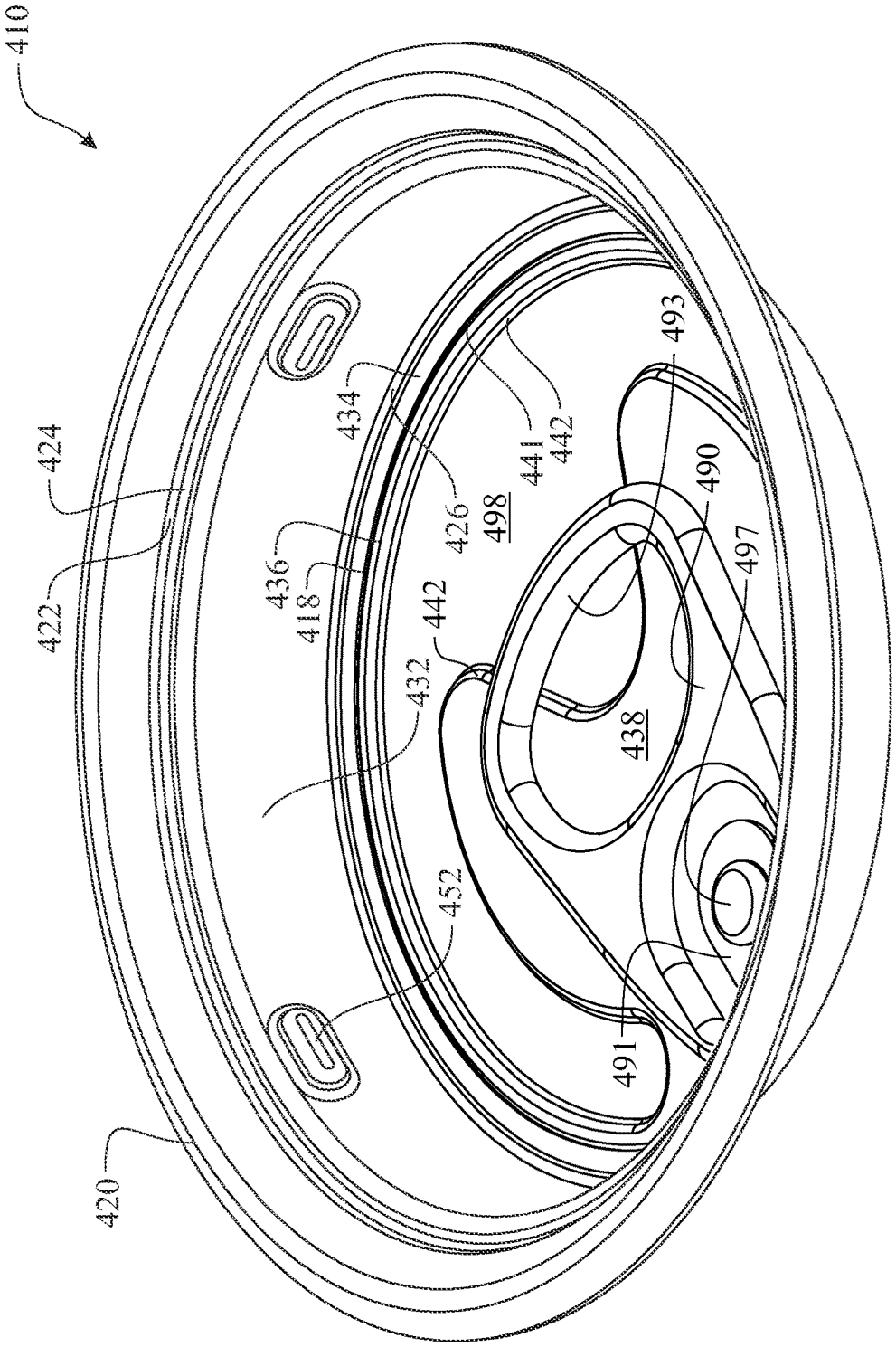



*FIG. 78*


410
424
422
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434
436
418
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498
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490
497
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432
438
452
491

FIG. 79

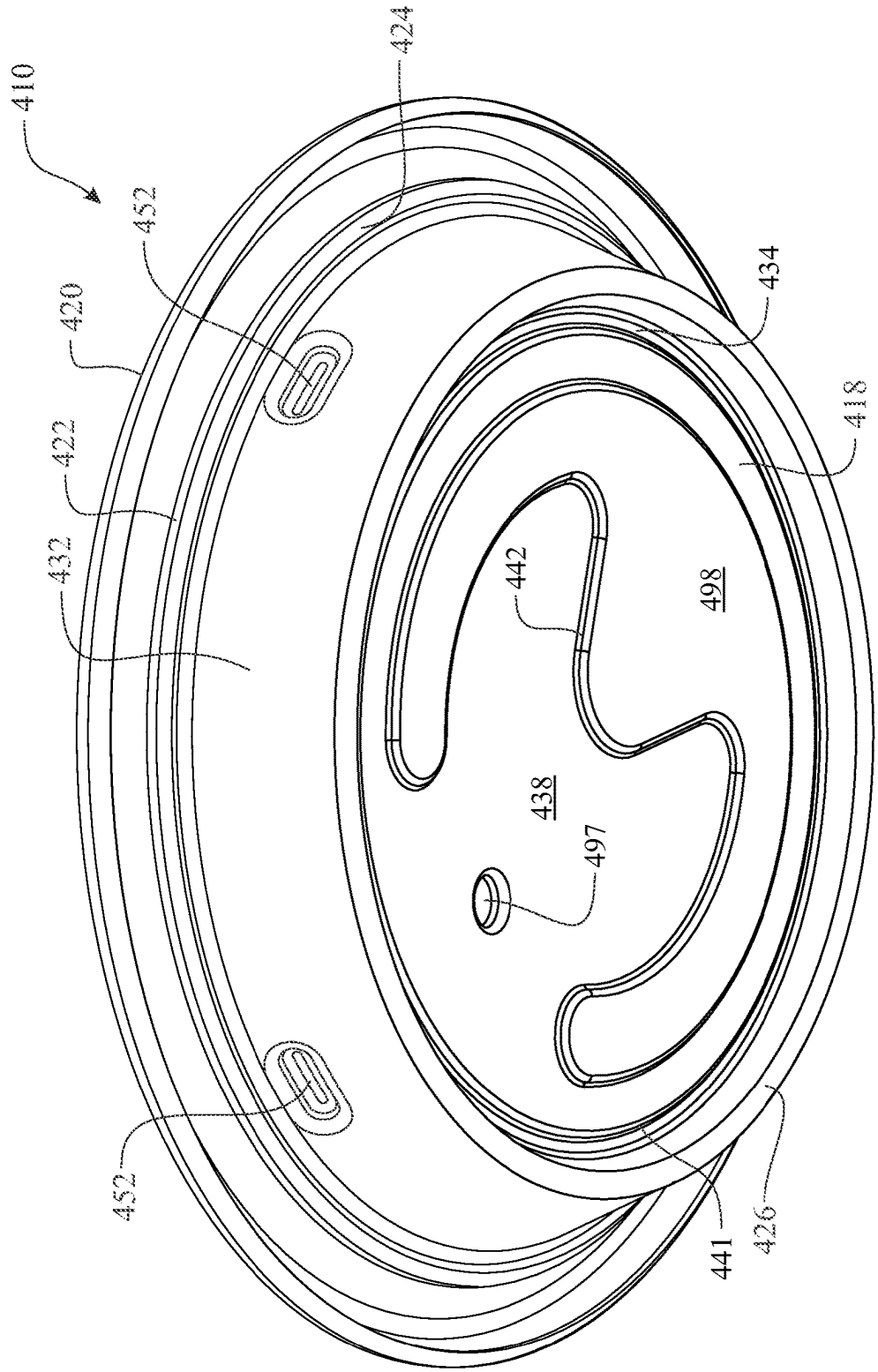
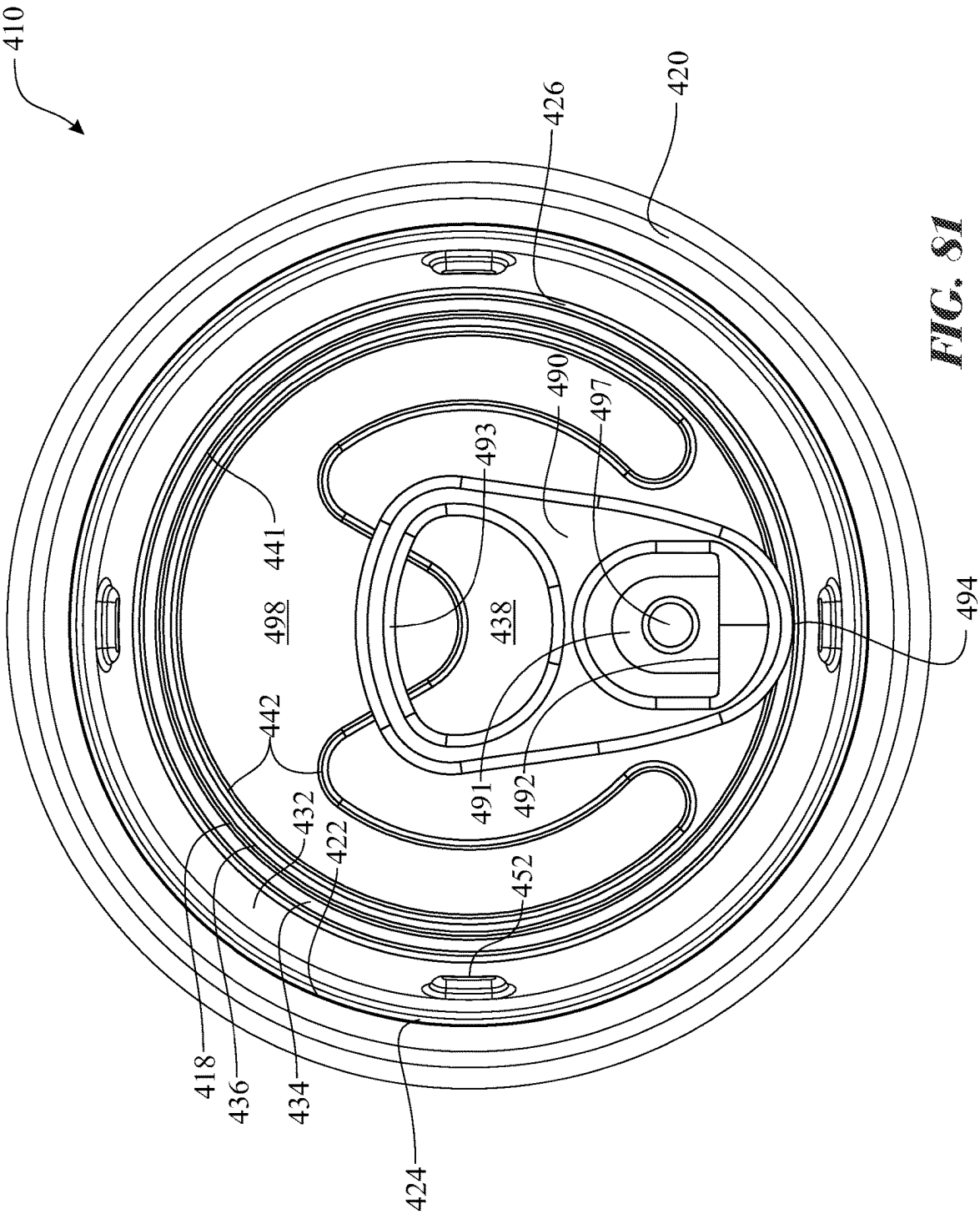



FIG. 80


410
426
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422
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436
434
424

FIG. 81

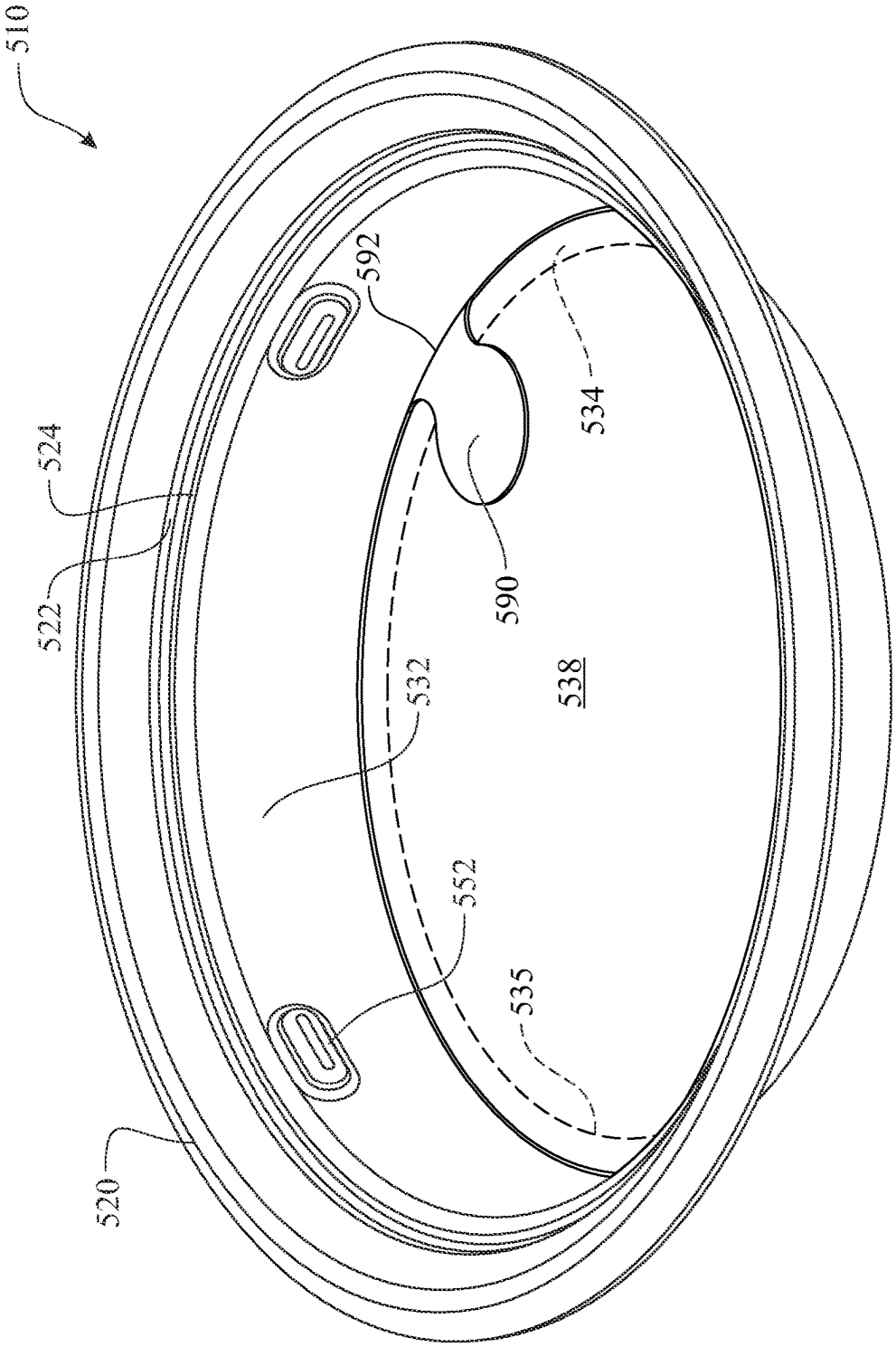



FIG. 82

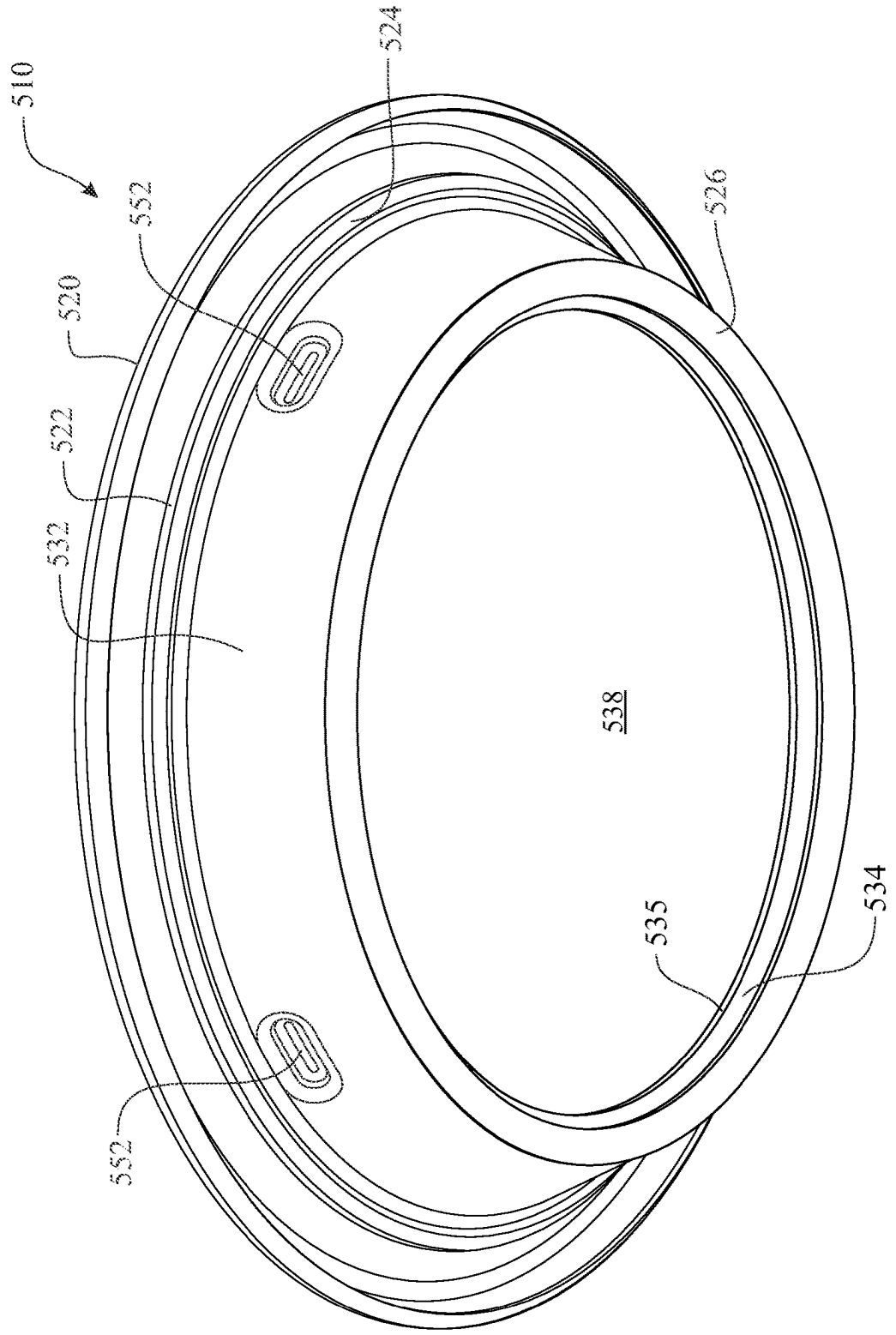



FIG. 83

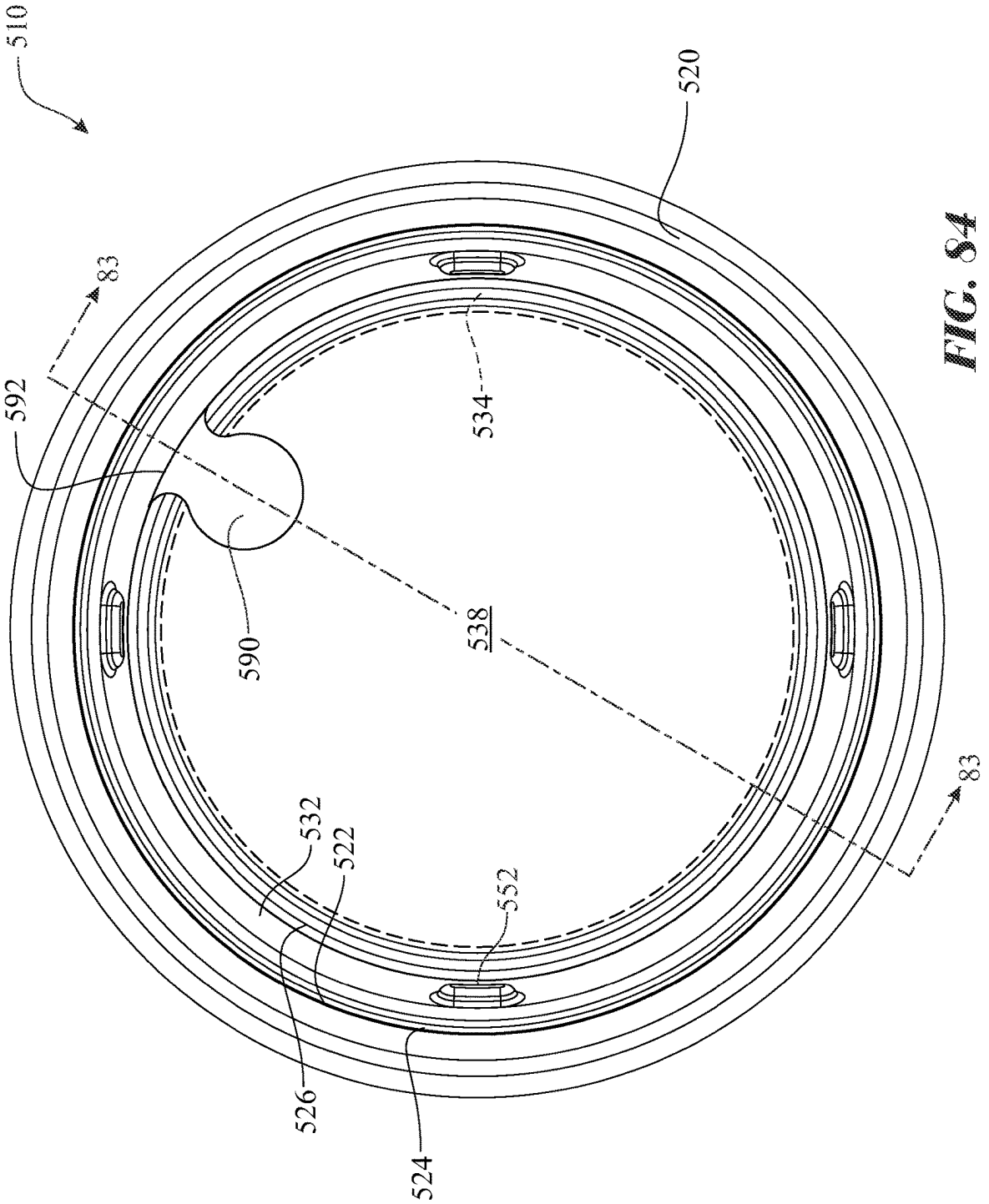
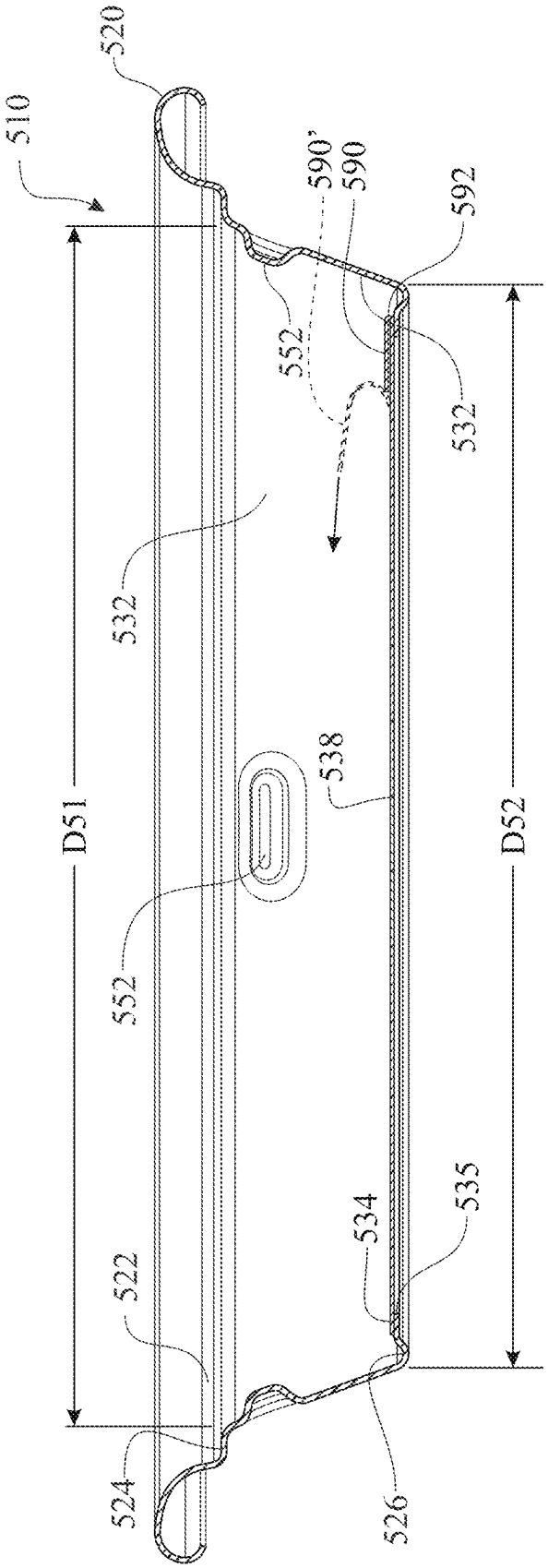



FIG. 84


520
510
590'
590
592
552
532
532
538
D51
D52
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522
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524
526

FIG. 85

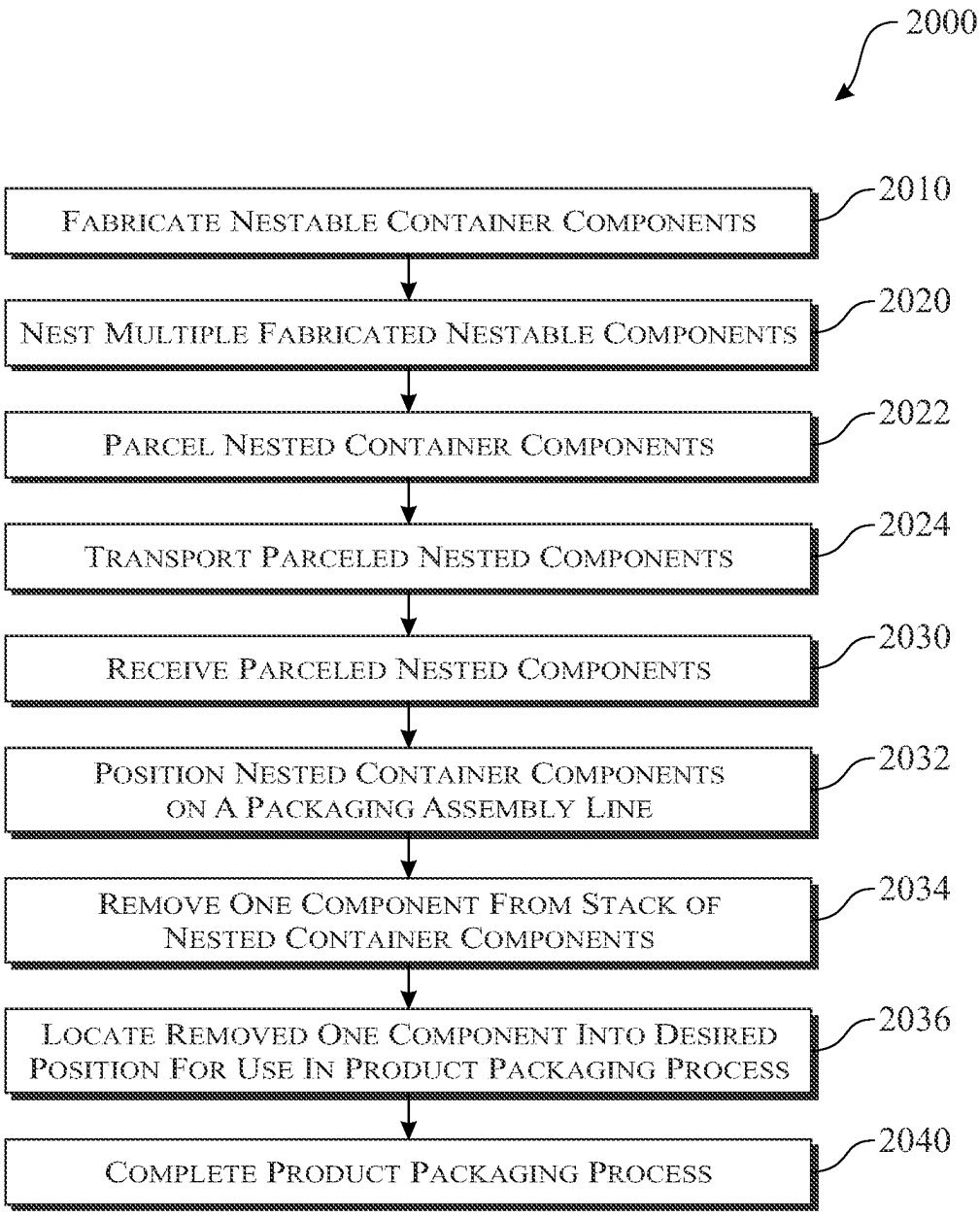
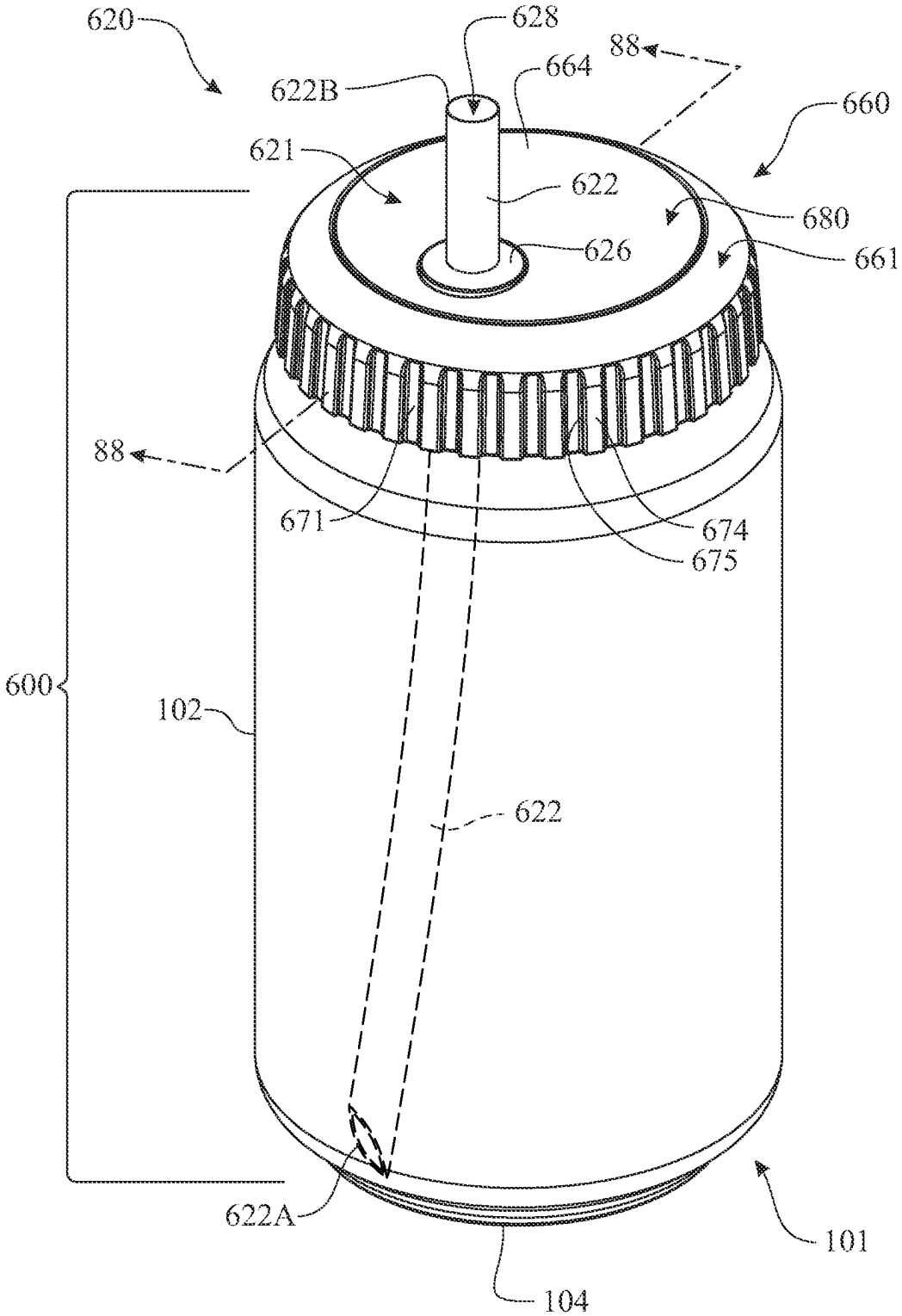

2000
FABRICATE NESTABLE CONTAINER COMPONENTS
2010
NEST MULTIPLE FABRICATED NESTABLE COMPONENTS
2020
PARCEL NESTED CONTAINER COMPONENTS
2022
TRANSPORT PARCELED NESTED COMPONENTS
2024
RECEIVE PARCELED NESTED COMPONENTS
2030
POSITION NESTED CONTAINER COMPONENTS ON A PACKAGING ASSEMBLY LINE
2032
REMOVE ONE COMPONENT FROM STACK OF NESTED CONTAINER COMPONENTS
2034
LOCATE REMOVED ONE COMPONENT INTO DESIRED POSITION FOR USE IN PRODUCT PACKAGING PROCESS
2036
COMPLETE PRODUCT PACKAGING PROCESS
2040

*FIG. 86*


620
628
88
664
622B
660
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680
626
661
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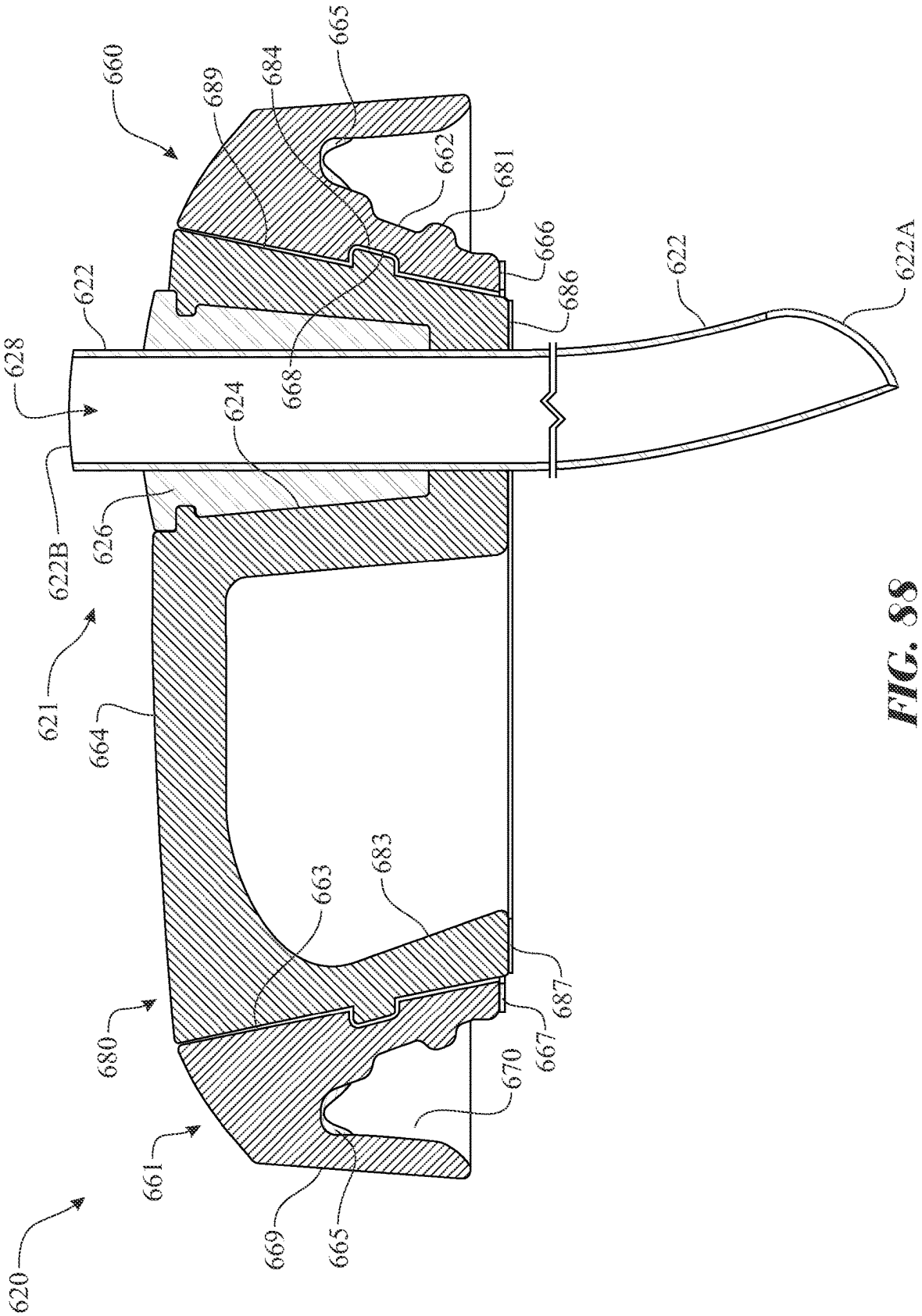
671
674
675
600
102
622
622A
101
104

*FIG. 87*


660
689
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665
662
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622
622A
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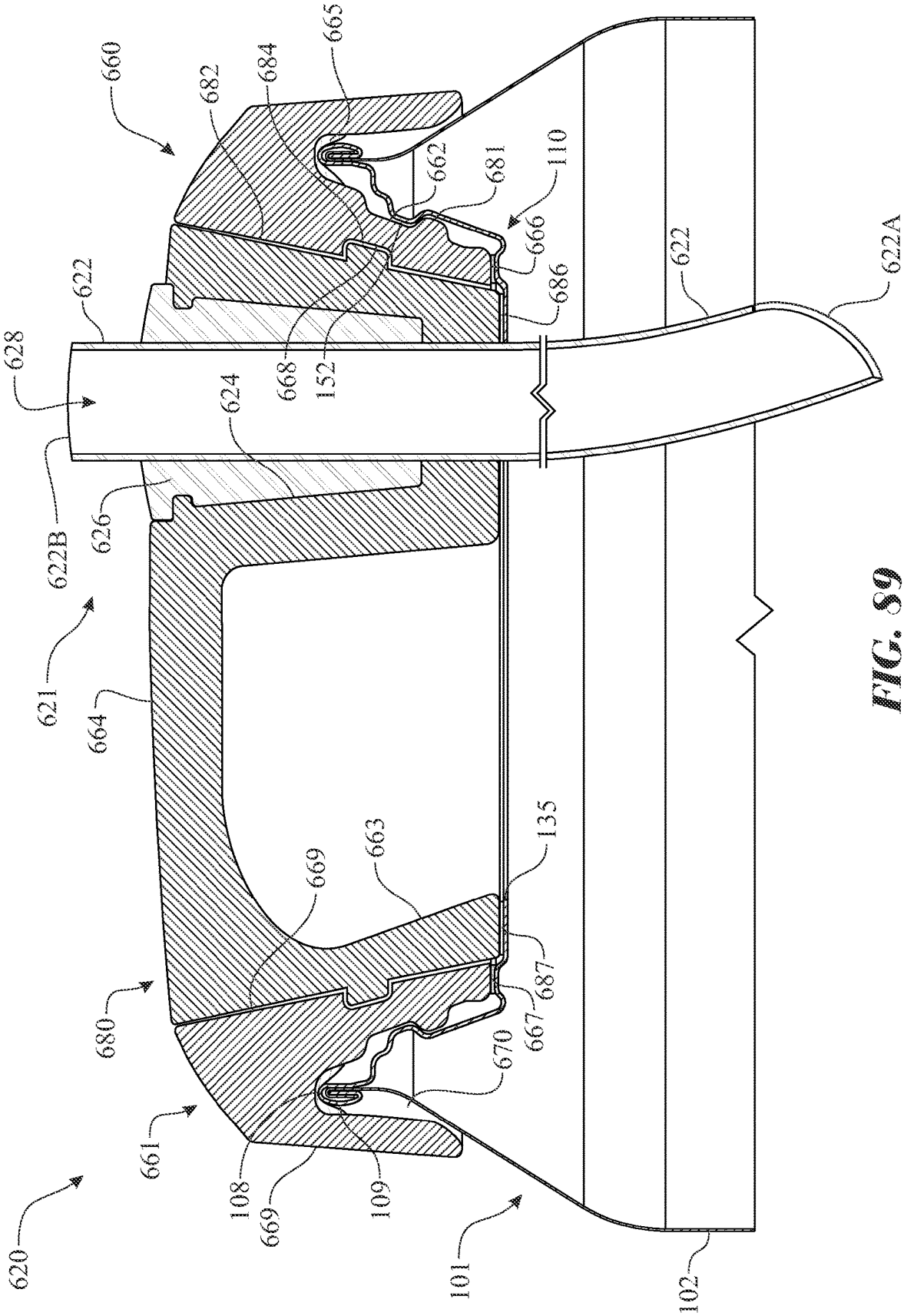
669
665
620

FIG. 88


660
682
684
665
662
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110
666
686
622
622A
628
668
152
624
622B
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621
664
663
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135
687
667
680
670
661
108
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109
620
101
102

FIG. 89

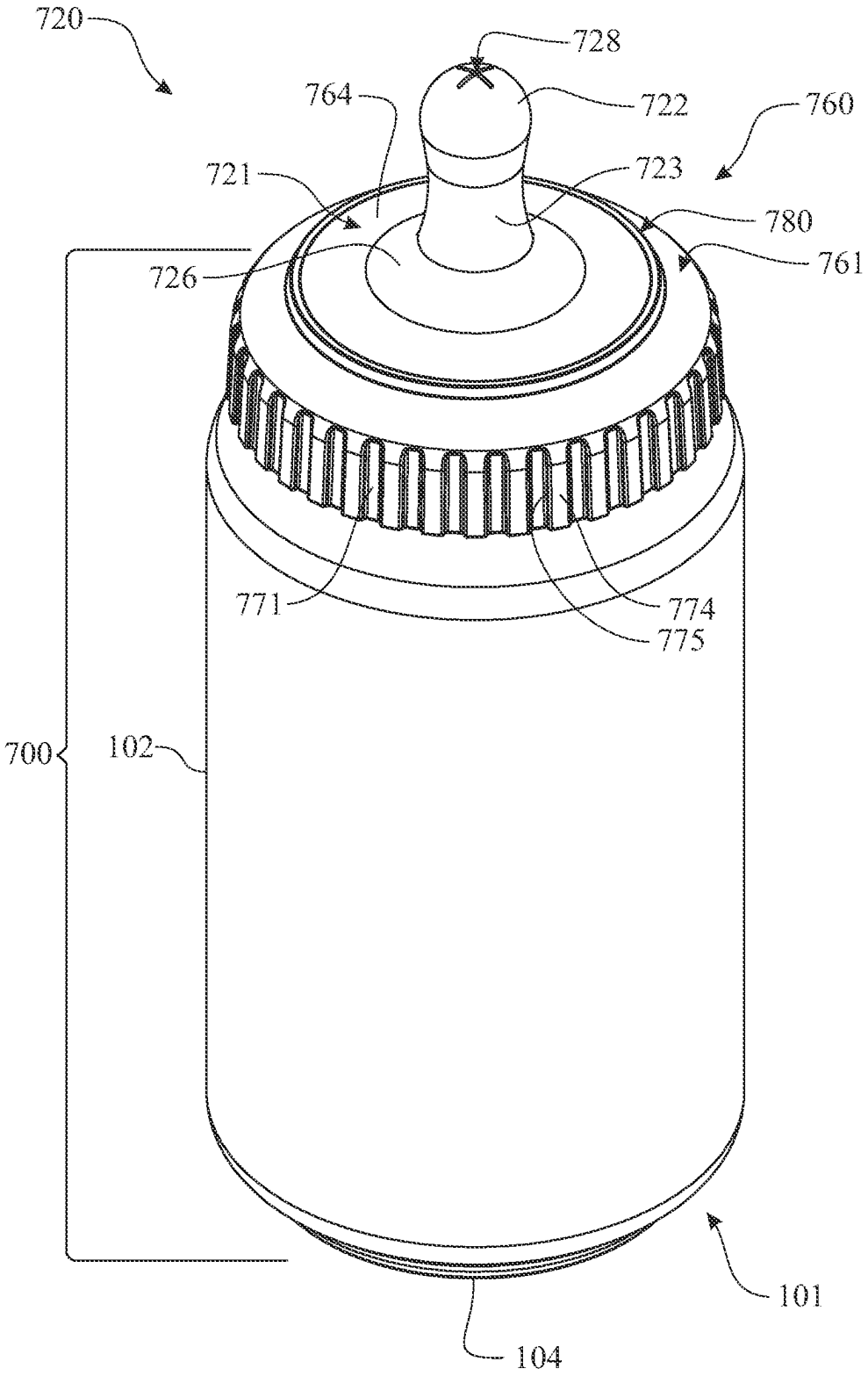
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*FIG. 90*

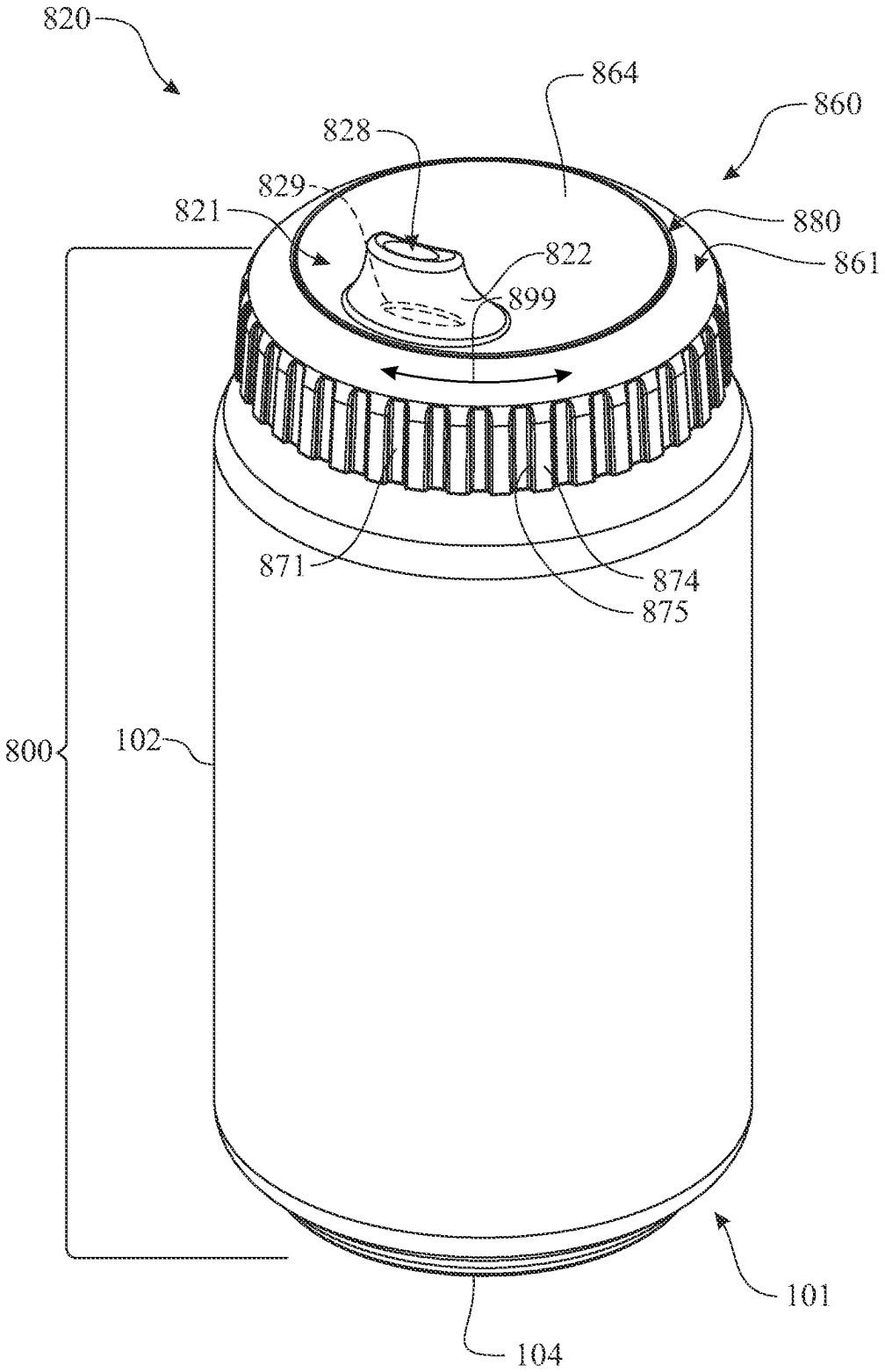
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*FIG. 91*

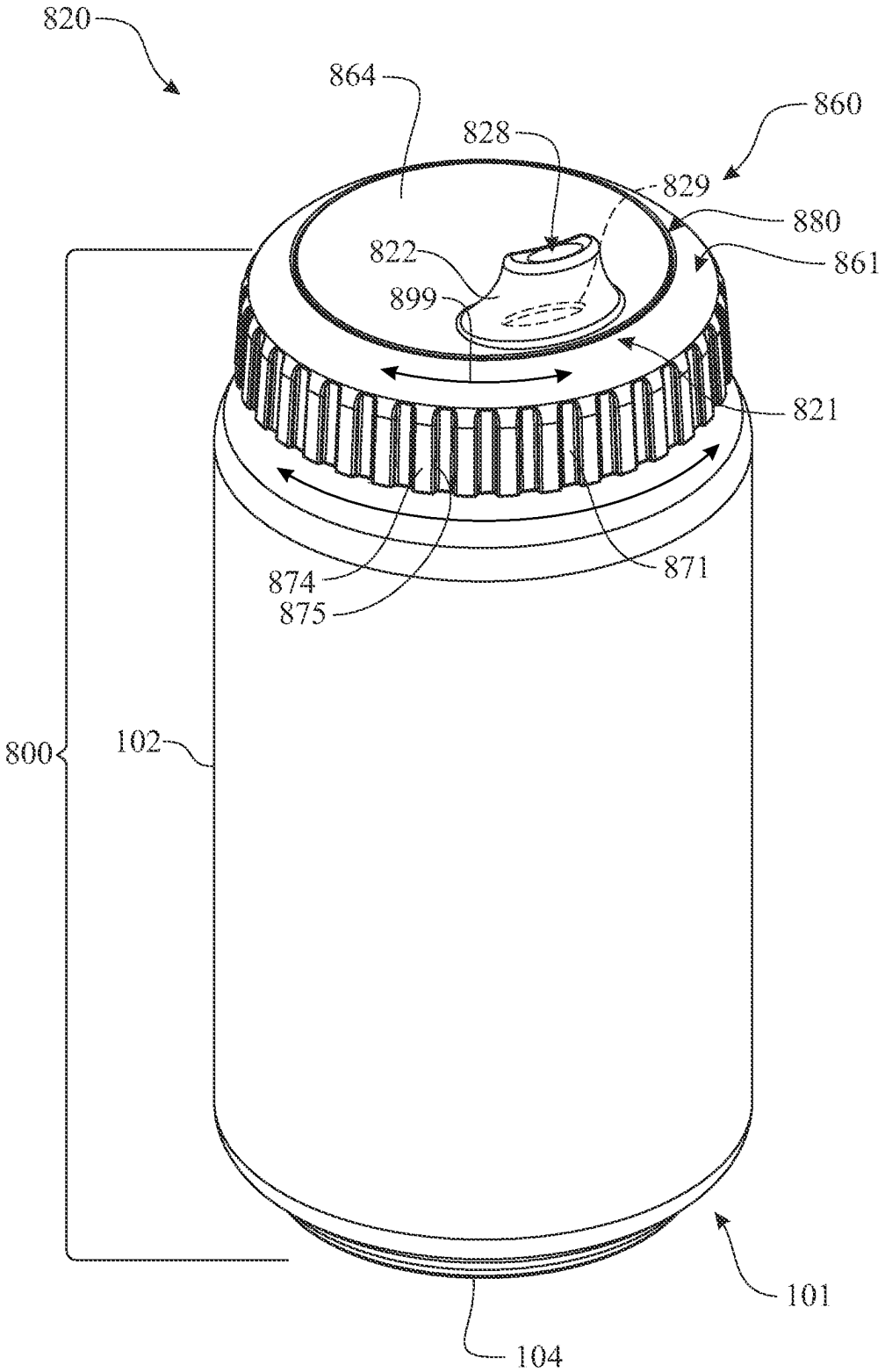
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*FIG. 92*

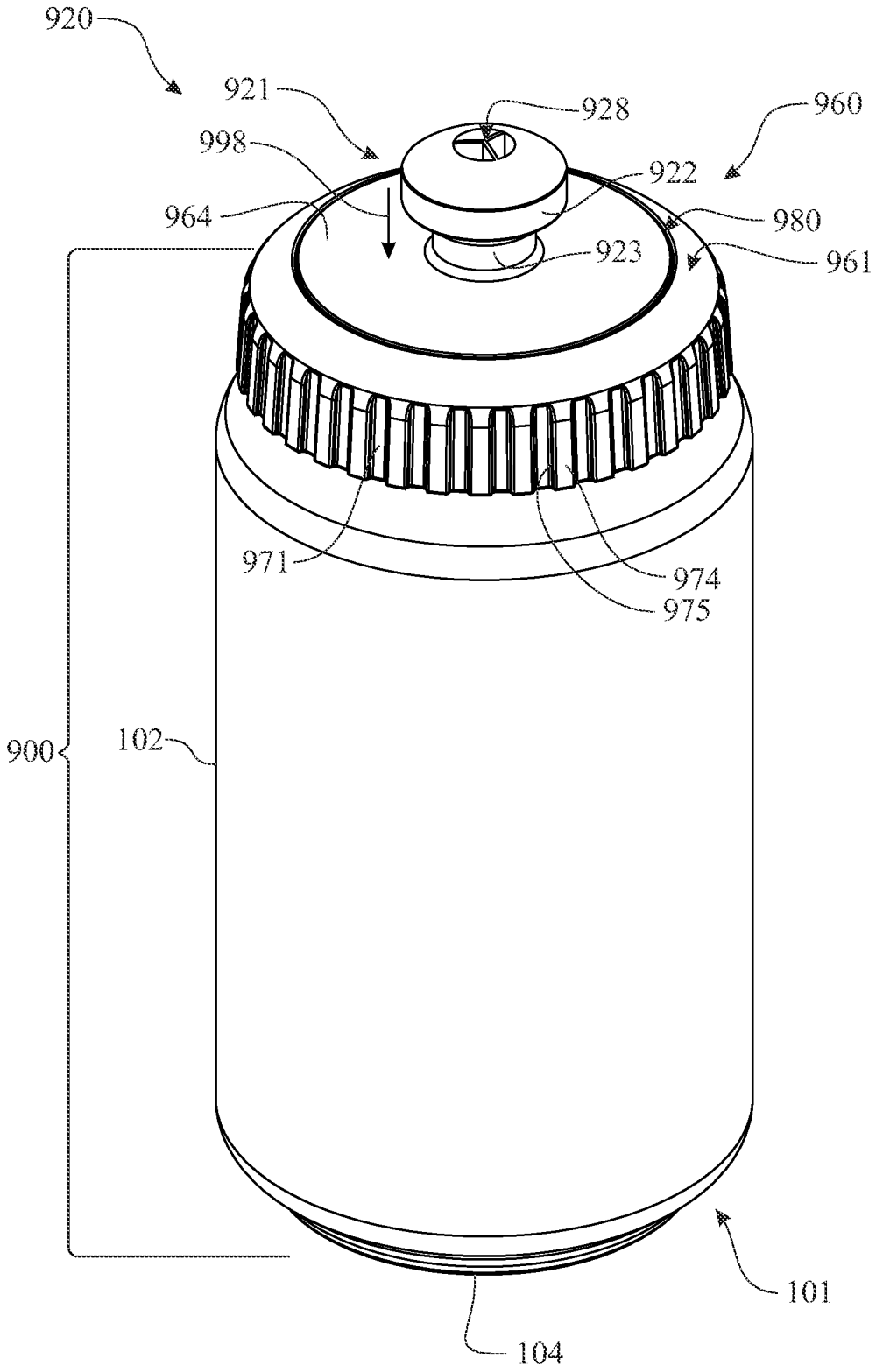
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*FIG. 93*

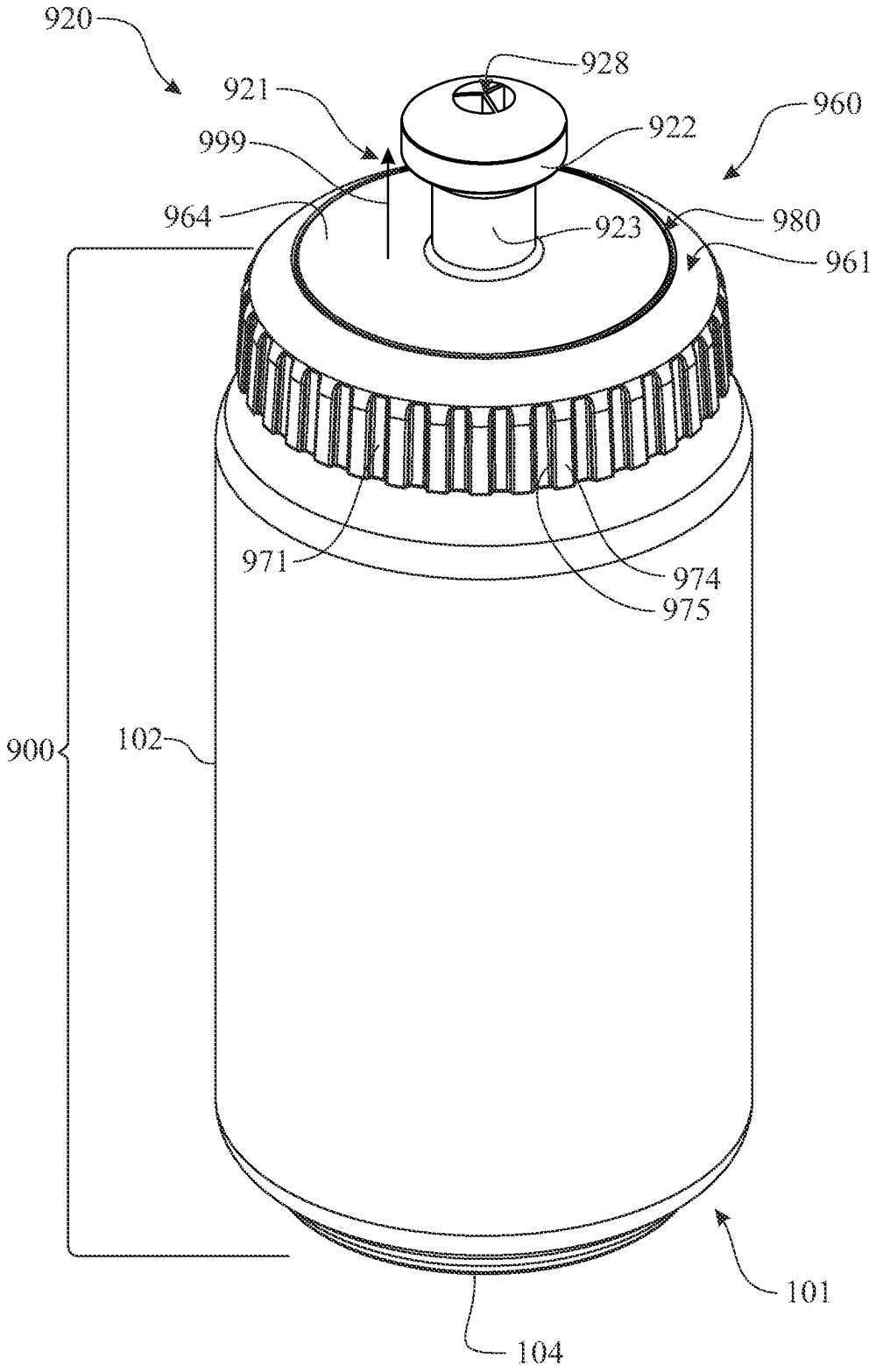
920
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*FIG. 94*

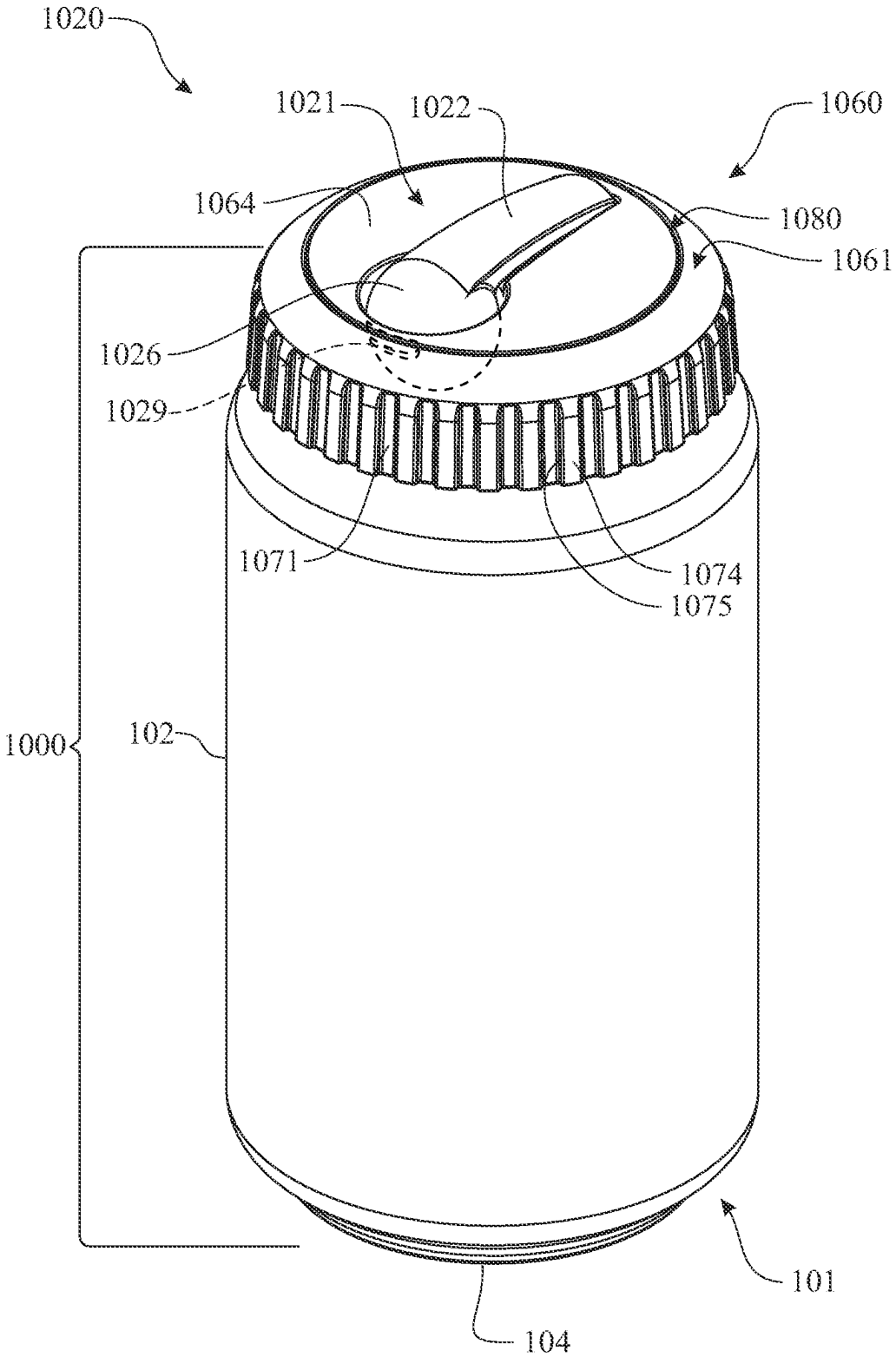
1020
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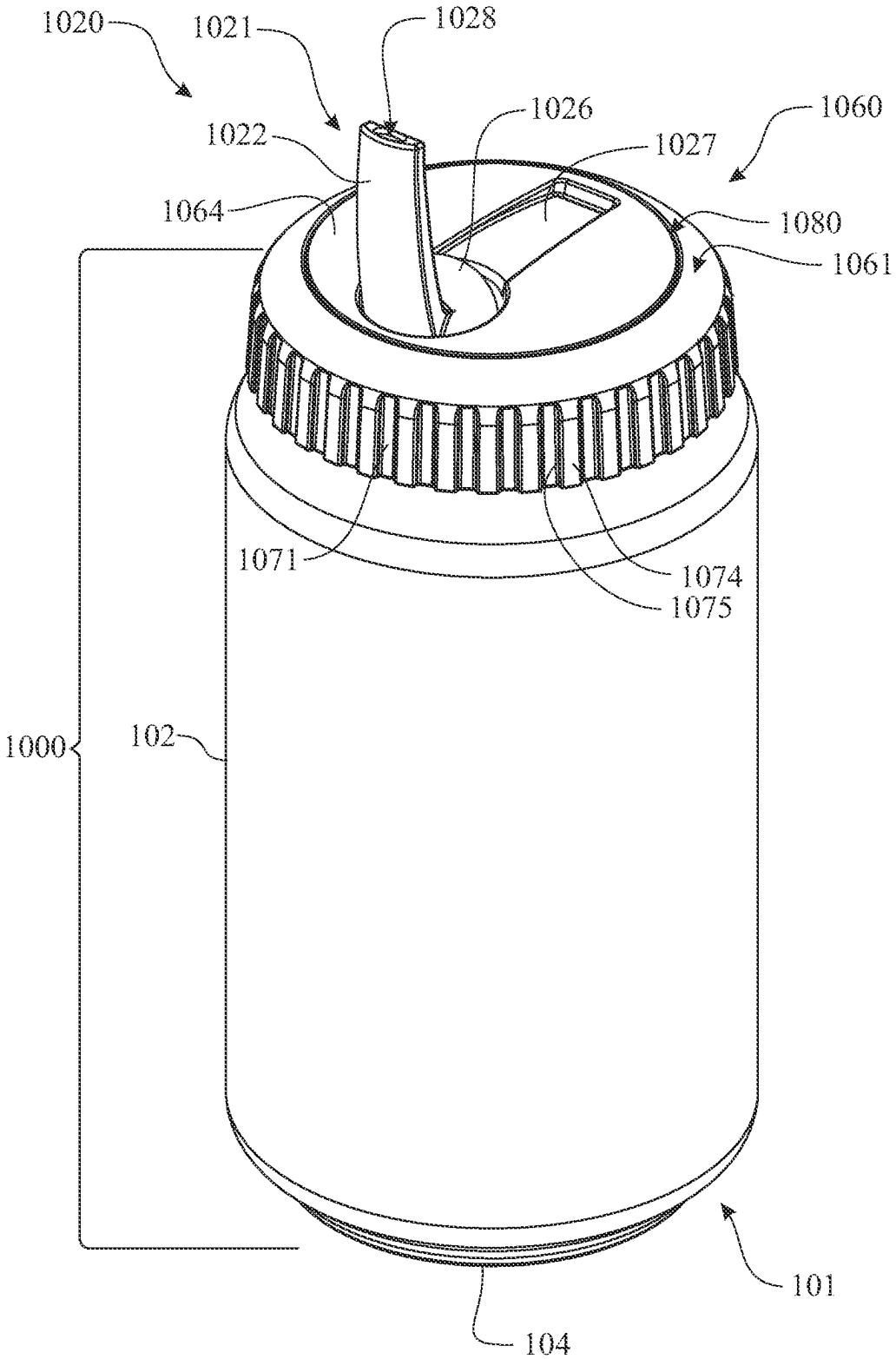
*FIG. 95*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1021
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*FIG. 96*

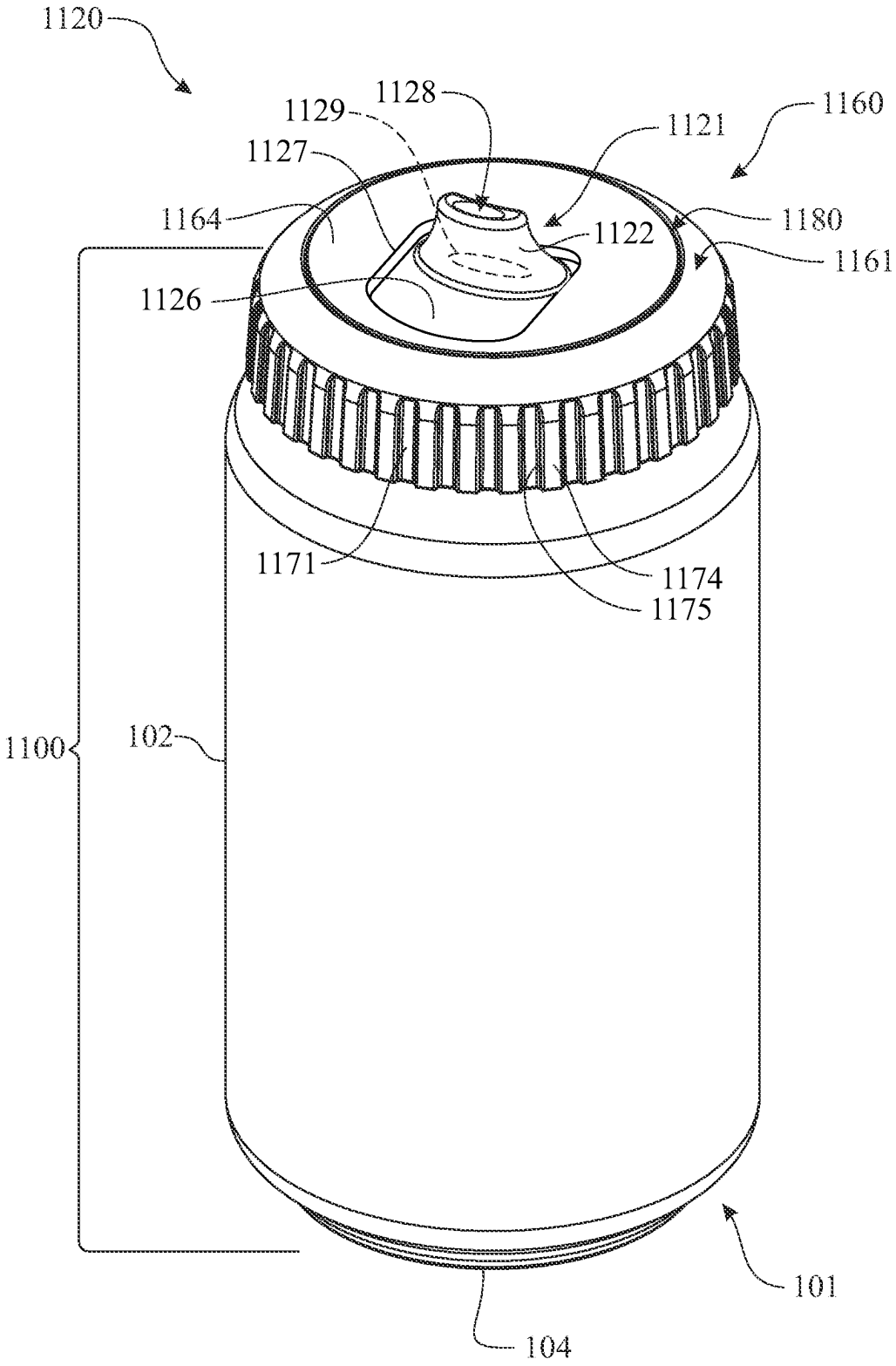
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*FIG. 97*

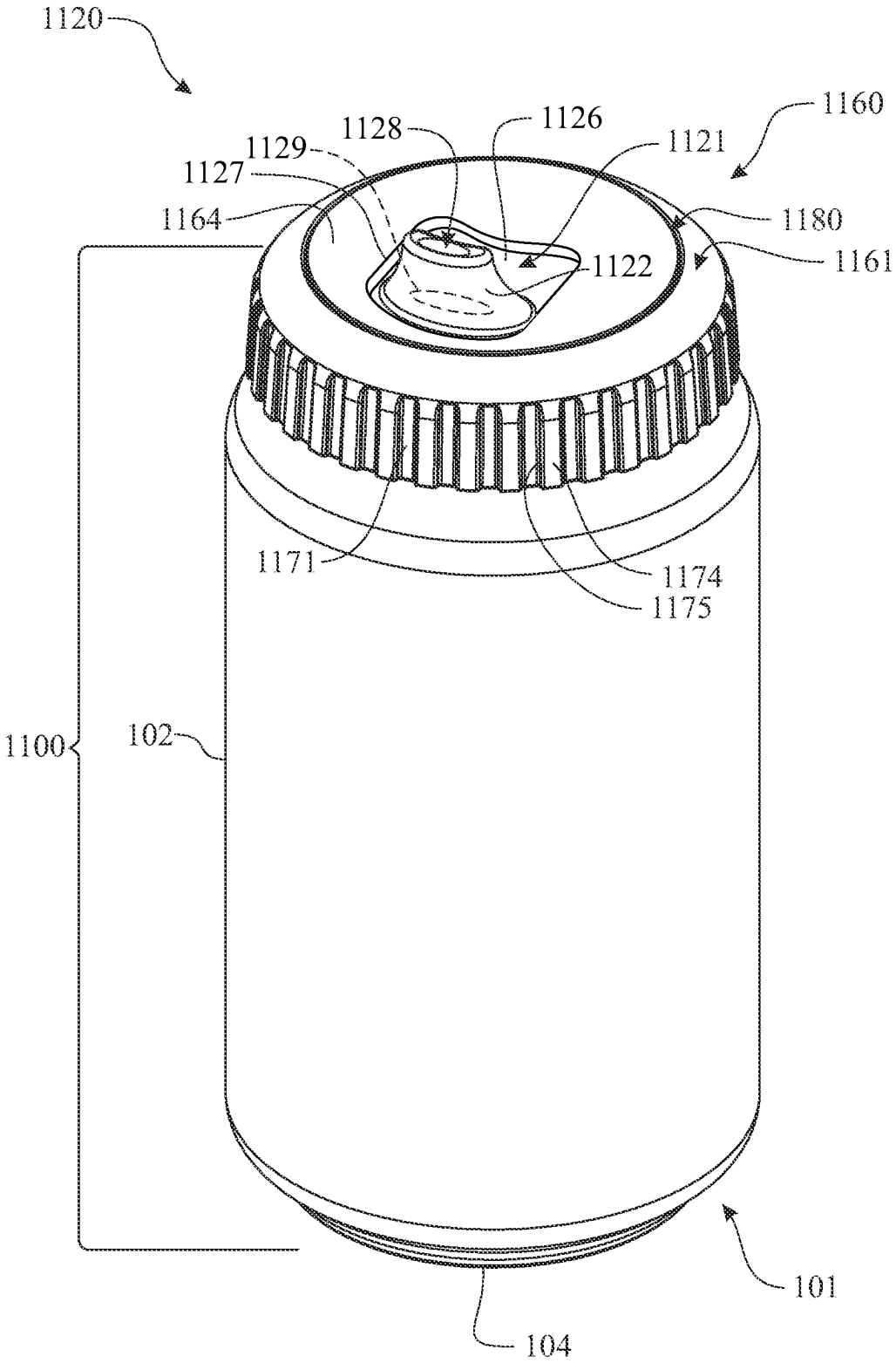
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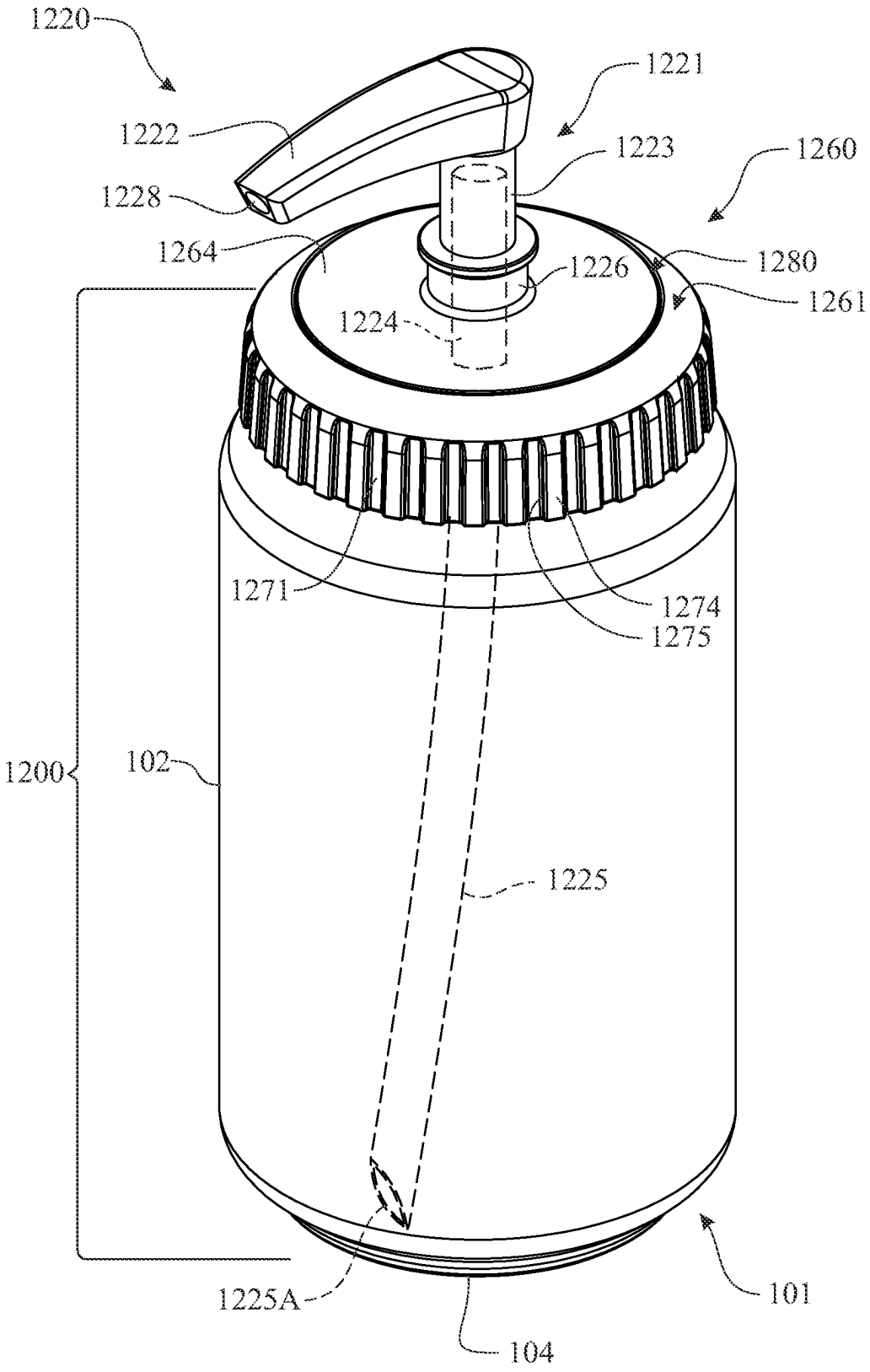
*FIG. 98*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1225A
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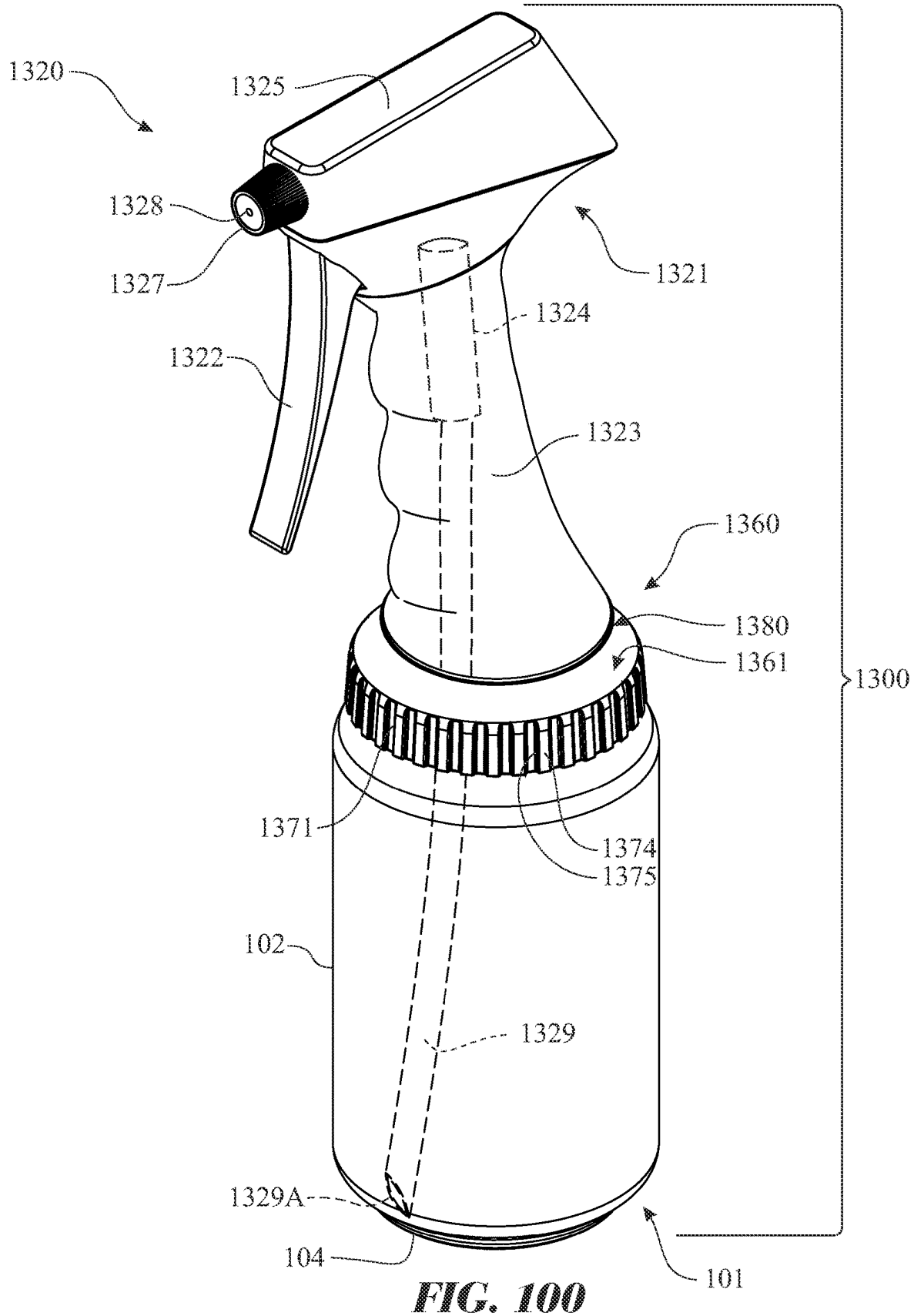
104

FIG. 99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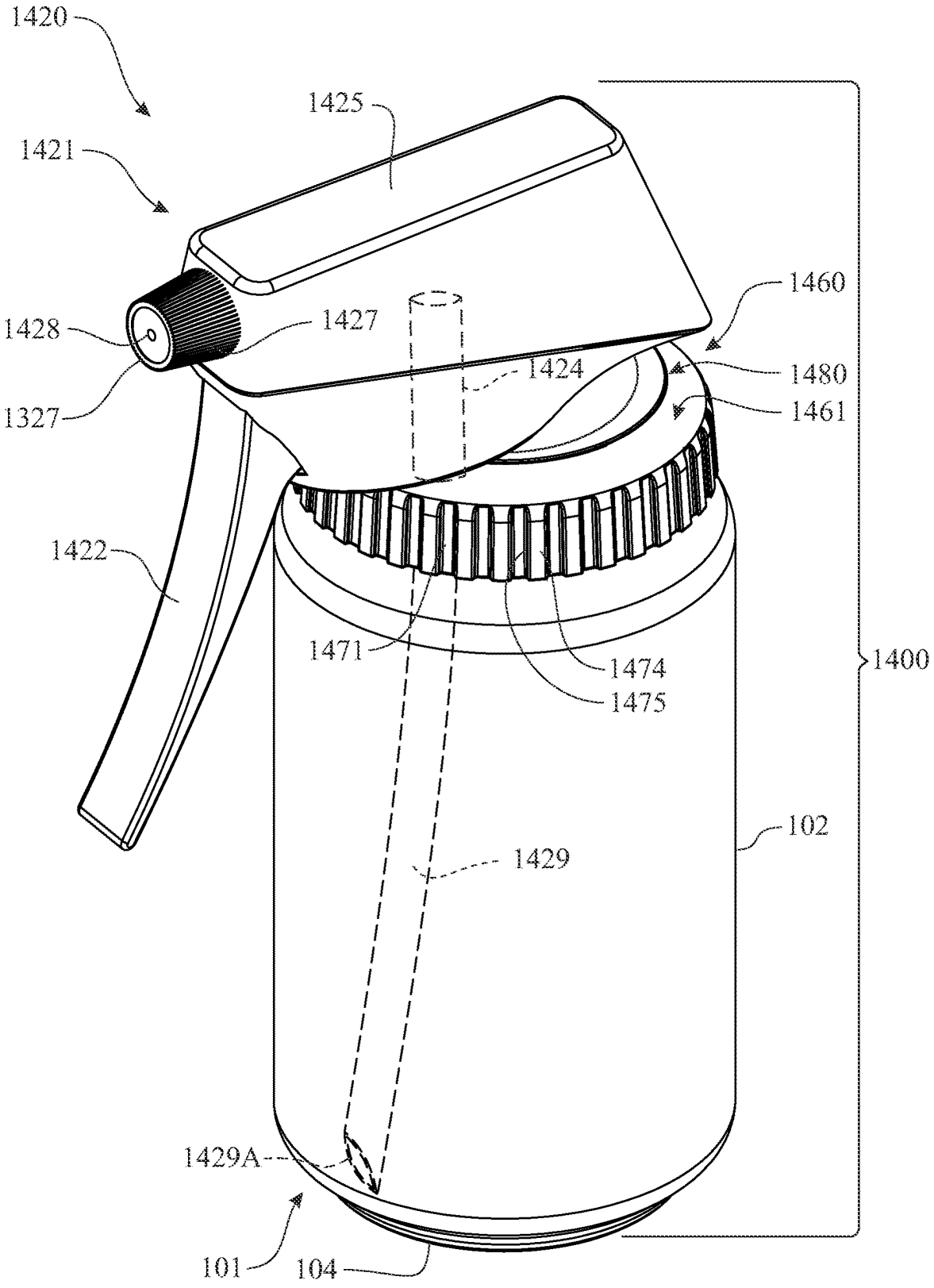
1329A
104
101

FIG. 100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1471
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1429A
101
104

*FIG. 101*

# THREADED CONTAINER COMPONENTS HAVING FRUSTUM SHAPED SURFACES ENABLING NESTING

## CROSS-REFERENCE TO RELATED APPLICATIONS

This Non-Provisional Patent Application claims the following benefits to:

A. is a Non-Provisional Patent Application claiming the benefit of United States Provisional Utility Patent Application Ser. No. 63/248,531, filed on 26 Sep. 2021,

B. is a Continuation-In-Part claiming the benefit of U.S. Non-Provisional Design patent application Ser. No. 29/777,334, filed on 5 Apr. 2021,

C. wherein U.S. Non-Provisional Design patent application Ser. No. 29/777,334 is a Continuation-In-Part claiming the benefit of U.S. Non-Provisional Design patent application Ser. No. 29/777,331, filed on 5 Apr. 2021, and

D. wherein U.S. Non-Provisional Design patent application Ser. No. 29/777,331 is a Continuation-In-Part claiming the benefit of U.S. Non-Provisional Design patent application Ser. No. 29/777,270, filed on 5 Apr. 2021,

each of which are incorporated herein by reference.

## TECHNICAL FIELD

The present invention relates to a resealable lid and cap combination for a container, including the structure, method of manufacturing, and method of use thereof. In general, the resealable lid is designed to be assembled to a container such as an aluminum can or container, a paper can or container, a plastic can or container, etc. for uses such as packaging of beverages, food, snacks, coffee grinds, pet food, pharmaceuticals (including prescription, non-prescription, *cannabis*, etc.), paint, personal and beauty products, household items, consumer goods, and the like. The container cap is removed from the container lid and assembled to the container lid by a rotational motion provided by a consumer to open and reseal the container. The rotational movement of the container cap is converted into a linear motion by an interaction between one or more rotational translative elements provided on an interior surface of a cavity formed in the container lid and a mating one or more rotational translative elements formed on an exterior surface of the container cap to effect an opening/sealing action. In a condition where an opening or passage is provided through the container lid, the container cap can be removed for access to and/or consumption of contents stored within the container and the container cap can be reassembled to the container lid to reseal the opened container. The container, container lid, and container cap are designed to be efficiently conveyed and transported during the manufacturing and product filling processes, and be compatible with existing container, container lid, and container cap manufacturing, conveyance, transport, and filling infrastructure.

## BACKGROUND OF THE PRESENT INVENTION

The can industries have long sought to create a can that is both economical to produce and convenient for use by consumers. Cans or containers can be used for packaging of comestible and non-comestible products. In the past, beverage cans were provided with a "ring pull" which the consumer would grab by a ring, and pull until the pull tab was removed from the can. This created a problem in that the pull tab became disposable waste for which the consumer was responsible to ensure proper disposal. Often the consumer failed to properly dispose of the pull tab, thereby creating not only litter, but also a safety issue, in that the pull tabs could be swallowed by small children. Moreover, the edges of the pull tab were sharp enough that they could, if mishandled, cut the fingers or hands of the consumer or anyone else who handled a loose pull tab. Pull tabs were commonly disposed of by throwing the removed pull tabs onto the ground. This exposed people walking barefoot to foot injuries. Environmental consequences were also created when wildlife ate or became injured by the improperly disposed pull tabs. As a result of these problems, the industry moved in the direction of a tab that stayed on the can after opening, thereby preventing both litter and any sharp edges from coming into contact with consumers.

The present state of the art is to have a "stay-on" tab that remains attached to the can lid by a rivet formed in the can lid next to the opening. The opening is formed by a score line, or frangible "kiss cut" which breaks when the pull tab is pulled up by the consumer. The score line, when broken, produces a hinged tear panel, wherein the opened tear panel remains connected to the can lid, but the tear panel is positioned inside the can.

Beverage cans with stay-on tabs suffer from a number of deficiencies. First, they are not resealable, so that once the consumer opens the beverage; the contents are subject to loss of carbonation, product oxidation, and the influx of foreign material due to the contents being open to the surrounding environment. Secondly, in order to form the rivet which is used to secure the stay-on tab to the beverage lid, the container lid needs to be made of a different material, typically an aluminum alloy that is stronger than the aluminum alloy used to make the sides and bottom of the can. Additionally, the tab itself is typically made of a different alloy than the sides and lid, reflecting the need for a still stronger, typically stiffer material. As a result, recycling of the aluminum beverage can is problematic because the different materials need to be separated, or virgin aluminum needs to be added to reconstitute the required alloy. The use of three (3) different materials also tends to add complexity and expense to the finished container and inhibits creating a new can completely out of recycled cans.

Other solutions, such as a container seal commonly used for nuts, coffee containers, and the like utilize a flexible plastic cover that snaps over an upper brim of the container. This arrangement provides a reasonable seal, but one that is not sufficient to maintain an air tight seal, a liquid tight seal, and/or internal pressure. Additionally, the seal lacks any safety features, enabling anyone of any age to access the contents within the container.

Other solutions, such as aluminum bottles, add external threading for receiving a cap for resealability. This arrangement provides a suitable air tight seal, a liquid tight seal, and support for internal pressure, but require complex and expensive manufacturing. One impact of this design is that the bottles require additional material thickness for strength, which adds costs and impacts the environment. Another impact of this design is that the shape of the aluminum bottles creates inefficiencies when transporting empty aluminum bottles and caps from the manufacturing facility to the product filling facilities due to their inability to nest together during transport; essentially, the shipments include a large volume of air space.

Other solutions, such as aluminum can lids with resealing mechanisms, utilize various valve designs configured to provide a means to reseal the container. Some of these arrangements provide suitable air and liquid tight seal, and internal pressure, while others only provide protection against spillage. However, many of these arrangements incorporate the use of plastic components in the resealing mechanisms that are not compatible with recycling infrastructure, are expensive, and are not intuitive to use by the consumer.

A need exists for improved containers that are resealable, cost effective to produce, and "sustainable" in terms of avoiding waste and facilitating the recycling of aluminum cans and other containers. Concurrently, a need exists for improved methods for manufacturing containers, lids, and closures (caps) for manufacturing of resealable containers that result in faster production time, lower production costs, compatibility with existing can manufacturing infrastructure, and improved consumer benefits. It is preferred that the container, the container lid, and the container design would be capable of sustaining an air tight seal, a liquid tight seal, and internal pressure formed within the container when the closure (cap) is assembled to the container lid. It would also be beneficial for designs that provide efficient transportation of the containers, the container lids, and/or the closures (caps) to transport from the manufacturing facilities to the product filling facilities. It would also be beneficial that the designs of the containers, the container lids, and/or the closures (caps) remain compatible with the other aspects of can manufacturing, filling, distribution, and recycling infrastructure.

## BRIEF DESCRIPTION OF THE PRESENT INVENTION

A container has a sidewall and integrally formed bottom. The container is preferably a beverage container, but could be adapted to any suitable container, such as a container for food, snacks, and the like; a paint can; a pharmaceutical container; a container for personal and beauty products; a container for household products; a container for consumer goods; and the like. A top lid includes a socket integrally formed therein; the socket including a tubular sidewall and a bottom wall. The container lid can include an opening or a method of creating an opening, such as a score line formed in a bottom wall. The score line would define a tear panel designed to create an opening through the container lid providing access to contents packaged within the container when the score line is fractured and the tear panel is bent inward or removed. A cap is fitted to the socket. The container lid includes a lid translative motion guide feature designed to engage with a mating cap translative motion guide feature formed on the container cap. The container lid translative motion guide feature is formed in the sidewall of the container lid, preferably as a boss extending radially inward. The container cap translative motion guide feature is formed in a sidewall of the container cap. The container cap translative motion guide feature can be formed as a boss, extending radially outward from the sidewall of the container cap or as a recess extending radially inward, formed as an indentation in the sidewall of the container cap. In a thin walled design, the cap translative motion guide feature can extend radially outward from the sidewall of the container cap as a boss or the cap translative motion guide feature can extend radially inward as a deboss or the recess formed into the sidewall of the container cap. Either configuration can work with the radially inwardly extending translative motion guide feature of the container lid.

In an alternative arrangement, the translative motion guide feature of the container lid can be formed as a deboss or the recess formed into the sidewall of the container lid. In this arrangement, the translative motion guide feature of the container cap is preferably formed as a boss, extending radially outward from the sidewall of the container cap.

The mating pair of translative motion guide features formed in the container lid and cap can be formed as a projection and a cam, a first threaded feature and a mating, second threaded feature, a first linear threaded feature and a mating, second linear threaded feature, a first non-linear threaded feature and a mating, second non-linear threaded feature, a first linear threaded feature and a mating, second non-linear threaded feature, a first non-linear threaded feature and a mating, second linear threaded feature, a projection and a groove, a projection and a ramp, a first ramp and a second, mating ramp, or any other suitable translative interface where the translative motion guide feature interface translates a rotational motion of a first respective object to a second respective object into an axial motion between the first respective object and the second respective object.

In one example, cam surfaces, formed as grooves or slots on the cap, cooperate with bosses or detents formed in the generally cylindrical sidewall of the socket or sidewall of the container lid. The design of the cam surfaces and associated bosses translate the rotational motion of the container cap into linear, axial motion. This translative motion can be used to provide a liquid and gas impervious seal formed between the container cap and the container lid. It is preferred that the seal be capable of withstanding pressure within the container. The pressure supporting capability of the seal can be enhanced by incorporating features in the design of the container cap and/or the design of the container lid to aid in the container capable of retaining a pressure within the container.

Once opened, the container cap can be re-fitted into the socket, so that the translative motion guide feature of the container cap engages with the translative motion guide feature of the container lid. As the container cap is rotated respective to the container lid, the rotational motion is translated into an axial motion. The axial motion draws the container cap and lid towards one another forming a seal therebetween. The formed seal protects the contents of the container from an ambient atmosphere. This will result in the prevention of spillage, the loss of carbonation, exposure to oxygen, and the prevention of foreign objects from entering the container. The user can opt to discard, recycle, or reuse the container cap and/or container once the entire contents of the container are consumed.

In one example, the container is a beverage container, commonly referred to as a "can". The same principals described herein could be adapted for use on other types of containers, including bottles made of various materials, including plastic, paper, metal (such as aluminum, tin, steel, and stainless steel), cartons, cups, glasses, etc. In one particularly preferred embodiment, the container can be an aluminum can with a body manufactured of an aluminum alloy material, and a container lid being manufactured of the same aluminum alloy material as the container. The container cap can be made of the same aluminum alloy material as the container and container lid, or of a material such as metal, plastic, molded paper pulp, glass, or any other suitable material of sufficient hardness that the surfaces of the translative motion guide feature do not deform during opening and closing operations.

In accordance with one embodiment of the present invention, the invention consists of a resealable container assembly comprising:

- a generally vertical lid sidewall having a tubular frustum shape extending between an upper peripheral edge and a lower peripheral edge;
- a chuck shoulder extending annularly about and extending radially outward from the generally vertical lid sidewall upper peripheral edge;
- a lid container joining formation peripherally formed about and extending upward and radially outward from a peripheral outer edge of the chuck shoulder, the container lid and container joining formation being adapted to assemble the container lid to a joining formation of a container body, the container body comprising a tubular sidewall extending upward from a container body closed bottom wall; and
- a container lid translative motion guide feature integral with the generally vertical lid sidewall, the container lid translative motion guide feature extending radially inward from a radially interior surface of the generally vertical lid sidewall,
- wherein the container lid and the generally vertical lid sidewall and container joining formation are unitarily formed of the same material,
- wherein the container lid translative motion guide feature is adapted to engage with a mating translative motion guide feature of a container cap to guide and retain the container cap in a position providing a seal between the container lid and container cap.

Container Body—General Design

In a second aspect, the container body is substantially tubular and the bottom wall is integrally formed with the sidewall.

In yet another aspect, the container body is substantially tubular and the bottom wall is contiguous with the sidewall.

In yet another aspect, the container body is generally tubular and the bottom wall is integrally formed with the sidewall.

In yet another aspect, the container body is generally tubular and the bottom wall is contiguous with the sidewall.

In yet another aspect, the container body includes a frustum shape and the bottom wall is integrally formed with the sidewall.

In yet another aspect, the container body includes a frustum shape and the bottom wall is contiguous with the sidewall.

In yet another aspect, the container body includes a frustum shape and is designed to fit withing the cavity of an adjacent container body.

In yet another aspect, the joining formation is a rolled annular bead on the peripheral upper edge.

In yet another aspect, the joining formation is a rolled annular bead on the peripheral upper edge adapted to accept a snap-on container lid.

In yet another aspect, the joining formation is a rolled annular bead on the peripheral upper edge adapted to accept a snap-on container cap.

In another aspect, the joining formation of the container body is formed having a diameter that is smaller than a diameter of the container body.

In another aspect, the joining formation of the container body is formed having a diameter that is larger than a diameter of the container body.

In yet another aspect, the bottom wall of the container body includes a domed shape feature.

In yet another aspect, the bottom wall of the container body includes a domed shape feature, wherein the domed shaped feature extends upwards, extending into an interior volume of the container body.

In yet another aspect, the bottom wall of the container body includes a boss shape feature.

In yet another aspect, the bottom wall of the container body includes a boss shape feature, wherein the boss shaped feature extends upwards, extending into an interior volume of the container body.

In another aspect, the joining formation of the container body is designed to be rolled together with the lid container joining formation to create a container body and lid assembly seam (alternatively referred to as a double-seam).

In another aspect, the joining formation of the container body is formed having an annular or circular shape and the container body is formed having any cross sectioned shape.

In another aspect, the joining formation of the container body is formed having an annular or circular shape and the container body is formed having a circular cross sectioned shape.

In another aspect, the joining formation of the container body is formed having an annular or circular shape and the container body is formed having a non-circular cross sectioned shape.

In another aspect, the joining formation of the container body is formed having an annular or circular shape and the container body is formed having a spiral cross sectioned shape.

In another aspect, the joining formation of the container body is formed having an annular or circular shape and the container body is formed having a rectangular cross sectioned shape.

In another aspect, the joining formation of the container body is formed having an annular or circular shape and the container body is formed having a square cross sectioned shape.

In another aspect, the joining formation of the container body is formed having an annular or circular shape and the container body is formed having a polygonal cross sectioned shape.

In another aspect, the joining formation of the container body is formed having an annular or circular shape and the container body is formed having a segmented cross sectioned shape.

In yet another aspect, the container body includes annular demarcations to delineate certain volumes within the container cavity.

In yet another aspect, the container body includes annular reinforcement features to aid in stiffening the container sidewall.

In yet another aspect, the container body includes a stacking feature.

In yet another aspect, the container body includes a stacking feature, the stacking feature being defined by an inverted frustum shape proximal the bottom wall of the container body

Container Body—Sealing

In yet another aspect, the container body includes a sealing surface.

In yet another aspect, the container body includes a sealing surface, wherein the sealing surface is designed to engage with a mating sealing surface of the container cap.

In yet another aspect, the container body includes a sealing surface, wherein the sealing surface is formed as an annular ring about a surface of a rolled annular ring of the container body.

In yet another aspect, the container body includes a sealing surface, wherein the sealing surface is provided as an annular ring about a radially inward facing surface of the double seam of the container lid and container body assembly.

## Lid—General Design

In another aspect, the container lid additionally includes a container lid bottom wall extending in a substantially radial direction inward respective to the generally vertical lid sidewall;

In yet another aspect, the container lid includes a container lid bottom wall, a sidewall extending generally perpendicular to and circumscribing a peripheral edge of the bottom wall, and a seaming panel (alternatively referred to as a lid joining formation) formed about a free end of the sidewall.

In yet another aspect, the container lid sidewall is contiguous with the peripheral edge of the container lid bottom wall.

In yet another aspect, the container lid includes a countersink formed between the container lid bottom wall and the container lid sidewall.

In yet another aspect, the container lid translative motion guide features are formed in the container lid sidewall.

In yet another aspect, the container lid includes a chuck shoulder formed between the container lid sidewall and the seaming panel.

In yet another aspect, the container lid includes the chuck shoulder formed as a substantially radial element and a chuck wall formed as a generally vertical element.

In yet another aspect, the chuck shoulder and the chuck wall include a small radial transition section extending therebetween.

In yet another aspect, the chuck shoulder is located closer to an upper edge of the container lid compared to the container lid translative motion guide features.

In yet another aspect, the chuck shoulder is located about an upper edge of the container lid sidewall.

In yet another aspect, the chuck shoulder is located about the upper edge of the container lid sidewall, whereas the container lid translative motion guide features are formed in the container lid sidewall.

In yet another aspect, the container lid is fabricated from a single sheet of planar material.

In yet another aspect, the container lid is fabricated from two (2) portions of planar material, the container lid being fabricated from the first portion of the sheet of planar material and a Stay-On-Tab (SOT) being fabricated from the second portion of the sheet of planar material.

In another aspect, the bottom wall, the sidewall and the container lid are all made of a same material.

In yet another aspect, the bottom wall, the sidewall and the container lid are all fabricated from one planar sheet of material.

In yet another aspect, the bottom wall, the sidewall and the container lid are all fabricated from one planar sheet of material, wherein the material is a metal.

In yet another aspect, the material is selected from a group of materials, the group of materials comprising:

a. Metal,
b. Aluminum alloy,
c. Steel alloy,
d. Tin,
e. Plastic,
f. Nylon,
g. Polyvinyl chloride (PVC),
h. Polyethylene terephthalate (PETE or PET),
i. Thermoplastic elastomer (TPE),
j. High-Density Polyethylene (HDPE),
k. Polypropylene (PP),
l. Polycarbonate.

In yet another aspect, the bottom wall and the sidewall of the container lid are all fabricated from one planar sheet of material, wherein the material is aluminum.

In yet another aspect, at least one of the bottom wall, the sidewall, the seaming panel, and the container lid is made of an aluminum alloy.

In yet another aspect, the bottom wall, the sidewall, the seaming panel and the container lid are all made of the aluminum alloy.

## Lid—Sealing

In yet another aspect, the container lid includes a sealing surface.

In yet another aspect, the container lid includes a sealing surface, wherein the sealing surface is designed to engage with a mating sealing surface of the container cap.

In yet another aspect, the container lid includes a sealing surface, wherein the sealing surface is formed as an annular ring on a top surface of the bottom wall of the container lid.

In yet another aspect, the container lid includes a sealing surface, wherein the sealing surface is formed as an annular ring about a surface of the sidewall adjacent to the chuck wall of the container lid.

In yet another aspect, the container lid includes a sealing surface, wherein the sealing surface is formed as an annular ring about a surface of the sidewall adjacent to the chuck shoulder of the container lid.

In yet another aspect, the container lid includes a sealing surface, wherein the sealing surface is provided as an annular ring about an upper surface of the seaming panel of the container lid.

In yet another aspect, the container lid includes a sealing surface, wherein the sealing surface is provided as an annular ring about an upper surface of the double seam of the container lid and container body assembly.

In yet another aspect, the container lid includes a sealing surface, wherein the sealing surface is provided as an annular ring about a radially inward facing surface of the double seam of the container lid and container body assembly.

In yet another aspect, the container lid includes a sealing surface, wherein the sealing surface is formed as an annular ring about a surface of a lower portion of the sidewall of the container lid.

In yet another aspect, the container lid includes a sealing surface, wherein the sealing surface is formed as an annular ring about a surface proximate the countersink of the container lid.

In yet another aspect, the container lid includes a sealing surface, wherein the sealing surface is formed as an annular ring about a surface of a rolled annular end ring of the container lid.

In yet another aspect, the container lid includes a sealing surface, wherein the sealing surface is formed as an annular ring about a surface of a rolled annular end ring formed at a lower edge of the sidewall of the container lid.

In yet another aspect, the container lid includes a sealing surface, wherein the sealing surface is formed as an annular ring about at least one of (a) an upper surface of a rolled annular end ring formed at a lower edge of the sidewall of the container lid and (b) a radially inner surface of the rolled annular end ring formed at the lower edge of the sidewall of the container lid.

Lid—Socket

In yet another aspect, the container lid includes a socket extending downwardly into an interior space of the container body, the socket including a sidewall and a bottom wall. The container cap including a sidewall and a bottom wall, and wherein the container cap is adapted to fit into the socket.

In yet another aspect, the socket of the container lid is formed within the planar base panel of the container lid.

In yet another aspect, the socket of the container lid is located proximate a circumferential edge of the container lid.

In yet another aspect, the entire peripheral edge of the socket of the container lid is concentrically located respective to the seaming panel or the circumferential edge of the container lid.

In yet another aspect, a peripheral edge wall of the socket of the container lid is located between a seaming panel and a peripheral countersink.

In yet another aspect, the peripheral edge wall of the socket of the container lid is arranged being generally vertically oriented.

In yet another aspect, the peripheral edge wall of the socket of the container lid is arranged being generally vertically oriented, the peripheral edge wall further comprising at least one lid translative motion guide feature.

In yet another aspect, the peripheral edge wall of the socket of the container lid is arranged being generally vertically oriented; the peripheral edge wall further comprising two (2) lid translative motion guide features.

In yet another aspect, the peripheral edge wall of the socket of the container lid is arranged being generally vertically oriented; the peripheral edge wall further comprising three (3) lid translative motion guide features.

In yet another aspect, the peripheral edge wall of the socket of the container lid is arranged being generally vertically oriented; the peripheral edge wall further comprising four (4) lid translative motion guide features.

In yet another aspect, the peripheral edge wall of the socket of the container lid is arranged being generally vertically oriented; the peripheral edge wall further comprising five (5) lid translative motion guide features.

In yet another aspect, the peripheral edge wall of the socket of the container lid is arranged being generally vertically oriented; the peripheral edge wall further comprising six (6) lid translative motion guide features.

In yet another aspect, the peripheral edge wall of the socket of the container lid is arranged being substantially vertically oriented.

In yet another aspect, the peripheral edge wall of the socket of the container lid is arranged being substantially vertically oriented, the peripheral edge wall further comprising at least one lid translative motion guide feature.

In yet another aspect, the socket additionally includes an assembly element for assembling and retaining a secondary component to the container lid.

In yet another aspect, the assembly element formed within the socket is located within the sidewall of the socket.

In yet another aspect, the assembly element formed within the sidewall of the socket is provided in a form of a lid translative motion guide feature.

In yet another aspect, the assembly element formed within the sidewall of the socket is provided in a form of a cam track.

In yet another aspect, the assembly element formed within the sidewall of the socket is provided in a form of a cam engaging projection.

In yet another aspect, the assembly element formed within the sidewall of the socket is provided in a form of a segment of a helical thread.

In yet another aspect, the assembly element formed within the sidewall of the socket is provided in a form of a projection for engaging with a segment of a helical thread.

In yet another aspect, the assembly element formed within the sidewall of the socket is provided in a form of a segment of a groove.

In yet another aspect, the assembly element formed within the sidewall of the socket is provided in a form of a projection for engaging with a segment of a groove.

In yet another aspect, the translative motion guide feature includes a leading end and a trailing end.

In yet another aspect, the leading end of the translative motion guide feature includes an angled lead in formation.

In yet another aspect, the trailing end of the translative motion guide feature includes a rotational locking formation.

In yet another aspect, the trailing end of the translative motion guide feature includes a rotational locking formation includes a detent feature, wherein the detent feature engages with the mating translative motion guide feature.

In yet another aspect, the container lid sidewall and the socket sidewall are distinct from one another.

In yet another aspect, the container lid sidewall and the socket sidewall are the same.

In yet another aspect, the container lid sidewall is formed having a frustum shape extending between the upper peripheral edge and the lower peripheral edge, wherein the frustum shape has a sidewall angle enabling nesting between two container lids.

In yet another aspect, the container lid sidewall is formed having a frustum shape extending between the upper peripheral edge and the lower peripheral edge, wherein the frustum shape has a sidewall angle enabling nesting between two container lids, wherein an interior surface of each lid translative motion guide feature nests against an exterior surface of the sidewall of a second container lid inserted into the first container lid.

In yet another aspect, the container lid sidewall is formed having a frustum shape extending between the upper peripheral edge and the lower peripheral edge, wherein the frustum shape has a sidewall angle enabling nesting between two container lids, wherein an interior surface of each lid translative motion guide feature nests against an exterior surface of the sidewall of a second container lid inserted into the first container lid, wherein a bottom surface of a container lid bottom wall of the second container lid is located proximate to an upper surface of a bottom wall of the first container lid.

In yet another aspect, the container lid sidewall is formed having a frustum shape extending between the upper peripheral edge and the lower peripheral edge, wherein the frustum shape has a sidewall angle enabling nesting between two container lids, wherein an interior surface of each lid translative motion guide feature nests against an exterior surface of the sidewall of a second container lid inserted into the first container lid, wherein a bottom surface of a container lid

bottom wall of the second container lid is located proximate to an upper surface of a stay-on tab of the first container lid.

In yet another aspect, the container lid sidewall is formed having a frustum shape extending between the upper peripheral edge and the lower peripheral edge, wherein the frustum shape has a sidewall angle enabling nesting between two container lids, wherein an interior surface of each lid translative motion guide feature nests against an exterior surface of the sidewall of a second container lid inserted into the first container lid, wherein a top, exterior surface of a seaming panel (joining formation) of the first container lid is located proximate to an interior (underside) surface of a seaming panel (joining formation) of the second container lid.

In yet another aspect, the container lid additionally includes a countersink formed about a periphery of the lower peripheral edge of the container lid.

In yet another aspect, the container lid additionally includes a countersink formed about a periphery of the lower peripheral edge of the container lid, the countersink extending between a first, radially outer edge of the countersink and a second, radially inner edge, the first, radially outer edge being contiguous with a lower edge of the container lid sidewall and the second, radially inner edge being contiguous with the radial bottom surface of the container lid.

In yet another aspect, the container lid additionally includes a countersink formed about a periphery of the lower peripheral edge of the container lid, wherein the countersink is formed having a U-shaped bottom.

In yet another aspect, the container lid additionally includes a countersink formed about a periphery of the lower peripheral edge of the container lid, wherein the countersink is formed having a v-shaped bottom.

In yet another aspect, the container lid additionally includes a countersink formed about a periphery of the lower peripheral edge of the container lid, wherein the countersink is formed having a chamfered bottom.

In yet another aspect, the container lid additionally includes a countersink formed about a periphery of the lower peripheral edge of the container lid, wherein the countersink is formed having a chamfered bottom, wherein the chamfered bottom includes a radial bottom surface, a first 45 degree chamfered wall segment extending between a first, radially outer edge of the radial bottom surface and the sidewall and a second 45 degree chamfered wall segment extending between a second, radially inner edge of the radial bottom surface and the bottom wall.

Lid—Stay-on Tab (SOT) Design

In yet another aspect, the container lid can include a currently commercially available Stay-On Tab (SOT) design.

In yet another aspect, the container lid can include a currently commercially available Stay-On Tab (SOT) design includes a Stay-On Tab (SOT) secured to the bottom wall of the container lid.

In yet another aspect, the container lid can include a currently commercially available Stay-On Tab (SOT) design includes a Stay-On Tab (SOT) secured to the bottom wall of the container lid by a rivet.

In yet another aspect, the container lid can include a currently commercially available Stay-On Tab (SOT) design includes a Stay-On Tab (SOT) secured to the bottom wall of the container lid by a rivet formed in the bottom wall of the container lid.

In yet another aspect, the container lid can include a currently commercially available Stay-On Tab (SOT) design includes a Stay-On Tab (SOT) secured to the bottom wall of the container lid by a rivet integrally formed in the bottom wall of the container lid.

In yet another aspect, the container lid can include a currently commercially available Stay-On Tab (SOT) design, wherein the Stay-On Tab (SOT) works in conjunction with a score line formed in an upper surface of the bottom wall of the container lid.

In yet another aspect, the container lid can include a currently commercially available Stay-On Tab (SOT) design, wherein the Stay-On Tab (SOT) works in conjunction with a score line formed in an upper surface of the bottom wall of the container lid, wherein the score line is provided in a shape creating a tear panel.

In yet another aspect, the container lid can include a currently commercially available Stay-On Tab (SOT) design, wherein the Stay-On Tab (SOT) works in conjunction with a score line formed in an upper surface of the bottom wall of the container lid, wherein the score line is provided in a shape creating a tear panel and a hinge for the tear panel.

In yet another aspect, the tear panel is formed to further include a tear panel reinforcement section.

In yet another aspect, the container lid bottom wall can include reinforcing formations to maintain a desired shape.

In yet another aspect, the tear panel portion of the container lid bottom wall can include reinforcing formations to maintain a desired shape.

In yet another aspect, the container lid can include a currently commercially available Stay-On Tab (SOT) design, which additionally includes at least one reinforcing element formed in the bottom wall of the container lid.

In yet another aspect, the container lid can include a currently commercially available Stay-On Tab (SOT) design, which additionally includes a finger clearance formed in the bottom wall of the container lid.

In yet another aspect, the container lid bottom wall can include formations to improve ergonomic accessibility to at least one feature.

In yet another aspect, the container lid bottom wall can include formations to improve ergonomic accessibility to the tab.

In yet another aspect, the container lid can include a reinforced section formed surrounding the currently commercially available Stay-On Tab (SOT) design.

Lid—Open Lid Design

In yet another aspect, the container lid can include a rolled annular end ring.

In yet another aspect, the container lid can include a rolled annular end ring, wherein the rolled annular end ring is formed by rolling the material at the lower edge of the sidewall in an outward direction.

In yet another aspect, the rolled annular end ring is formed having a circular cross section shape.

In yet another aspect, the rolled annular end ring is formed having a non-circular cross section shape.

In yet another aspect, the rolled annular end ring is formed having an elliptical cross section shape.

In yet another aspect, the container lid can include a rolled annular end ring forming a passageway.

In yet another aspect, the rolled annular end ring is formed having a semi-circular cross section shape.

In yet another aspect, the rolled annular end ring is formed having a semi-circular cross section shape, wherein the

rolled annular end ring is formed by rolling the material at the lower edge of the sidewall in an outward direction at least 180 degrees.

In yet another aspect, the rolled annular end ring is formed having a semi-circular cross section shape, wherein the rolled annular end ring is formed by rolling the material at the lower edge of the sidewall in an outward direction at least 270 degrees.

In yet another aspect, the rolled annular end ring is formed having a semi-circular cross section shape, wherein the rolled annular end ring is formed by rolling the material at the lower edge of the sidewall in an outward direction to approximately 360 degrees.

Lid—Peel Off Foil Design

In yet another aspect, the container lid can include a currently commercially available peel off foil design.

In yet another aspect, the container lid can include an opening or passageway accessing contents within the container.

In yet another aspect, the opening or passageway of the container lid can be defined by a sheared edge of a bottom wall of the container lid.

In yet another aspect, the opening or passageway of the container lid can be defined by a rolled edge along a lower portion of a sidewall of the container lid.

In yet another aspect, the container lid can include an opening or passageway accessing contents within the container, the passageway being covered and sealed by a peel off foil member.

In yet another aspect, the container lid can include a currently commercially available peel off foil design includes an actuation tab hingeably formed with a peel off foil body.

In yet another aspect, the container lid can include a currently commercially available peel off foil design includes the actuation tab hingeably formed with the peel off foil body, wherein the actuation tab is unitarily formed with the peel off foil body.

In yet another aspect, the peel off foil member includes an actuation tab hingeably formed with a peel off foil body.

In yet another aspect, the peel off foil member is initially sealed to an upper surface of the container lid.

In yet another aspect, the peel off foil member is initially sealed to an upper surface of the container lid using an adhesive.

In yet another aspect, the peel off foil member is initially sealed to an upper surface of the container lid using an adhesive, wherein the adhesive is formulated to reside on the foil when the foil is removed from the container lid.

In yet another aspect, the peel off foil member is initially sealed to an upper region of the rolled edge of the container lid.

In yet another aspect, the peel off foil member is initially sealed to an upper surface of the bottom wall of the container lid.

In yet another aspect, the peel off foil member can be fabricated of an aluminum sheet.

In yet another aspect, the peel off foil member can be fabricated of any suitable material, wherein the suitable material provides Oxygen and a moisture barrier.

In yet another aspect, the peel off foil member can be fabricated of any suitable material, including an aluminum sheet, a stainless steel sheet, a copper sheet, a plastic sheet, a waxed paper sheet, polyethylene (PE), high-density polyethylene (HDPE), polyethylene terephthalate (PET), polypropylene (PP) and polyvinyl chloride (PVC), a heat induction sealing material, or any other suitable material.

Lid—Translative Motion Guide Feature

In yet another aspect, the container lid further comprising a socket adapted to receive the container cap and a lid translative motion guide feature, wherein the lid translative motion guide feature includes elements formed on opposing generally cylindrical surfaces of the socket.

In yet another aspect, the container lid further comprising a socket adapted to receive the container cap and a lid translative motion guide feature, wherein the lid translative motion guide feature extends radially inward from the sidewall of the container

In yet another aspect, the lid translative motion guide feature can be a boss feature that slideably engages with a cam surface, multiple boss features that slideably engages with multiple cam surfaces, a ramp surface engaging with a mating surface, multiple ramp surfaces engaging with one or more surfaces, a first ramp surface engaging with a second ramp surface, multiple first ramp surfaces engaging with multiple second ramp surfaces, a first threaded surface engaging with a second threaded surface, a pair of first threaded surfaces engaging with a pair of second threaded surfaces, a plurality of first threaded surfaces engaging with a like plurality of second threaded surfaces, and the like.

In yet another aspect, the threaded surfaces can be formed having a helical thread shape.

In yet another aspect, each translative motion guide feature is formed on an outer cylindrical surface of the container cap, and projections are formed on the inner cylindrical surface of the socket, wherein each translative motion guide feature is adapted to engage the projections whereby rotational movement of the container cap imparts translational movement to the container cap.

In yet another aspect, the first drive system for driving the container cap into operable engagement with the tear panel, thereby pushing the tear panel into the can to form an opening in the container lid; and

a second drive system, operable in response to the first drive system, to increase the engagement between the container cap and the tear panel,

wherein the container cap includes a sharp projection formed in a center of the bottom wall of the container cap, and the socket includes a score line formed in a center of the bottom wall of the socket, in juxtaposition to the sharp projection when the container cap is positioned in the socket.

In yet another aspect, the second drive means includes a second linear motion drive mechanism, capable of converting rotational motion of the container cap into a separation force applied upon the tear panel.

In yet another aspect, the first linear motion drive mechanism includes first and second cam structures, formed respectively on the container cap cylindrical sidewall and socket cylindrical sidewall.

In yet another aspect, the second linear motion drive mechanism includes third and fourth cam structures, formed respectively on the container cap bottom wall and the socket bottom wall.

In yet another aspect, the first cam structure includes a groove formed in the container cap cylindrical sidewall, and the second cam structure includes at least one projection formed on the socket cylindrical sidewall.

In yet another aspect, the third cam structure includes at least one cap ramp and the fourth cam structure includes at least one socket ramp in sliding engagement with the at least one cap ramp.

In yet another aspect, the at least one cap ramp includes three ramps arranged peripherally around the container cap bottom wall, in sliding engagement with the at least one socket ramp.

In yet another aspect, the container cap second linear drive mechanism element is a first series of ramps, and the mating socket second linear drive mechanism element is a second series of ramps, wherein each ramp of the first series of ramps and each associated ramp of the second series of ramps are in sliding engagement with one another.

In yet another aspect, at least a portion of the ramp is configured to be an embossed feature, extending downward from the bottom surface of the container cap.

In yet another aspect, at least a portion of the ramp is configured to be a debossed feature, extending upward from the bottom surface of the container cap.

In yet another aspect, at least a portion of the ramp is configured to be an embossed feature, extending downward from the bottom surface of the container cap.

In yet another aspect, at least a portion of the ramp is configured to be an embossed feature, extending downward from the bottom surface of the container cap and a second portion of the ramp is configured to be a debossed feature, extending upward from the bottom surface of the container cap.

In yet another aspect, the opening process includes a mechanism enabling the container cap to distally separate from the container lid upper surface, thus separating the sealing element from the upper surface of the container cap receiving socket bottom wall, eliminating any friction between the sealing element and the associated mating surface.

In yet another aspect, separation of the sealing element and the associated mating surface enables depressurization of the pressurized contents within container to eliminate missiling.

In yet another aspect, the lid translative motion guide feature can be formed using an elastomer applied to the container lid.

In yet another aspect, the lid translative motion guide feature can be formed using the elastomer applied to the socket wall of the container lid.

In yet another aspect, the lid translative motion guide feature can be formed using the elastomer applied to the socket wall of the container lid, wherein the socket wall is the sidewall.

In yet another aspect, the lid translative motion guide feature can be formed by dispensing the elastomer onto the socket wall of the container lid.

In yet another aspect, the lid translative motion guide feature can be formed by dispensing the elastomer onto the socket wall of the container lid, wherein the socket wall is the sidewall.

In yet another aspect, the lid translative motion guide feature can be formed by dispensing the elastomer onto the socket wall of the container lid and using a mating lid translative motion guide feature of the container cap to shape the dispensed elastomer into a desired shape creating the lid translative motion guide feature. The formed elastomer remains bonded to the socket sidewall of the container lid.

In yet another aspect, the lid translative motion guide feature can be formed by dispensing the elastomer onto the socket wall of the container lid and using a mating lid translative motion guide feature of the container cap to shape the dispensed elastomer into a desired shape creating the lid translative motion guide feature. The formed elastomer remains bonded to at least a portion of a countersink, the socket sidewall, a chuck wall, and/or at least a portion of the seaming panel of the container lid.

In yet another aspect, the lid translative motion guide feature can be formed by dispensing the elastomer onto the socket wall of the container lid and using a mating lid translative motion guide feature of the container cap to shape the dispensed elastomer into a desired shape creating the lid translative motion guide feature, wherein the lid translative motion guide feature has a thread shape.

In yet another aspect, the lid translative motion guide feature can be formed by dispensing the elastomer onto the socket wall of the container lid and using a mating lid translative motion guide feature of the container cap to shape the dispensed elastomer into a desired shape creating the lid translative motion guide feature, wherein the lid translative motion guide feature includes a plurality of like threaded shapes.

In yet another aspect, the elastomer can be dispensed onto any existing container lid, including a currently commercially available Stay-On Tab (SOT) design, ring-pull design, full panel ring-pull easy open design, and foil peel-off membrane design.

## Lid—Score Line

In yet another aspect, the score line is adapted to define a pathway for initiating and propagating a fracture defining a tear panel from the container lid planar based bottom or socket bottom wall.

In yet another aspect, the score section is formed upon the container lid planar base bottom.

In yet another aspect, the score section is formed upon an exterior (exposed) surface of the container lid planar base bottom.

In yet another aspect, the score section is formed upon an interior (concealed) surface of the container lid planar base bottom.

In yet another aspect, the score section is formed upon at least one of an exterior surface of the container lid planar base bottom and an interior surface of the container lid planar base bottom.

In yet another aspect, the score section is formed upon a socket bottom wall, wherein the socket is formed within the container lid planar base bottom.

In yet another aspect, the score section is concentric with respect to the container lid socket sidewall.

In yet another aspect, the score section is located off-center with respect to the container lid socket sidewall.

In yet another aspect, the score section is formed having a pair of score grooves; the pair of score grooves is arranged substantially parallel to one another.

In yet another aspect, the score section is formed having a pair of score grooves; the pair of score grooves is joined to one another at one end.

In yet another aspect, the score section is formed having a pair of score grooves; the pair of score grooves is joined to one another at one end by a loop formation.

In yet another aspect, the score line is shaped initiating at a looped segment and having a pair of line segments extending from each end of the looped segment, the pair of line segments extending in a like direction generally following a peripheral edge of the socket bottom wall.

In yet another aspect, the score line is shaped initiating at a looped segment and having a pair of line segments extending from each end of the looped segment, the pair of line segments extending in a like direction generally following a peripheral edge of the socket bottom wall, wherein the pointed projection is in alignment with a center of the looped segment of the score line.

In yet another aspect, the score line is formed in an "S" shape.

In yet another aspect, the score line is formed in an "S" shape, defining a pair of tear panels.

In yet another aspect, the score line is formed in an "S" shape, defining a pair of tear panels, wherein each end of the score line defines a respective hinge for the respective tear panel.

In yet another aspect, the score line is adapted to define a hinge section.

In yet another aspect, the container lid further comprising a hinge section defined by ends of the score line, wherein the hinge section extends between the tear panel and the annular surface maintaining attachment of the tear panel to the planar member when the score line is fractured.

In yet another aspect, the score line is formed using a single score forming step.

In yet another aspect, the score line is formed using multiple score forming steps.

In yet another aspect, the score line is formed using multiple score forming steps, wherein an intersection between ends of the first score segment formed by the first score forming step and the second score segment formed by a subsequent score forming step is facilitated by including an enlarged score area located at the intersection between the first score segment and the second score segment.

In yet another aspect, the enlarged score area adjoining two (2) separately formed score line segments is employed to perform at least one function of initiating and propagating the fracture of the score line.

In yet another aspect, the multiple score line process employs registration features formed within the container lid to maintain registration accuracy between the first score forming step and each subsequent score forming step.

In yet another aspect, the score line can be reinforced by applying a sealant material on at least one side of the material having the score line. The reinforced score line can be formed partially extending through the score receiving substrate or extend completely through the score receiving substrate.

In yet another aspect, the enlarged score area adjoining two (2) separately formed score line segments, includes a thinned material fracture section located upon a same surface as the score line, and a broader compression formed concave surface located on an opposite side of the score receiving substrate, wherein the combination ensures a desired movement of material during the forming process. The process is adapted to form the scoring fracture initiation or propagation section by the traversing displacement of the material.

In yet another aspect, the enlarged score area adjoining two (2) separately formed score line segments can be of any suitable shape, including circular, oval, oblong, square, rectangular, diamond, hexagonal, octagonal, or any other suitable shape.

In yet another aspect, at least one end of the score line includes an outward arched segment, wherein the outward arched segment is adapted to direct any additional fracturing away from the hinge formation.

In yet another aspect, both ends of the score line include outward arched segments, wherein the outward arched segments are adapted to direct any additional fracturing away from the hinge formation.

In yet another aspect, the score line can be arranged providing a counter-clockwise driven opening, having score line fracture initiating location on a left side of the tear panel and a hinge located on a right side.

In yet another aspect, the score line can be arranged providing a clockwise driven opening, having score line fracture initiating location on a right side of the tear panel and a hinge located on a left side.

In yet another aspect, the container lid includes at least one score line, wherein the score line is of a shape that defines a tear panel.

In yet another aspect, the container lid includes at least one score line, wherein the score line is of a shape that defines a hinge associated with the tear panel.

In yet another aspect, the container lid includes at least one score line, wherein the score line is of a shape that enables removal of the tear panel.

In yet another aspect, the container lid includes at least one score line, wherein the score line is of a shape that circumscribes a peripheral edge of the container lid bottom wall, enabling removal of the tear panel, wherein the tear panel is a majority or the entire bottom wall.

Lid—Reinforcement Section

In yet another aspect, the container lid further comprising a reinforcement section formed within a bottom wall of the socket of the container lid.

In yet another aspect, the container lid further comprising a reinforcement structure located about a peripheral edge of the container lid planar base bottom.

In yet another aspect, the container lid further comprising a reinforcement structure that is formed as an embossed feature extending upward into a void within the socket cavity.

In yet another aspect, the container lid further comprising a reinforcement structure that is formed as a debossed feature extending downward away from the void within the socket cavity.

In yet another aspect, the container lid further comprises a reinforcement structure that is formed having both the embossed feature extending upward into the void within the socket cavity and the debossed feature extending downward away from the void within the socket cavity.

In yet another aspect, the container lid further comprises a reinforcement structure that is formed on the planar base bottom, outward of the score line.

In yet another aspect, the container lid further comprises a reinforcement structure that is formed on the container lid planar base bottom, outward of the score line.

In yet another aspect, the reinforcement structure includes features that are employed for translation of a radial motion into at least one of an axial motion and an axial force.

In yet another aspect, the reinforcement structure includes features that are employed to induce a torsional force upon the tear panel to rotate or bend the tear panel away from the container lid planar base bottom.

In yet another aspect, the reinforcement structure is adapted to distribute the fracturing force applied by the container cap onto the tear panel to propagate the bifurcation fracturing of the score line.

In yet another aspect, the reinforcement structure can be employed for nesting of at least one feature provided on the container cap.

In yet another aspect, the container lid can include a reinforcement structure formed about the socket sidewall.

In yet another aspect, the container lid can include a reinforcement structure formed about an upper edge of the socket sidewall.

In yet another aspect, the container lid can include a reinforcement structure formed about the seaming panel of the container lid.

In yet another aspect, the container lid can include a reinforcement structure formed about a lower portion of the seaming panel of the container lid.

In yet another aspect, the container lid can include a reinforcement structure formed about the seaming panel of the container lid, wherein the reinforcement feature is employed to retain a cylindrical shape of the container lid sidewall.

In yet another aspect, the container lid can include a reinforcement structure formed about the lower portion of the seaming panel of the container lid, wherein the reinforcement structure is employed as a support for a respective seating feature of a seaming chuck.

In yet another aspect, the container lid can include a reinforcement structure formed about the lower portion of the seaming panel of the container lid, wherein the reinforcement structure is employed to provide planar support for the respective seating feature of the seaming chuck.

In yet another aspect, the container lid can include a reinforcement structure formed about a bottom edge of the socket sidewall.

In yet another aspect, the container lid can include a reinforcement structure formed about a bottom edge of the socket sidewall, wherein the reinforcement feature is a countersink.

In yet another aspect, the exclusion of the countersink enhances the ability of the container lid to funnel any residual beverage volume back towards an opened tear panel, returning the residual beverage volume to an interior of the container.

In yet another aspect, the replacement of the countersink with a frustum shaped transition between the cylindrical sidewall and the bottom wall of the container lid enhances the ability of the container lid to funnel any residual beverage volume back towards an opened tear panel, returning the residual beverage volume to an interior of the container.

## Cap—General Design

In yet another aspect, the container cap is fabricated from a single sheet of planar material.

In yet another aspect, the container cap is fabricated using at least one metal forming process. The at least one metal forming process can include a stamping process, a sheering process, a drawing process, a wall ironing process, a metal pinching process, a rolling process, and the like.

In yet another aspect, the container cap is fabricated using at least one molding process. The at least one molding process can include an injection molding process, a vacuum molding process, a blow molding process, a thermoforming process, an over-molding process, a slush molding process, a transfer molding process, a pressure molding process, and the like.

In yet another aspect, the container cap is fabricated using a molding process. The molding process can include a wax or resin impregnated with the molding material.

In yet another aspect, the container cap is fabricated using a molding process. The molding process making a part that can include a wax or resin coating on the molded material.

In yet another aspect, the container cap is fabricated using a molding process. The molding process making a part that can include a plastic lining on the molded material.

In yet another aspect, the container cap is fabricated using a machining process.

In yet another aspect, the container cap is fabricated using a molding process.

In yet another aspect, the container cap is fabricated using a casting process.

In yet another aspect, a cap planar traversing wall, a sidewall, and a grip feature are all made of a same material.

In yet another aspect, the container cap planar traversing wall, the sidewall, and the grip feature are all fabricated from one planar sheet of material.

In yet another aspect, the material is selected from a group of materials, the group of materials comprising:

a. Metal,
b. Aluminum alloy,
c. Steel alloy,
d. Tin,
e. Plastic,
f. Nylon,
g. Polyvinyl chloride (PVC),
h. Polyethylene terephthalate (PETE or PET),
i. Thermoplastic elastomer (TPE),
j. High-Density Polyethylene (HDPE),
k. Polypropylene (PP),
l. Polycarbonate,
m. Waxed or resin impregnated paper/organic fiber pulp,
n. Waxed or resin coated paper/organic fiber pulp, and
o. Plastic lined paper/organic fiber pulp.

In yet another aspect, at least one of the container cap planar traversing wall, the sidewall, and the grip feature is made of an aluminum alloy.

In yet another aspect, the container cap planar traversing wall, the sidewall, and the grip feature are all made of the aluminum alloy.

In yet another aspect, the container cap can include at least one cap reinforcement structure.

In yet another aspect, the container cap reinforcement structure can be formed as a gripping element.

In yet another aspect, the container cap reinforcement structure can be formed as a sidewall.

In yet another aspect, the container cap reinforcement structure can be formed as a countersink.

In yet another aspect, the container cap reinforcement structure can be formed as at least one ramp.

In yet another aspect, the container cap reinforcement structure can be formed as a tamper indicator.

## Cap—Grip

In yet another aspect, the container cap includes at least one grip.

In yet another aspect, the container cap further comprising a grip element formed in the upper end of the container cap.

In yet another aspect, the container cap further comprising at least one grip element formed about an exterior of the upper end of the container cap.

In yet another aspect, the container cap further comprising at least one grip element formed about a radially outward, exterior surface of the upper end of the container cap.

In yet another aspect, the container cap further comprising a series of grip elements formed about a radially outward, exterior surface of the upper end of the container cap.

In yet another aspect, the container cap further comprising a series of grip elements spatially formed about a radially outward, exterior surface of the upper end of the container cap.

In yet another aspect, the grip element is formed having an embossed shape, wherein the embossed shape extends radially outward from a container cap inverted countersink.

In yet another aspect, the grip element can include a series of grip enhancing features.

In yet another aspect, the grip enhancing features can be a series of axially oriented bosses.

In yet another aspect, the grip feature can be designed to receive at least one of:

- a tangential force (such as on an exterior surface of a cylindrical sidewall),
- a direct force (such as on a bar shaped grip), and
- a torsional force (such as on the pivoting grip feature).

In yet another aspect, a lid translative motion guide feature can be formed on an exterior surface of the grip cylindrical sidewall proximate a lower (free) edge thereof.

In yet another aspect, the container cap is designed to include a clearance for features of the container lid, the container lid features being located on the exterior side of the container lid.

In yet another aspect, the container cap is designed to include a clearance for features of the container lid; the container lid features being located on the exterior side of the container lid, features of the container lid can include the tab, the tab rivet, reinforcement formations, and the like.

In yet another, the container cap comprising the cylindrically shaped sidewall and the exterior (upper) surface of the container cap planar transversing surface defining a hollow interior, enables storage of goods therein, when the container cap is assembled to the container lid.

## Cap—Tamper Feature

In yet another aspect, cap includes tamper evidence feature.

In yet another aspect, the tamper evidence feature of the container cap is provided as a frangible skirt circumscribing a peripheral edge of the container cap.

In yet another aspect, the container cap has an upper end having a peripheral edge, and the container cap includes a skirt formed along the peripheral edge, the skirt including an opened indicating feature for visually indicating when beverage container has been opened.

In yet another aspect, the opened indicating feature includes score lines formed radially outwardly at spaced intervals along the skirt, wherein the score lines are broken to allow movement of the skirt when the container cap moves downwardly.

In yet another aspect, the tamper indicator can be formed as an embossed dome shaped upward projection.

In yet another aspect, the embossed dome shaped upward projection operates by allowing a flexure in a direction opposite to the domed shape when unsupported. The flexibility enables the tamper indicator to report, similar to a clicking device.

In yet another aspect, the embossed dome shaped upward projection functions employing a mechanically supported configuration.

In yet another aspect, the embossed dome shaped upward projection can further include a downward projecting probe or operating element to provide support to the embossed dome shaped upward projection.

In yet another aspect, the downward projecting probe or operating element is adapted to contact the opposing surface of the container lid bottom wall. The downward projecting probe contacts the opposing surface of the container lid bottom wall. When the interior volume within the container is pressurized, the contained pressure stiffens the container lid bottom wall. Thus, in a sealed configuration, the downward projecting probe contacting the stiffened container lid bottom wall retains the tamper indicator in an upward shape. When the integrity of the container is compromised, the pressure is equalized within the interior volume of the container, thus no longer providing stiffness to the container lid bottom wall. Thus, in a compromised configuration, the downward projecting probe contacting the unsupported container lid bottom wall no longer retains the tamper indicator in an upward shape, enabling the tamper indicator to flex. The flexibility enables the tamper indicator to report, similar to a clicking device.

In yet another aspect, the embossed dome shaped upward projection functions employing a pneumatically supported configuration.

In yet another aspect, the pneumatically supported configuration employs a vacuum formed within the container. In a vacuum support configuration, the safety indicator is normally drawn towards the interior of the container.

In yet another aspect, the pneumatically supported configuration employs a pressure formed within the container. In a pressure support configuration, the safety indicator is normally forced away from the interior of the container.

In yet another aspect, the embossed dome shaped upward projection is concentrically located respective to a peripheral edge of the container cap.

In yet another aspect, the embossed dome shaped upward projection is located off centered respective to a peripheral edge of the container cap.

In yet another aspect, the tamper indicator would be formed using a fabrication process compatible with the method(s) used for manufacturing the container cap.

In yet another aspect, the downward projecting probe or operating element of the tamper indicator can alternatively be an upward projecting probe extending upward from the container cap receiving socket bottom wall of the container lid.

In yet another aspect, the container cap can be fabricated of a transparent or translucent material, enabling the user to visually inspect for a breach of the can tear panel from the bottom wall of the container lid.

In yet another aspect, the container cap can be fabricated of a transparent or translucent material, enabling the user to visually inspect for breach of the bottom wall of the container lid.

## Cap and Lid Assembly—General Design

In accordance with another variant of a resealable container lid assembly in accordance with the present invention the resealable container lid assembly includes:

- a container lid comprising:
  - a frustum shaped sidewall having a generally cylindrical shape extending between an upper peripheral edge and a lower peripheral edge,
  - a seaming panel formed about the vertical sidewall upper peripheral edge, the seaming panel being adapted to assembly to the container lid to a container,

a container lid rotational and axial translative guide feature integral with the vertical sidewall, and

a container lid seal engaging surface;

a container lid sealing cap comprising:

a resealable container cap generally horizontally oriented traversing wall,

a resealable container cap cylindrical sidewall arranged generally perpendicular to the resealable container cap generally horizontally oriented traversing wall, the resealable container cap exterior sidewall having a cylindrical shape, sized to rotationally engage with an interior surface of the container lid vertical sidewall,

a grip feature adapted to receive a force to cause a rotational motion of the container lid sealing cap,

a sealing cap rotational and axial translative guide feature integral with the container cap vertical sidewall, and

a container cap seal engaging surface; and

a sealing element arranged to provide a seal between the container lid seal engaging surface and the container cap seal engaging surface;

wherein the container cap is inserted into an interior volume defined by the container lid vertical sidewall,

wherein the sealing element engages with the container lid seal engaging surface when the sealing cap rotational and axial guide feature is rotationally engaged with the container lid rotational and axial guide feature.

In another aspect, the sealing element is carried by the container lid.

In another aspect, the sealing element is carried by the container cap.

In another aspect, a first sealing element is carried by the container lid and a second sealing element is carried by the container cap.

In another aspect, the sealing cap rotational and axial guide feature is one of:

a) an at least one cam follower, and

b) an at least one cam track; and

wherein the container lid rotational and axial guide feature is the other of:

a) the at least one cam follower, and

b) the at least one cam track.

In another aspect, the sealing cap rotational and axial guide feature is one of:

a) an at least one ramp, and

b) an at least mating ramp; and

wherein the container lid rotational and axial guide feature is the other of:

a) the at least one mating ramp, and

b) the at least one ramp.

In another aspect, the sealing cap rotational and axial guide feature is one of:

a) an at least one ramp, and

b) an at least projection designed to engage with the ramp; and

wherein the container lid rotational and axial guide feature is the other of:

a) the at least one projection designed to engage with the ramp, and

b) the at least one ramp.

In another aspect, the sealing cap rotational and axial guide feature is one of:

a) an at least one section of a helical thread, and

b) an at least one mating section of a helical thread; and

wherein the container lid rotational and axial guide feature is the other of:

a) the at least one mating section of a helical thread, and

b) the at least one section of a helical thread.

In another aspect, the sealing cap rotational and axial guide feature is one of:

a) an at least one section of a helical thread, and

b) an at least one projection designed to engage with the section of a helical thread; and

wherein the container lid rotational and axial guide feature is the other of:

a) the at least one projection designed to engage with the section of a helical thread, and

b) the at least one section of a helical thread.

In yet another aspect, wherein the container lid seal engaging surface is a frustum shaped surface formed within the container lid vertical sidewall,

wherein the container cap sealing element is arranged having a frustum shaped surface adapted to engage with the frustum shaped surface of the container lid seal engaging surface.

In yet another aspect, the container lid sealing cap further comprises a tamper indicator, wherein the tamper indicator is adapted to inform a consumer when a resealable container assembly comprising the container lid has been breached.

In yet another aspect, the container cap sealing element is one of:

a) a sealing gasket carried by a bottom surface of the resealable container cap generally horizontally oriented traversing wall,

b) a sealing gasket carried by an annular surface of the bottom surface of the resealable container cap generally horizontally oriented traversing wall, or

c) a frustum shaped surface formed within the resealable container cap cylindrical sidewall.

Cap and Lid Assembly—Retention Features

In yet another aspect, the container lid includes a detent feature for securing the container cap in a first position associated with pre-opening, and a second position associated with post-opening.

In yet another aspect, the translative motion guide feature is provided in a form of a cam track, the cam track including a locking detent segment.

In yet another aspect, the locking detent segment is designed to retain the container cap from rotating in a reverse direction following an initial assembly of the container cap to the container cap receiving socket within the container lid.

In yet another aspect, the container cap is retained in a container pre-opened position by locating each socket sidewall cam engaging projections within each respective cam track, with each socket sidewall cam engaging projections being located following the respective embossed cam surface lower detent. Further rotation in an opening direction is hindered by an upward sloping cam groove surface segment.

In yet another aspect, the cam track includes features to retain the container cap within the container cap receiving cavity, while enabling an opening sequence, a dispensing configuration, as a sealing configuration. This can be accomplished by including a downward directed segment at an opposite end of the cam track.

In yet another aspect, the cam track can include at least one of an upper detent and a downward directed segment at an upper distal end thereof, wherein the at least one of an upper detent and a downward directed segment is adapted to curtail any further rotational motion of the container cap,

thus retaining the container cap within the container cap receiving cavity of the container lid.

In yet another aspect, the detent feature is associated with the cam feature.

In yet another aspect, the pre-opening position is associated with functions of storage and transport, and the post-opening position is associated with resealing.

In yet another aspect, the detent feature includes at least a portion of the lid translative motion guide feature.

In yet another aspect, the sealing element is secondarily employed as a retention element to retain a rotational relationship between the container cap and the container lid.

Cap and Lid Assembly—Sealing Formation

In yet another aspect, a seal is formed between the container lid and the container cap, more specifically; the seal is formed between an annular seal provided on a bottom surface of the container cap and a respective sealing surface located on the upper surface of the container lid bottom wall.

In yet another aspect, the sealing feature provided on the container cap is concentrically located respective to a peripheral edge of the container cap.

In yet another aspect, a seal is formed between the container lid and the container cap, more specifically; the seal is formed between an annular seal element carried by an annular surface circumscribing a peripheral edge of the planar traversing wall of the container cap and a mating surface formed on the container lid. The mating section is formed on an annular surface circumscribing a peripheral edge of the socket bottom wall of the container lid.

In yet another aspect, a seal is formed between the container lid and the container cap, more specifically; the seal is formed between an annular seal element carried by an annular surface circumscribing a peripheral edge of the planar traversing wall of the container cap and a mating surface formed on the container lid. The mating section is formed on an annular surface circumscribing a peripheral edge of the socket bottom wall of the container lid, wherein the socket includes the container lid sidewall.

In yet another aspect, a seal is formed between the container lid and the container cap, more specifically; the seal is formed between an annular seal provided on a frustum shaped surface circumscribing an outer peripheral edge of the container cap and a mating section formed on the container lid. The mating section is formed having a frustum shape and is located interposed between the container lid seaming panel and the vertical socket sidewall.

In yet another aspect, the container lid contains a frustum shaped sidewall section, the frustum shaped sidewall section extending between the chuck shoulder and the seaming panel.

In yet another aspect, the container lid contains a frustum shaped sidewall section, the frustum shaped sidewall section extending between the chuck shoulder and the vertical socket sidewall.

In yet another aspect, the container lid contains a frustum shaped cap seal engaging annular section, the frustum shaped cap seal engaging annular section extending between the peripheral edge of the bottom wall and a lower edge of the vertical socket sidewall.

In yet another aspect, the container cap and lid form a seal between the seating arrangement of the socket and the lower surface of the container cap.

In yet another aspect, the container cap and lid form a seal between an upper surface of the substantially planar member and a contacting surface of a flange extending radially outward from a peripheral edge about the container cap.

In yet another aspect, the container cap fits substantially within the socket, and the translative motion guide feature comprises earn surfaces formed in one of the cylindrical sidewalls of the socket and the container cap, and at least one projection formed in the other of the cylindrical sidewalls of the socket and the container cap.

In yet another aspect, the translative motion guide feature is formed as at least one of: a ramp, a cam, a portion of a helical thread.

In yet another aspect, a pliant sealing element can be carried by one of the container cap or the container lid.

In yet another aspect, the pliant sealing element can be located between the container cap and the container lid.

In yet another aspect, the pliant sealing element can be an independent component of the container lid assembly, wherein the pliant sealing element would be located between the container cap and the container lid.

In yet another aspect, the container cap includes a substantially axially extending pliant annular seal that is designed to engage with an interior surface of the countersink of the container lid.

In yet another aspect, the container cap includes a substantially axially extending pliant annular seal that is designed to engage with an interior surface of the countersink of the container lid, wherein the pliant property of the material enables the substantially axially extending pliant annular seal to flex and create a reliable seal.

In yet another aspect, the substantially axially extending pliant annular seal is integral with the container cap.

In yet another aspect, the container cap includes a generally radially extending pliant annular seal that is designed to engage with an outer peripheral surface of the bottom wall of the container lid, wherein the pliant property of the material enables the generally radially extending pliant annular seal to flex and create a reliable seal.

In yet another aspect, the generally radially extending pliant annular seal extends in a radially inward direction from the container cap,

In yet another aspect, the generally radially extending pliant annular seal is integral with the container cap.

In yet another aspect, the container cap includes the substantially axially extending pliant annular seal and the generally radially extending pliant annular seal.

In yet another aspect, the substantially axially extending pliant annular seal and the generally radially extending pliant annular seal are integral with the container cap.

In yet another aspect, the container cap includes a generally axially extending pliant annular seal that is designed to engage with a frustum shaped interior surface of the peripheral edge of bottom wall of the container lid.

In yet another aspect, the container lid comprising the frustum shaped interior surface is exclusive of a countersink.

In yet another aspect, the generally axially extending pliant annular seal extends from the container cap in a slightly radially inward direction.

In yet another aspect, the generally axially extending pliant annular seal extends axially, with a change in direction, where a distal segment extends in a slightly radially inward direction.

In yet another aspect, the container cap includes a generally axially extending pliant annular seal that is designed to engage with an interior surface of the countersink of the container lid, wherein the pliant property of the material enables the substantially axially extending pliant annular seal to flex and create a reliable seal.

In yet another aspect, the substantially axially extending pliant annular seal is integral with the container cap.

In yet another aspect, the container cap further comprises at least one radial sealing ring formed circumscribing an exterior cylindrical sidewall of the container cap.

In yet another aspect, each of the at least one radial sealing ring is formed extending partially radially outward from the exterior cylindrical sidewall of the container cap.

In yet another aspect, each of the at least one radial sealing ring is integrally fabricated with the container cap.

In yet another aspect, each of the at least one radial sealing ring is integrally fabricated with the container cap, wherein the container cap is of a moldable material.

In yet another aspect, each of the at least one radial sealing ring is integrally fabricated with the container cap, wherein the container cap is of a moldable material, the moldable material being one of: plastic, nylon, rubber, silicone, and the like.

In yet another aspect, wherein the material used to fabricate the at least one radial sealing ring and the material used to fabricate the container cap can be different from one another.

In yet another aspect, each of the at least one radial sealing ring is integrally fabricated with the container cap, wherein the container cap is of a moldable material, wherein plastic properties of the material enable flexure of the at least one radial sealing ring.

In yet another aspect, each of the at least one radial sealing ring is integrally fabricated with the container cap, wherein the container cap is of a molded plastic.

In yet another aspect, each of the at least one radial sealing ring is integrally fabricated with the container cap, wherein the container cap is of a molded plastic, wherein plastic properties of the material enable flexure of the at least one radial sealing ring.

In yet another aspect, each of the at least one radial sealing ring is formed extending partially axially from the exterior cylindrical sidewall of the container cap in a direction towards a bottom of the container cap.

In yet another aspect, the container cap further comprises a series of radial sealing rings formed circumscribing the exterior cylindrical sidewall of the container cap.

In yet another aspect, the container cap further comprises a series of radial sealing rings formed circumscribing the exterior cylindrical sidewall of the container cap, wherein one radial sealing ring partially overlaps an adjacent radial sealing ring.

In yet another aspect, the at least one radial sealing ring seal engages with a generally axially oriented interior surface of the container lid.

In yet another aspect, the at least one radial sealing ring seal engages with an interior surface of the seaming panel of the container lid.

In yet another aspect, the at least one radial sealing ring seal engages with an interior of the chuck wall of the container lid.

In yet another aspect, the at least one radial sealing ring seal engages with an interior of the cylindrical sidewall of the container lid.

In yet another aspect, an elastomer is disposed within the countersink.

In yet another aspect, a lower edge of the container cap engages with the elastomer disposed within the countersink to seal the container.

In yet another aspect, engagement between the elastomer disposed upon the interior surface of the cylindrical sidewall of the container lid and the threaded exterior sidewall of the container cap forms a seal.

In yet another aspect, an elastomeric sealant material is disposed upon a bottom surface of the container cap; a peripheral edge of the elastomeric sealant material forms an annular sealing feature, wherein the annular sealing feature engages with a peripheral edge of the bottom wall of the container lid.

In yet another aspect, wherein the elastomeric sealant material is applied to the container cap, adhesively bonded to the container cap, overmolded into the container cap, mechanically retained in position, and the like.

In yet another aspect, the elastomeric sealant material is disposed upon the entire bottom surface of the container cap.

In yet another aspect, the container cap further comprises a generally radially directed peripheral seal adapted to seal against the container lid cylindrical sidewall to deter dust and other contaminants from collecting within the threaded area of the container lid and the container lid countersink.

In yet another aspect, the elastomeric sealant material is formed including at least one fin-like or annular projection.

In yet another aspect, the elastomeric sealant material is formed including a plurality of fin-like or annular projections.

Cap and Lid Assembly—Container Body Seaming

In yet another aspect, the seaming panel of the container lid is joined or seamed to an upper, free edge of the container body.

In yet another aspect, the seaming panel of the container lid is joined or seamed to an upper, free edge of the container body using a two operation progressive roller that circumscribes the seaming panel.

In yet another aspect, the seaming process employs a two operation progressive roller and a seaming chuck.

In yet another aspect, the first operation roller creates a cover hook, where the seaming panel of the container lid hooks around the upper and outer edge of the container body seaming panel or flange (upper free edge), initiating the seam.

In yet another aspect, the second operation roller compresses the rolled, initiated seaming panel, finalizing the seaming process.

In yet another aspect, the seaming chuck seats against chuck wall and chuck shoulder of the container lid. The chuck wall is formed in a generally axial direction. The chuck shoulder is formed in a generally radial direction.

In yet another aspect, the seaming chuck is designed to exclusively contact the container lid.

In yet another aspect, the seaming chuck is designed to exclusively contact the container lid, wherein the seaming chuck includes a cavity which provides clearance between the seaming chuck and features of the container cap, when the container cap is assembled to the container lid during the seaming process.

In yet another aspect, the seaming chuck is designed to properly located and retain the container lid in position on the container body throughout the seaming process.

In yet another aspect, the seaming chuck provides a radial registration with the seaming chuck and the container body by contact between the seaming chuck and the generally axially directed sidewall of the container body (or container cap when included) throughout the seaming process.

In yet another aspect, the seaming chuck provides an axial registration with the seaming chuck and the container body by contact between the seaming chuck and the chuck shoulder of the container body (or container cap when included) throughout the seaming process.

In yet another aspect, the seaming chuck is employed as an anvil for the seaming roller throughout the seaming process.

In yet another aspect, the seaming chuck is designed to contact the container cap, wherein the forces respective to the seaming chuck are passed through the container cap onto the container lid.

In yet another aspect, the seaming roller includes a clearance for the container cap.

In yet another aspect, the seaming roller is designed to provide a seaming function exclusive of any contact with the container cap.

In yet another aspect, the container lid seaming panel is assembled to the container body seaming flange.

In yet another aspect, the container lid seaming panel is assembled to the container body seaming flange using a roll forming process.

In yet another aspect, the container lid seaming panel is assembled to the container body seaming flange using a roll forming process in conjunction with a compression process. The roll forming process can be completed using any suitable roll forming process. In one exemplary method, at least one roller is rotated about a stationary assembly. In a second exemplary method, the assembly is rotated about at least one stationary roller. In a third exemplary method, the assembly is rotated about at least one rotating roller.

In yet another aspect, the container lid seaming panel is assembled to the container body seaming flange using a step of applying an axial compression force to the container lid. The axial compression force application process can be completed using any suitable roll forming process.

In yet another aspect, the container lid seaming panel is assembled to the container body seaming flange using a step of applying an axial compression force to the container lid using a frustum shaped mating surface between a seaming chuck and the container lid seaming panel.

In yet another aspect, the container lid seaming panel is assembled to the container body seaming flange using a step of applying an axial compression force to the container lid by applying a compression force from the respective seating feature provided on the seaming chuck and a seaming chuck shoulder formed about an interior surface of the container lid sidewall. The respective seating feature can alternatively be referred to as a planar driving surface.

In yet another aspect, the seaming chuck can further comprise a cavity formed extending inward from a seaming chuck bottom surface, wherein the seaming chuck bottom surface cavity provides clearance for features of the container lid assembly.

In yet another aspect, the seaming chuck can further comprise a cavity formed extending inward from a seaming chuck bottom surface, wherein the seaming chuck bottom surface cavity provides clearance for features of the container lid assembly, which includes the container lid and the container cap.

In yet another aspect, the container lid seaming panel can be assembled to the container body seaming flange using a bonding process.

In yet another aspect, the container lid is adapted for deformation during subjection to and resulting from a retort process.

In yet another aspect, a tamper indicator actuator (or similar feature) ensures and maintains sufficient separation between the resealable container cap substantially horizontally oriented traversing wall (more specifically, the incisor) and the container cap receiving socket bottom wall to avoid premature fracturing of the score line during subjection to the retort process.

In yet another aspect, during the retort process, the vertical sidewall of the container lid deforms inward, pinching the cam tracks against the respective cam followers of the resealable container cap. This configuration retains the container cap within cap receiving socket of the container lid while subjected to the retort process.

Cap and Lid Assembly—Accessories

In yet another aspect, the container cap can include a child's sip cup top configuration, enabling the beverage container be converted into a child's sip cup.

In yet another aspect, the container cap can include a baby bottle "nipple" formation to convert the beverage container into a baby bottle.

In yet another aspect, the container cap can include a baby bottle "nipple" formation to convert the beverage container into a baby bottle. In accordance with this variant, the contents of the container could be infant formula.

In yet another aspect, the container cap can include an axially actuated resealable sports bottle dispensing mechanism to convert the beverage container into a sports bottle.

In yet another aspect, the container cap can include an axially actuated resealable sports bottle dispensing mechanism to convert the beverage container into a sports bottle, wherein an axial motion of a cap along a spout opens and closes the container.

In yet another aspect, the container cap can include an axially actuated resealable sports bottle dispensing mechanism to convert the beverage container into a sports bottle, wherein an axial motion of a cap along a spout opens and closes the container, wherein a top of the spout is positioned in an extended position, the container is open allowing dispensing of contents from within the container and wherein a top of the spout is positioned in an retracted position, the container is closed retaining contents within the container.

In yet another aspect, the axially actuated resealable sports bottle dispensing mechanism can include an axially oriented dispensing tube comprising a passageway, wherein the passageway is opened and sealed by an axial movement of a spout cap.

In yet another aspect, the axially actuated resealable sports bottle dispensing mechanism can include an axially oriented dispensing tube comprising a passageway, wherein the passageway is opened and sealed by an axial movement of a spout cap, the spout cap comprising a fluid passageway, wherein the cap fluid passageway is in fluid communication with the dispensing tube passageway when the cap is placed in an open position and fluid communication between the cap fluid passageway and the dispensing tube passageway is blocked when the cap is placed in a closed position.

In yet another aspect, the axially actuated resealable sports bottle dispensing mechanism can include an axially oriented dispensing tube comprising at least one passageway, wherein the passageway is opened and sealed by an axial movement of a spout cap.

In yet another aspect, the axially actuated resealable sports bottle dispensing mechanism can include an axially oriented dispensing tube comprising a passageway, wherein

the passageway is opened and sealed by an axial movement of a spout cap, the spout cap comprising a fluid passageway, wherein the cap fluid passageway is in fluid communication with the dispensing tube passageway when the cap is placed in an open position and fluid communication between the cap fluid passageway and the dispensing tube passageway is blocked when the cap is placed in a closed position.

In yet another aspect, the axially actuated resealable sports bottle dispensing mechanism can include an axially oriented dispensing tube comprising at least one passageway, wherein the passageway is opened and sealed by an axial movement of a spout cap.

In yet another aspect, the container cap can include a pivotally actuated resealable bottle dispensing mechanism. The pivotally actuated resealable bottle dispensing mechanism can be provided in a form factor of a spout.

In yet another aspect, the container cap can include a pivotally actuated resealable fluid dispensing mechanism to convert the beverage container into a fluid dispensing bottle, wherein the rotational motion of a spout opens and closes the container.

In yet another aspect, the pivotally actuated resealable fluid dispensing mechanism includes a valve located at a pivoting end of the spout, wherein when the spout is oriented in a retracted position, the valve is closed, retaining fluid within the container and when the spout is oriented in a dispensing position, the valve is open, enabling dispensing of fluid from the container.

In yet another aspect, the pivotally actuated resealable fluid dispensing mechanism can include at least one fluid dispensing passageway.

In yet another aspect, the pivoting spout of the pivotally actuated resealable fluid dispensing mechanism can include at least one fluid dispensing passageway.

In yet another aspect, the pivoting spout of the pivotally actuated resealable fluid dispensing mechanism can include at least one fluid dispensing passageway, wherein the fluid dispensing passageway extends from the valve to a dispensing port.

In yet another aspect, the pivoting spout of the pivotally actuated resealable fluid dispensing mechanism can include at least one fluid dispensing passageway, wherein the fluid dispensing passageway extends from the valve to a dispensing port, wherein the dispensing port is located at a distal, free end of the pivoting spout.

In yet another aspect, the pivotally operated valve includes at least one fluid dispensing passageway extends from a valve end of the spout to a dispensing port of the spout, wherein the valve end of the dispensing passageway on the spout aligns with a dispensing port of a cap when the spout is pivotally moved into a dispensing position and a seal located adjacent to the valve end of the dispensing passageway on the spout seals the dispensing port of the cap when the spout is pivotally moved into a sealed position.

In yet another aspect, the spout can be seated within a recess formed within the cap when pivotally moved into a sealed position.

In yet another aspect, the container cap can include a slideably actuated resealable bottle dispensing mechanism. The slideably actuated resealable bottle dispensing mechanism can be provided in a form factor of a spout.

In yet another aspect, the container cap can include a slideably actuated resealable bottle dispensing mechanism. The slideably actuated resealable bottle dispensing mechanism can be provided in a form factor of a spout, wherein when the spout is slideably positioned in a first position, the container is open allowing dispensing of contents from within the container and wherein when the spout is slideably positioned in an second position, the container is closed retaining contents within the container.

In yet another aspect, the slideably actuated resealable bottle dispensing mechanism includes a dispensing passageway formed through the spout. A second valve member is located on the container cap and is designed to be in fluid communication with the dispensing passageway of the spout when the spout is slid into an open position and provides a fluid barrier between the second valve member and the dispensing passageway of the spout when the spout is slid into a closed position. The second valve member includes an aperture that is in alignment with the dispensing passageway of the spout when the spout is slid into an open position and a closure that is in alignment with the dispensing passageway of the spout when the spout is slid into a closed position.

In yet another aspect, the container cap can include a rotationally actuated resealable bottle dispensing mechanism. The rotationally actuated resealable bottle dispensing mechanism can be provided in a form factor of a spout or any other dispensing formation.

In yet another aspect, the container cap can include a rotationally actuated resealable bottle dispensing mechanism. Operation of the rotationally actuated resealable bottle dispensing mechanism can be accomplished by rotating an element comprising the spout into a first or open position where a passageway of the spout is in alignment with an aperture of a second valve member enabling dispensing of contents from within the container and rotating the element comprising the spout into a second or closed position where a passageway of the spout is in alignment with a sealing portion of the second valve member inhibiting dispensing of contents from within the container.

In yet another aspect, the container cap can include a pump dispensing mechanism. The pump dispensing mechanism can be of any suitable pump dispensing mechanism known by those skilled in the art. Commercially available examples include soap dispensers, shampoo dispensers, cleaning composition dispensers, etc. The contents of the container can be drawn through a tubular member to the pump dispensing mechanism.

In yet another aspect, the container cap can include a spray dispensing mechanism. The spray dispensing mechanism can be of any suitable spray dispensing mechanism known by those skilled in the art. Commercially available examples include water spray bottles, cleaning composition dispensers, insecticide sprayers, weed kill sprayers, etc. The contents of the container can be drawn through a tubular member to the spray dispensing mechanism.

In yet another aspect, the container cap can include a spray dispensing mechanism, wherein a trigger of the spray dispensing mechanism can be located adjacent a spray dispensing mechanism neck, wherein the user would grip the spray dispensing mechanism neck and draw the trigger towards the spray dispensing mechanism neck to actuate the spray dispensing mechanism.

In yet another aspect, the container cap can include a spray dispensing mechanism, wherein a trigger of the spray dispensing mechanism can be located adjacent the container body, wherein the user would grip the container body and draw the trigger towards the container body to actuate the spray dispensing mechanism.

In yet another aspect, the container cap can include a straw gasket for retaining a straw within a sealed cap. The container cap can be a two piece configuration (resembling a Mason jar styled two piece cap) enabling a straw aperture

to remain in a rotational relationship with the dispensing aperture during assembly of the container cap to the container lid.

In yet another aspect, the container cap includes the straw gasket for retaining a straw within a sealed cap includes a pliant straw retention and sealing element. The pliant straw retention and sealing element is preferably designed having an elongated, tubular shape.

In yet another aspect, the container cap includes a projection that is adapted to extend into the dispensing aperture of the breached container lid.

In yet another aspect, the container cap includes a projection that is adapted to extend into the dispensing aperture of the breached container lid.

In yet another aspect, the container cap includes a concentric projection that is adapted to extend into the dispensing aperture of the breached container lid.

In yet another aspect, the container cap includes an off-centered projection that is adapted to extend into the dispensing aperture of the breached container lid.

In yet another aspect, the straw or any other tubular projection of the accessory can include an angled fluid collection end, wherein the angled fluid collection end enables the straw to puncture a seal provided covering the container.

In yet another aspect, the off-centered projection can be employed to maintain a rotational position of the two piece cap center component respective to the container lid during assembly of the two piece cap to the container lid.

Cap and Lid Assembly—Accessories—Two (2) Piece Closure

In yet another aspect, each accessory can include a one piece closure member.

In yet another aspect, each accessory can include a two piece closure subassembly.

In yet another aspect, each accessory can include a two piece closure subassembly comprising an outer member and an inner member.

In yet another aspect, each accessory can include a two piece closure subassembly comprising an outer member and an inner member, wherein the outer member includes at least one feature provided to engage with the at least one translative motion guide feature provided on the container lid.

In yet another aspect, each accessory can include a two piece closure subassembly comprising an outer member and an inner member, wherein the outer member includes at least one feature provided to engage with the at least one translative motion guide feature provided on the container lid and the inner member rotates independently of the outer member.

In yet another aspect, each accessory can include a two piece closure subassembly comprising an outer member and an inner member, wherein the outer member includes at least one feature provided to engage with the at least one translative motion guide feature provided on the container lid and the inner member rotates independently of the outer member, wherein the inner member is desired to remain stationary upon contact with the container while the outer member continues to rotate about the container.

In yet another aspect, the two piece configuration includes a lid translative motion guide feature disposed therebetween, wherein the lid translative motion guide feature translates a rotation of the outer member of the two piece cap configuration ring into an axial motion of the inner, non-rotating (stationary) inner member or central sealing component of the two piece cap configuration. The axial motion engages and maintains a seal between the container cap and the container lid.

In yet another aspect, one accessory can include the inner member of the two piece closure subassembly, wherein the inner member would be interchangeable with one outer member. In certain scenarios the outer member can be provided with the resealable container subassembly.

Cap and Lid Assembly—Miscellaneous Features

In yet another aspect, at least one of the container lid and the container cap include indicia presenting operating instructions for operating the container lid and cap assembly.

In yet another aspect, the operating indicia includes instructions for at least one of opening, dispensing, and closing the container cap upon the container lid.

The container cap may be included with the container or offered as a separate implement, being sold separately from the beverage container, and re-useable after washing.

In yet another aspect, the shape of the tubular container body sidewall could be one of any number of shapes including:

a. Cylindrical,
b. Spherical,
c. Conical,
d. Polygonal, or
e. Contoured tubular (examples of contoured tubular sidewalls include: COKE CONTOUR bottle/BUDWEISER BOWTIE can/HEINEKEN Keg can).

In yet another aspect, a safety ring can be provided circumscribing the peripheral edge of the inverted countersink of the container cap, wherein the safety ring rotates independent of the container cap until pressure is applied to a predetermined direction to engage the safety ring with the container cap. This acts as a child proof barrier to the contents of the container.

These and other aspects, features, and advantages of the present invention will become more readily apparent from the attached drawings and the detailed description of the preferred embodiments, which follow.

## BRIEF DESCRIPTION OF THE DRAWINGS

The preferred embodiments of the invention will hereinafter be described in conjunction with the appended drawings provided to illustrate and not to limit the invention, in which:

FIG. **1** presents a top, side isometric view introducing a first exemplary container lid in accordance with the present invention, wherein the first exemplary container lid includes a plurality of lid translative motion guide features integral within a frustum shaped sidewall and a Stay-On-Tab (SOT) arrangement provided on a lid bottom wall;

FIG. **2** presents a bottom, side isometric view of the first exemplary container lid originally introduced in FIG. **1**;

FIG. **3** presents a top, plan view of the first exemplary container lid originally introduced in FIG. **1**, wherein the illustration provides a detailed view of elements associated with the Stay-On-Tab (SOT) arrangement;

FIG. **4** presents a bottom, plan view of the first exemplary container lid originally introduced in FIG. **1**, wherein the illustration provides a detailed view of formations in the bottom wall associated with the Stay-On-Tab (SOT) arrangement;

FIG. **5** presents a side elevation view of the first exemplary container lid originally introduced in FIG. **1**;

FIG. **6** presents a cross sectioned side elevation view of the first exemplary container lid originally introduced in FIG. **1**, the section view taken along section line **6-6** of FIG. **3**;

FIG. **7** presents a cross sectioned side elevation view of the first exemplary container lid originally introduced in FIG. **1**, the section view taken along section line **6-6** of FIG. **3**, the illustration presenting a nesting capability of the first exemplary container lid;

FIG. **8** presents a top, side isometric view introducing a first exemplary container cap in accordance with the present invention, wherein the first exemplary container cap includes a plurality of cap translative motion guide features integral within a frustum shaped sidewall and a countersink arrangement provided circumscribing a cap bottom wall;

FIG. **9** presents a bottom, side isometric view of the first exemplary container cap originally introduced in FIG. **8**;

FIG. **10** presents a top, plan view of the first exemplary container cap originally introduced in FIG. **8**;

FIG. **11** presents a bottom, plan view of the first exemplary container cap originally introduced in FIG. **8**;

FIG. **12** presents a side elevation view of the first exemplary container cap originally introduced in FIG. **8**, the illustration detailing a shape of an exemplary cap translative motion guide feature provided in a form of a cam and a plurality of grip elements formed in an inverted countersink;

FIG. **13** presents a cross sectioned side elevation view of the first exemplary container cap originally introduced in FIG. **8**, the section view taken along section line **13-13** of FIG. **10**;

FIG. **14** presents a cross sectioned side elevation view of the first exemplary container cap originally introduced in FIG. **8**, the section view taken along section line **13-13** of FIG. **10**, the illustration presenting a nesting capability of the first exemplary container cap;

FIG. **15** presents a front, top isometric exploded assembly view of a container comprising the first exemplary container lid originally introduced in FIG. **1** and the first exemplary container cap originally introduced in FIG. **8**, the illustration presenting the container lid and a container body awaiting seaming to one another and the container cap staged for assembly thereto;

FIG. **16** presents a front, top isometric partially assembled view of the container originally introduced in FIG. **15**, the illustration presenting the container lid seamed to the container body and the container cap staged for assembly thereto;

FIG. **17** presents a front, top isometric partially assembled view of the container originally introduced in FIG. **15**, the illustration presenting the container cap assembled to the container lid and body subassembly;

FIG. **18** presents an elevation exploded assembly view of the container originally introduced in FIG. **15** comprising the first exemplary container lid originally introduced in FIG. **1**, the illustration presenting a relationship between a seaming panel of the container lid and a joining edge of the container body prior to execution of a seaming process, the section of the container being representative of the section taken along section line **6-6** of FIG. **3**;

FIG. **19** presents an elevation assembly view of the container originally introduced in FIG. **15** comprising the first exemplary container lid originally introduced in FIG. **1**, the illustration presenting a seam formed between the seaming panel of the container lid and the joining edge of the container body, the section of the container being representative of the section taken along section line **6-6** of FIG. **3**;

FIG. **20** presents an elevation partial assembly view of the container as illustrated in FIG. **19**, introducing the first exemplary container cap originally introduced in FIG. **8**, the illustration presenting the container cap staged for assembly to the container subassembly, the section of the container being representative of the section taken along section line **6-6** of FIG. **3**;

FIG. **21** presents an elevation assembly view of the container as illustrated in FIG. **19**, the illustration presenting the container cap assembled to the container subassembly, the section of the container being representative of the section taken along section line **6-6** of FIG. **3**;

FIG. **22** presents an enlarged cross section view detailing a completed seam formed between the joining edge of the container lid originally introduced in FIG. **1** and the container body and the container cap originally introduced in FIG. **8** assembled to the container subassembly, is an enlarged detail view of area **22** circumscribed within FIG. **21**;

FIG. **23** presents a top, side isometric view introducing a second exemplary container lid in accordance with the present invention, wherein the second exemplary container lid includes a plurality of lid translative motion guide features integral within a frustum shaped sidewall and a lid rolled annular end ring arrangement provided at a lower edge of the frustum shaped sidewall;

FIG. **24** presents a bottom, side isometric view of the second exemplary container lid originally introduced in FIG. **24**;

FIG. **25** presents a top, plan view of the second exemplary container lid originally introduced in FIG. **23**;

FIG. **26** presents a bottom, plan view of the second exemplary container lid originally introduced in FIG. **23**;

FIG. **27** presents a side elevation view of the second exemplary container lid originally introduced in FIG. **23**;

FIG. **28** presents a cross sectioned side elevation view of the second exemplary container lid originally introduced in FIG. **23**, the section view taken along section line **28-28** of FIG. **25**;

FIG. **29** presents a cross sectioned side elevation view of the second exemplary container lid originally introduced in FIG. **23**, the section view taken along section line **28-28** of FIG. **25**, the illustration presenting a nesting capability of the second exemplary container lid;

FIG. **30** presents a top, side isometric view introducing a second exemplary container cap in accordance with the present invention, wherein the second exemplary container cap includes a plurality of cap translative motion guide features integral within a frustum shaped sidewall and a countersink arrangement provided circumscribing a cap bottom wall;

FIG. **31** presents a bottom, side isometric view of the second exemplary container cap originally introduced in FIG. **30**;

FIG. **32** presents a top, plan view of the second exemplary container cap originally introduced in FIG. **30**;

FIG. **33** presents a bottom, plan view of the second exemplary container cap originally introduced in FIG. **30**;

FIG. **34** presents a side elevation view of the second exemplary container cap originally introduced in FIG. **30**, the illustration detailing a shape of an exemplary cap translative motion guide feature provided in a form of a cam;

FIG. **35** presents a cross sectioned side elevation view of the second exemplary container cap originally introduced in FIG. **30**, the section view taken along section line **35-35** of FIG. **32**;

FIG. **36** presents a cross sectioned side elevation view of the second exemplary container cap originally introduced in FIG. **30**, the section view taken along section line **35-35** of FIG. **32**, the illustration presenting a nesting capability of the second exemplary container cap;

FIG. **37** presents a front, top isometric exploded assembly view of a container comprising the second exemplary container lid originally introduced in FIG. **23** and the first exemplary container cap originally introduced in FIG. **30**, the illustration presenting the container lid and a container body awaiting seaming to one another and the container cap staged for assembly thereto;

FIG. **38** presents a front, top isometric partially assembled view of the container originally introduced in FIG. **37**, the illustration presenting the container lid seamed to the container body and the container cap staged for assembly thereto;

FIG. **39** presents a front, top isometric partially assembled view of the container originally introduced in FIG. **37**, the illustration presenting the container cap assembled to the container lid and body subassembly;

FIG. **40** presents an enlarged sectioned assembly view of the container originally introduced in FIG. **37** comprising the second exemplary container lid originally introduced in FIG. **23**, the section of the container being representative of the section taken along section line **28-28** of FIG. **25**;

FIG. **41** presents a sectioned elevation exploded assembly view of the container originally introduced in FIG. **37** comprising the second exemplary container lid originally introduced in FIG. **23**, the illustration presenting a relationship between a seaming panel of the container lid and a joining edge of the container body prior to execution of a seaming process, the section of the container being representative of the section taken along section line **28-28** of FIG. **25**;

FIG. **42** presents a sectioned elevation assembly view of the container originally introduced in FIG. **41** comprising the first exemplary container lid originally introduced in FIG. **23**, the illustration presenting a seam formed between the seaming panel of the container lid and the joining edge of the container body, the section of the container being representative of the section taken along section line **28-28** of FIG. **25**;

FIG. **43** presents a sectioned elevation partial assembly view of the container as illustrated in FIG. **41**, introducing the second exemplary container cap originally introduced in FIG. **30**, the illustration presenting the container cap staged for assembly to the container subassembly, the section of the container being representative of the section taken along section line **28-28** of FIG. **25**;

FIG. **44** presents a sectioned elevation assembly view of the container as illustrated in FIG. **41**, the illustration presenting the container cap assembled to the container subassembly, the section of the container being representative of the section taken along section line **28-28** of FIG. **25**;

FIG. **45** presents an enlarged sectioned view detailing a completed seam formed between the joining edge of the container lid originally introduced in FIG. **23** and the container body originally introduced in FIG. **37**, the illustration additionally presenting the container cap originally introduced in FIG. **30** assembled to the container subassembly, wherein the illustration is an enlarged detail view of area **45** circumscribed within FIG. **44**;

FIG. **46** presents an enlarged sectioned view detailing a seal formed between an annular sealing surface of the container cap originally introduced in FIG. **30** and a mating sealing surface of the lid rolled annular end ring of the container lid originally introduced in FIG. **23**, wherein the illustration is an enlarged detail view of area **46** circumscribed within FIG. **44**;

FIG. **47** presents an enlarged sectioned view illustrating a modified detail view of area **45** circumscribed within FIG. **44**, the modification being an alternatively shaped cap sealing ring;

FIG. **48** presents an enlarged sectioned view detailing a completed seam formed between the joining edge of the container lid originally introduced in FIG. **23** and the container body and the container cap originally introduced in FIG. **30** assembled to the container subassembly, wherein the illustration is an enlarged modified detail view of area **45** circumscribed within FIG. **44**, the modification being an alternatively shaped cap sealing ring;

FIG. **49** presents an enlarged sectioned view illustrating a modified detail view of area **46** circumscribed within FIG. **44**, the modification introduces a lower cap sealing ring;

FIG. **50** presents a top, side isometric view introducing an exemplary nesting container body with integral cap receiving translative motion guide feature in accordance with the present invention, wherein the nesting container body with integral cap receiving translative motion guide feature includes a plurality of lid translative motion guide features integral within a frustum shaped container sidewall and a closed bottom wall contiguous with and extending across a lower edge of the frustum shaped container sidewall;

FIG. **51** presents a bottom, side isometric view of the exemplary nesting container body with integral cap receiving translative motion guide feature originally introduced in FIG. **50**;

FIG. **52** presents a top, plan view of the exemplary nesting container body with integral cap receiving translative motion guide feature originally introduced in FIG. **50**;

FIG. **53** presents a bottom, plan view of the exemplary nesting container body with integral cap receiving translative motion guide feature originally introduced in FIG. **50**;

FIG. **54** presents a side elevation view of the exemplary nesting container body with integral cap receiving translative motion guide feature originally introduced in FIG. **50**;

FIG. **55** presents a cross sectioned side elevation view of the exemplary nesting container body with integral cap receiving translative motion guide feature originally introduced in FIG. **50**, the section view taken along section line **55-55** of FIG. **52**;

FIG. **56** presents a cross sectioned side elevation view of the exemplary nesting container body with integral cap receiving translative motion guide feature originally introduced in FIG. **50**, the section view taken along section line **55-55** of FIG. **52**, the illustration presenting a nesting capability of a plurality of exemplary nesting container bodies with integral cap receiving translative motion guide feature;

FIG. **57** presents a top, side isometric view introducing a second exemplary container cap in accordance with the present invention, wherein the second exemplary container cap includes a plurality of cap translative motion guide features integral within a frustum shaped sidewall and a countersink arrangement provided circumscribing a cap bottom wall;

FIG. **58** presents a bottom, side isometric view of the third exemplary container cap originally introduced in FIG. **57**;

FIG. **59** presents a top, plan view of the third exemplary container cap originally introduced in FIG. **57**;

FIG. **60** presents a bottom, plan view of the third exemplary container cap originally introduced in FIG. **57**;

FIG. **61** presents a side elevation view of the third exemplary container cap originally introduced in FIG. **57**, the illustration detailing a shape of an exemplary cap translative motion guide feature provided in a form of a cam;

FIG. **62** presents a cross sectioned side elevation view of the third exemplary container cap originally introduced in FIG. **57**, the section view taken along section line **62-62** of FIG. **59**;

FIG. **63** presents a cross sectioned side elevation view of the third exemplary container cap originally introduced in FIG. **57**, the section view taken along section line **62-62** of FIG. **59**, the illustration presenting a nesting capability of the third exemplary container cap;

FIG. **64** presents a front, top isometric exploded assembly view of a container comprising the exemplary nesting container body with integral cap receiving translative motion guide feature originally introduced in FIG. **50** and the first exemplary container cap originally introduced in FIG. **57**, the illustration presenting the container cap staged for assembly to the nesting container body employing the integral cap receiving translative motion guide feature;

FIG. **65** presents a front, top isometric assembly view of the container comprising the exemplary nesting container body with integral cap receiving translative motion guide feature originally introduced in FIG. **50** and the third exemplary container cap originally introduced in FIG. **57**, the illustration presenting the container cap assembled to the integral cap receiving translative motion guide feature of the nesting container body;

FIG. **66** presents a sectioned, front, elevation exploded assembly view of the resealable container assembly comprising the exemplary nesting container body with integral cap receiving translative motion guide feature originally introduced in FIG. **50** and the third exemplary container cap originally introduced in FIG. **57**, the illustration presenting the container cap staged for assembly to the nesting container body employing the integral cap receiving translative motion guide feature;

FIG. **67** presents a sectioned, front, elevation assembly view of the container comprising the exemplary nesting container body with integral cap receiving translative motion guide feature originally introduced in FIG. **50** and the third exemplary container cap originally introduced in FIG. **57**, the illustration presenting the container cap assembled to the nesting container body employing the integral cap receiving translative motion guide feature;

FIG. **68** presents a cross sectioned side elevation view of the exemplary resealable container assembly originally illustrated in an assembled configuration in FIG. **65**, the illustration presenting a stacking capability of the exemplary resealable container assembly;

FIG. **69** presents a sectioned, front, elevation assembly view of the container comprising the exemplary nesting container body with integral cap receiving translative motion guide feature originally introduced in FIG. **50** and a first modified variant of the third exemplary container cap originally introduced in FIG. **57**, the first variant comprising a recess enabling nesting, the illustration presenting the container cap assembled to the nesting container body employing the integral cap receiving translative motion guide feature;

FIG. **70** presents a cross sectioned side elevation view of the first modified variant of the exemplary resealable container assembly originally illustrated in an assembled configuration in FIG. **69**, the illustration presenting a nesting capability of the first modified variant of the exemplary resealable container assembly;

FIG. **71** presents a sectioned, front, elevation assembly view of the container comprising the exemplary nesting container body with integral cap receiving translative motion guide feature originally introduced in FIG. **50** and a second modified variant of the third exemplary container cap originally introduced in FIG. **57**, the second variant comprising a recess and a secondary registration feature enabling nesting, the illustration presenting the container cap assembled to the nesting container body employing the integral cap receiving translative motion guide feature;

FIG. **72** presents a cross sectioned side elevation view of the second modified variant of the exemplary resealable container assembly originally illustrated in an assembled configuration in FIG. **71**, the illustration presenting a nesting capability of the second modified variant of the exemplary resealable container assembly;

FIG. **73** presents a sectioned, front, elevation assembly view of a modified variant of the container comprising the exemplary nesting container body with integral cap receiving translative motion guide feature originally introduced in FIG. **50** and a third modified variant of the third exemplary container cap originally introduced in FIG. **57**, the third variant comprising a recess having a retention interface and a secondary registration feature enabling nesting, the illustration presenting the third modified variant of the container cap assembled to the nesting container body employing the integral cap receiving translative motion guide feature;

FIG. **74** presents a cross sectioned side elevation view of the third modified variant of the exemplary resealable container assembly originally illustrated in an assembled configuration in FIG. **73**, the illustration presenting a nesting and retention capability of the third modified variant of the exemplary resealable container assembly;

FIG. **75** presents an enlarged sectioned view detailing a nesting and retention interface provided between to nested exemplary resealable container assemblies, wherein the illustration is an enlarged detail view of area **75** circumscribed within FIG. **74**;

FIG. **76** presents a sectioned, front, elevation assembly view of the container comprising the exemplary nesting container body with integral cap receiving translative motion guide feature originally introduced in FIG. **50** and a fourth modified variant of the third exemplary container cap originally introduced in FIG. **57**, the fourth variant comprising a boss registration feature supporting a stacking of resealable container assemblies, the illustration presenting the fourth modified variant of the container cap assembled to the nesting container body employing the integral cap receiving translative motion guide feature;

FIG. **77** presents a cross sectioned side elevation view of the fourth modified variant of the exemplary resealable container assembly originally illustrated in an assembled configuration in FIG. **76**, the illustration presenting a nesting and retention capability of the fourth modified variant of the exemplary resealable container assembly;

FIG. **78** presents an enlarged sectioned view detailing a stacking registration interface provided between to exemplary resealable container assemblies, wherein the illustration is an enlarged detail view of area **78** circumscribed within FIG. **77**;

FIG. **79** presents a top, side isometric view introducing a fourth exemplary container lid in accordance with the present invention, wherein the fourth exemplary container lid includes a frustum shaped sidewall comprising a plurality of lid translative motion guide features as introduced in FIG. **1** and a easy open end (full panel removal);

FIG. **80** presents a bottom, side isometric view of the fourth exemplary container lid originally introduced in FIG. **79**;

FIG. **81** presents a top, plan view of the fourth exemplary container lid originally introduced in FIG. **79**, wherein the illustration provides a detailed view of elements associated with the Stay-On-Tab (SOT) arrangement;

FIG. **82** presents a top, side isometric view introducing a fifth exemplary container lid in accordance with the present invention, wherein the fourth exemplary container lid includes a peel off foil/film sealing a frustum shaped sidewall comprising a plurality of lid translative motion guide features as introduced in FIG. **23**;

FIG. **83** presents a bottom, side isometric view of the fifth exemplary container lid originally introduced in FIG. **82**;

FIG. **84** presents a top, plan view of the fifth exemplary container lid originally introduced in FIG. **82**, wherein the illustration provides a detailed view of elements associated with the peel off foil/film arrangement;

FIG. **85** presents a cross sectioned side elevation view of the fifth exemplary container lid originally introduced in FIG. **82**, the section view taken along section line **85**-**85** of FIG. **84**, the illustration presenting a process of removing the peel off tab from the container lid;

FIG. **86** presents a flow diagram describing a method for processing nestable container components;

FIG. **87** presents a top isometric view of a first exemplary accessory which can be substituted for a container lid, the accessory being a cap and drinking straw assembly, the cap including a fixed inner cap liner and a rotatable outer cap component for securing the cap assembly to the container lid;

FIG. **88** presents a section elevation view of the cap and drinking straw assembly as shown in FIG. **87**;

FIG. **89** presents a section elevation view of the cap and drinking straw assembly as shown in FIG. **87**, the exemplary cap and drinking straw assembly being shown secured to the container assembly;

FIG. **90** presents a top isometric view of a second exemplary accessory for use as a container lid, the second exemplary accessory including a baby nipple;

FIG. **91** presents a top isometric view of a third exemplary accessory for use as a container lid, the accessory including a spill-proof children's cap;

FIG. **92** presents a top isometric view of a third exemplary accessory for use as a container lid, the accessory including a spill-proof children's cap introducing a rotational closure system;

FIG. **93** presents a top isometric view of a fourth exemplary accessory for use as a container lid, the accessory including a resealable sports bottle dispensing mechanism, the resealable sports bottle dispensing mechanism being illustrated in a closed configuration;

FIG. **94** presents a top isometric view of the fourth exemplary accessory as originally introduced in FIG. **93**, the accessory including a resealable sports bottle dispensing mechanism, the resealable sports bottle dispensing mechanism being illustrated in an opened configuration;

FIG. **95** presents a top isometric view of a fifth exemplary accessory for use as a container lid, the accessory including a pivoting resealable fluid dispensing spout, the pivoting resealable fluid dispensing spout being shown in a closed configuration;

FIG. **96** presents a top isometric view of the pivoting resealable fluid dispensing spout originally introduced in FIG. **95**, the pivoting resealable fluid dispensing spout being shown in an open configuration;

FIG. **97** presents a top isometric view of a sixth exemplary accessory for use as a container lid, the accessory including a sliding dispensing spout, the illustration presenting the sliding dispensing spout being illustrated in a closed position;

FIG. **98** presents a top isometric view of the sixth exemplary accessory originally introduced in FIG. **97**, the illustration presenting the sliding dispensing spout being illustrated in an opened position;

FIG. **99** presents a top isometric view of a seventh exemplary accessory for use as a container lid, the accessory including a pump dispensing assembly;

FIG. **100** presents a top isometric view of an eighth exemplary accessory for use as a container lid, the accessory including a trigger dispensing assembly, the arrangement employing a neck of the accessory as a portion of the grip for use in conjunction with the trigger; and

FIG. **101** presents a top isometric view of a ninth exemplary accessory for use as a container lid, the accessory including a trigger dispensing assembly, the arrangement employing the body of the container as a portion of the grip for use in conjunction with the trigger.

Like reference numerals refer to like parts throughout the various views of the drawings.

## DETAILED DESCRIPTION OF THE PRESENT INVENTION

The following detailed description is merely exemplary in nature and is not intended to limit the described embodiments or the application and uses of the described embodiments. As used herein, the word "exemplary" or "illustrative" means "serving as an example, instance, or illustration." Any implementation described herein as "exemplary" or "illustrative" is not necessarily to be construed as preferred or advantageous over other implementations. All of the implementations described below are exemplary implementations provided to enable persons skilled in the art to make or use the embodiments of the disclosure and are not intended to limit the scope of the disclosure, which is defined by the claims. In other implementations, well-known features and methods have not been described in detail so as not to obscure the invention. For purposes of description herein, the terms "upper", "lower", "left", "right", "front", "back", "vertical", "horizontal", and derivatives thereof shall relate to the invention as oriented in FIG. **1**. Furthermore, there is no intention to be bound by any expressed or implied theory presented in the preceding technical field, background, brief summary or the following detailed description. It is also to be understood that the specific devices and processes illustrated in the attached drawings, and described in the following specification, are simply exemplary embodiments of the inventive concepts defined in the appended claims. Hence, specific dimensions and other physical characteristics relating to the embodiments that may be disclosed herein are not to be considered as limiting, unless the claims expressly state otherwise.

A resealable container assembly **100** includes a resealable container lid **110** assembled to a resealable container body **101** and a resealable container cap **160** removably assembled to the resealable container lid **110**, as illustrated in FIGS. **15** through **22**. Details of the resealable container lid **110** are illustrated in FIGS. **1** through **7**. Details of the resealable container cap **160** are illustrated in FIGS. **8** through **14**.

A container body **101** includes a container body closed bottom wall **104** contiguous with a lower edge of the

container body tubular sidewall **102**. A container body sidewall seaming flange **106** is formed at an upper edge of the container body tubular sidewall **102**. The container body cylindrical sidewall seaming flange **106** is preferably annular in shape and extending radially outward from the container body tubular sidewall **102**. The container body tubular sidewall **102** can be any shape or size desired by the packaging company. The illustrated exemplary container body tubular sidewall **102** is cylindrical in shape. The container body tubular sidewall **102** can have any reasonable and/or creative cross section shape. The shape of the container body tubular sidewall **102** can be distinct to provide a unique association between the shape of the container body tubular sidewall **102** and the product itself. Examples of container body tubular sidewalls **102** having contoured tubular sidewalls include: COKE CONTOUR bottle, BUDWEISER BOWTIE can, and a HEINEKEN Keg Can. The container body tubular sidewall **102** can be formed having other sidewall shapes, including spherical, conical, polygonal, and the like. The container body tubular sidewall **102** is preferably fabricated of a metal or a metal alloy. Any known fabrication process, such as stamping, spinning, drawing, wall ironing, and the like or any combination thereof can be used for fabrication of the container body tubular sidewall **102**. Alternatively, the container body tubular sidewall **102** can be fabricated of a plastic, paper based product, bamboo, or any other suitable material. The material would be selected based upon the target packaged product and the associated manufacturing processes, the manufacturing environment, the transportation conditions, the shelf life of the product, and any other considerations.

The resealable container lid **110**, detailed in FIGS. **1** through **7**, includes a lid frustum shaped sidewall **132** extending between an upper (top) edge and a lower (bottom) edge. The upper edge is preferably annular in shape. Similarly, the lower edge is preferably annular in shape. A lid bottom wall **134** extends across a lower end of the lid frustum shaped sidewall **132**, providing a lower seal for the resealable container assembly **100**, when the resealable container lid **110** is assembled to the resealable container body **101**. A lid annular countersink **126** can be formed between an outer edge of the lid bottom wall **134** and the lower edge of the lid frustum shaped sidewall **132**. Although a commonly understood frustum shape includes a linear edge between a larger diameter upper portion and a smaller diameter lower portion, the frustum shaped sidewall included in the resealable container lid **110** can be arched (concave or convex) while enabling the same function as a frustum with a linear edge. The lid annular countersink **126** can be of any suitable shape. The lid annular countersink **126** is designed to enable flexure of the resealable container lid **110**; more specifically, flexure of the lid bottom wall **134** to accommodate a buildup of pressure within an interior of the resealable container assembly **100**. A region of the lid bottom wall **134** adjacent to the lid annular countersink **126** can be formed as a planar surface having at least an annular section that is uninterrupted enabling a seal between a mating sealing feature of the resealable container cap **160** and respective section of the lid bottom wall **134** of the resealable container lid **110**. Increased pressure within the interior of the resealable container assembly **100** can be a result of any of number of conditions. The resealable container assembly **100** is commonly used for packaging of beverages. A significant number of packaged beverages are carbonated, including soft drinks, carbonated or soda (seltzer) water, beer, sparkling wine, carbonated alcoholic beverages, energy drinks, and the like, as well as nitrogen backfilled still beverages, including water, teas, coffee, juices, wines, and the like. Another contribution to increased internal pressure is a pre-pressurization during a canning process. Another contribution to increased internal pressure is an assisted pressurization during a canning process using a nitrogen backfill. Another contributor to an increased internal pressure is change in ambient temperature.

A seaming chuck receiving formation including a seaming chuck wall **122** and a seaming chuck shoulder **124** are formed as a transition between the upper edge of the lid frustum shaped sidewall **132** and a seaming panel **120**. The seaming panel **120** is of a shape and size to receive the container body cylindrical sidewall seaming flange **106** of the resealable container body **101** and subsequently be seamed together using forming, rolling and compressing processes. The seaming panel **120** is preferably formed as an inverted countersink having an inverted U shape. Other details of the resealable container lid **110** will be discussed later in this disclosure.

The container body cylindrical sidewall seaming flange **106** of the resealable container body **101** is formed to receive and be seamed to a seaming panel **120** of the resealable container lid **110**. Similarly, the seaming panel **120** is shaped having an inverted U shape (or similar) to aid in an initiation of the seaming process. A lower or seaming surface of the seaming panel **120** is seated against an upper or seaming surface of the container body cylindrical sidewall seaming flange **106**. A lower surface of a seaming chuck is seated against the seaming chuck shoulder **124**, with a side surface of the seaming chuck being seated against the seaming chuck wall **122**. A downward force applied by the seaming chuck seats the lower or seaming surface of the seaming panel **120** against the upper or seaming surface of the container body cylindrical sidewall seaming flange **106**. The resultant radially outward force applied to the seaming chuck wall **122** provides a resistive force to a radially inward force applied to the seaming panel by a seaming roller tooling. The radially outward force applied to the seaming chuck wall **122** additionally retains the annular shape of the container body and lid assembly seam **109**. The seaming process is best illustrated in sectioned elevation views presented in FIGS. **18** and **19**. Once the resealable container lid **110** and the resealable container body **101** are assembled to one another, the resealable container cap **160** can be assembled to the resealable container assembly **100**, as illustrated in FIGS. **20** and **21** by rotationally engaging each cap translative motion guide feature **181** of the resealable container cap **160** and each respective lid translative motion guide feature **152** of the resealable container lid **110** with one another. A cap translative motion guide feature leader end **181**A of the cap translative motion guide feature **181** initially engages the cap translative motion guide feature **181** with the lid translative motion guide feature **152**. As the resealable container cap **160** is rotated respective to the resealable container lid **110**, the cap translative motion guide feature **181** continues to engage with the lid translative motion guide feature **152** until a cap translative motion guide feature locking end **181**E of the cap translative motion guide feature **181** engages with the lid translative motion guide feature **152**. Upon engagement of the cap translative motion guide feature locking end **181**E with the lid translative motion guide feature **152**, the cap translative motion guide feature locking end **181**E includes at least one feature that increases a force required to either continue to rotate the resealable container cap **160** respective to the resealable container lid **110** in a closing direction or an increase in force to at least initially rotate the resealable container cap **160**

respective to the resealable container lid **110** in an opening direction. A finished container body and lid assembly seam **109** formed between the container body cylindrical sidewall seaming flange **106** and the seaming panel **120** of the resealable container lid **110**, wherein the resealable container cap **160** has subsequently been assembled to the resealable container lid **110** is best illustrated in an enlarged sectioned assembly view illustrated in FIG. **22**. The arrangement of the resealable container lid **110**, as illustrated, can be referred to as a plug receiving lid. More specifically, the arrangement of radially inward extending translative motion guide features **152** on a resealable container lid **110** define a plug receiving configuration. Similarly, the arrangement of the resealable container cap **160**, as illustrated, can be referred to as a plug styled cap. More specifically, the arrangement of radially outward extending translative motion guide features **181** on a resealable container cap **160** define a plug styled closure.

At least one lid translative motion guide feature **152** is included in the lid frustum shaped sidewall **132** of the resealable container lid **110**. Similarly, at least one cap translative motion guide feature **181** is included in the resealable container cap frustum shaped exterior sidewall **162** of the resealable container cap **160**. In a preferred arrangement, one lid translative motion guide features **152** would be provided for each cap translative motion guide feature **181** respectively. Each of the at least one lid translative motion guide feature **152** would be shaped based upon a design of a respective cap translative motion guide feature **181** of the resealable container cap **160**. The shapes of the lid translative motion guide feature **152** and the mating cap translative motion guide feature **181** would provide a function which translates a rotational motion between the resealable container cap **160** and the resealable container lid **110** into an axial translating motion between the resealable container cap **160** and the resealable container lid **110**. When rotated in a first direction, the resealable container cap **160** is drawn into the resealable container lid **110** and when rotated in a second, opposite direction, the resealable container cap **160** is driven out of the resealable container lid **110**.

The lid translative motion guide feature **152** is preferably formed in the lid frustum shaped sidewall **132** during a process of fabricating the resealable container lid **110**. The resealable container lid **110** can include a single, long lid translative motion guide feature **152**, a pair of lid translative motion guide features **152** (preferably located at opposite quadrants of the lid frustum shaped sidewall **132**), three (3) lid translative motion guide features **152** (preferably equidistantly spaced between one another), four (4) lid translative motion guide features **152** (preferably equidistantly spaced between one another with one lid translative motion guide feature **152** located at each of four (4) quadrants), six (6) lid translative motion guide features **152** (preferably equidistantly spaced between one another), or any other suitable number of lid translative motion guide features **152**.

In the exemplary illustrations, each cap translative motion guide feature **181** is formed as a cam track. Each lid translative motion guide feature **152** is formed as a horizontally oriented geometric stadium (rectangle with rounded ends) shaped protrusion or emboss. The lid translative motion guide feature **152** can be other suitable shapes, such as a circular protrusion, an oval protrusion, an elliptical protrusion, a cam shaped protrusion, or any other suitable shape that is compatible with the cam track. In another example, the cap translative motion guide feature **181** can be shaped in a formation of a section of a helical thread. In this example, the lid translative motion guide feature **152** can be formed having any of the above described shapes utilized with the lid translative motion guide feature **152** for the cam track, or the lid translative motion guide feature **152** can be formed having a shape of a mating section of a helical thread, a ramp, or any other shape compatible with a portion of a helical thread. The cap translative motion guide feature **181** and the lid translative motion guide feature **152** can be any suitable shape enabling the desired translative function. The cap translative motion guide feature **181** can additionally include a detent feature, where an additional force is required to overcome the detent and enable the rotational motion between the resealable container cap **160** and the resealable container lid **110**.

The resealable container cap **160**, detailed in FIGS. **8** through **14**, is formed having a resealable container cap frustum shaped radially interior sidewall **163** extending between an upper edge and a lower edge. The resealable container cap frustum shaped radially interior sidewall **163** is preferably formed having a frustum shape, wherein the upper edge has a first diameter and the lower edge has a second diameter; the first diameter being larger than the second diameter. A resealable container cap planar transversing surface **164** extends across a bottom region of the resealable container cap **160**, providing a seal across the lower edge of the resealable container cap frustum shaped radially interior sidewall **163**. The resealable container cap planar transversing surface **164** can include a countersink shape cap annular countersink formation **166**. A lower surface of the cap annular countersink formation **166** can be shaped to provide a cap lower annular sealing member **167**. An elastomer can be provided upon the lower surface of the cap annular countersink formation **166** (the cap lower annular sealing member **167**) to increase a quality of the seal between the resealable container cap **160** and the resealable container lid **110**. The elastomer additionally increases friction between the resealable container cap **160** and the resealable container lid **110**, thus reducing a potential for the resealable container cap **160** to become dislodged from the resealable container lid **110**. It is noted that the elastomer can be applied to any mating surface where a seal is formed between any version of the container cap and any respective version of the container lid.

The cap annular countersink formation **166** additionally raises a central region of the resealable container cap planar transversing surface **164**. The elevated region of the resealable container cap planar transversing surface **164** provides a clearance for components assembled to the lid bottom wall **134** and/or other formations provided in the lid bottom wall **134** of the resealable container lid **110**.

The resealable container cap **160** preferably includes a grip element. In the exemplary illustrations, the grip element is provided as a series of resealable container cap grip elements **174** equi-spatially arranged about a resealable container cap grip element base **171**. In the exemplary illustrations, the series of resealable container cap grip elements **174** are created by creating formations within the material of the cylindrical sidewall inverted countersink **170**. A sidewall to inverted countersink transition segment **169** provides a transition between the resealable container cap frustum shaped radially interior sidewall **163** and the cylindrical sidewall inverted countersink **170**. The resealable container cap grip elements **174** can be formed as a recess (as illustrated), a boss, a knurl, or a combination of both within the cylindrical sidewall inverted countersink **170**. Alternatively, the resealable container cap grip elements **174** can be a material applied to the cylindrical

sidewall inverted countersink **170**. The number, size and shape of resealable container cap grip elements **174** are considerations for the designer.

Regarding manufacturing of the resealable container lid **110** and the resealable container cap **160**, each of the illustrated resealable container lid **110** and the resealable container cap **160** are fabricated from a single planar sheet of formable material, such as a thin sheet of metal. The resealable container lid **110** and the resealable container cap **160** can be fabricated using at least one metal forming process. The at least one metal forming process can include a stamping process, a sheering process, a drawing process, a re-drawing process, turning, spinning, a wall ironing process, a metal pinching process, a rolling process, and the like.

Alternatively, the resealable container lid **110** and/or the resealable container cap **160** can be fabricated using a molding process. The molding process can be any suitable molding process, utilize any material suitable for molding and determined based upon the product being packaged. The molded material can include plastic, a wax or resin impregnated molding material, a wax or resin coating on the molded material, a plastic lining on the molded material, or any other process to provide a protective container surface. In another consideration for manufacturing, the resealable container lid **110** and/or the resealable container cap **160** can be fabricated using a machining process, a casting process, a vacuum forming process, an additive manufacturing process (3D printing), any other suitable manufacturing process, or any combination thereof.

The resealable container lid **110** and/or the resealable container cap **160** can be fabricated of a material selected from a group of materials, the group of materials comprising:

a. Metal,
b. Aluminum alloy,
c. Steel alloy,
d. Tin,
e. Plastic,
f. Nylon,
g. Polyvinyl chloride (PVC),
h. Polyethylene terephthalate (PETE or PET),
i. Thermoplastic elastomer (TPE),
j. High-Density Polyethylene (HDPE),
k. Polypropylene (PP),
l. Polycarbonate,
m. Waxed or resin impregnated paper/organic fiber pulp,
n. Waxed or resin coated paper/organic fiber pulp, and
o. Plastic lined paper/organic fiber pulp.

Once the resealable container lid **110** and/or the resealable container cap **160** are fabricated, they can be further processed after forming. For example, a coating can be applied to the formed resealable container lid **110** and/or resealable container cap **160**, wherein the coating provides protection to the material and a barrier between the material of the resealable container lid **110** and/or the resealable container cap **160** and the contents packaged within the resealable container assembly **100**. For example, it is undesirable to expose food and/or drinks to aluminum. When aluminum is utilized as a component for the resealable container assembly **100**, the surfaces which contact the packaged comestibles is coated with a plastic material, wherein the plastic material provides a barrier between the metal surface of the resealable container lid **110** and/or the resealable container cap **160** and the packaged comestibles. The plastic coating can be applied using a spray process, a dipping process, or any other suitable application process. Similarly, an elastomer or other sealant material can be applied to one or more of the sealing surfaces of the resealable container lid **110** and/or the resealable container cap **160**. The elastomer can be sprayed upon the surface, applied using a dipping process, applied using a dispenser, applied using a printing process, applied using a transfer printing process, applied using a molding process, or applied using any other suitable process. Since one or more contact surfaces may be employed to create a seal between the resealable container lid **110** and the resealable container cap **160**, the sealant material can be applied onto the one or more contact surfaces. The protective coating can alternatively be any suitable protective coating, including the plastic coating (as described above), an epoxy lacquer, a BPA-free coating, and the like.

The exemplary resealable container lid **110** additionally includes any currently commercially available Stay-On Tab (SOT) design or a modified version of the currently commercially available Stay-On Tab (SOT) design. A tab **190** is fabricated of a sheet of material, preferably of a material that is compatible with the material of a body of the resealable container lid **110**. The tab **190** would be formed using any known and appropriate manufacturing steps and processes. The tab **190** would be fabricated including features, such as an aperture for passing a rivet **197** therethrough, a tab retention bracket **191**, a tab bracket hinge **192**, and a tab lightening hole **193**.

A number of features are formed in the lid bottom wall **134**. A lid bottom panel tear panel **138** is defined by a lid bottom panel score line **136**. The lid bottom panel score line **136** is preferably formed having a pair of parallel score lines, preferably being connected to one another at a first end and open or unconnected at a second end. A tear panel hinge **139** is created at the open or unconnected, second end of the lid bottom panel score line **136**. A socket bottom wall to reinforcement formation transition **141** is formed to enhance rigidity of the Stay-On Tab (SOT) design during a process of opening the lid bottom panel tear panel **138**. A tear panel reinforcing formation **198** can be formed within the lid bottom panel tear panel **138**, wherein the tear panel reinforcing formation **198** is created by forming a tear panel **138** to tear panel reinforcing formation transition **142** within the lid bottom panel tear panel **138**. The tear panel reinforcing formation **198** enhances a rigidity of the lid bottom panel tear panel **138**. The design of the tear panel reinforcing formation **198** provides significant rigidity to a contact area of the tab **190** when the tab **190** applies an opening force to the lid bottom panel tear panel **138**, enabling the tab **190** to fracture the lid bottom panel score line **136**, continue to propagate separation along the lid bottom panel score line **136** and fold the lid bottom panel tear panel **138** along a tear panel hinge **139** into a product volume of the resealable container **100**. The resealable container lid bottom wall reinforcement formation **118** is created by forming a lid bottom wall to reinforcement formation transition **141** within the lid bottom wall **134**. It is preferred that the resealable container lid bottom wall reinforcement formation **118** is formed as a recess within the lid bottom wall **134**. A tab stabilizing formation **196** can be formed in the resealable container lid bottom wall reinforcement formation **118** at a location underneath a distal or finger grip end of the tab **190**. The tab stabilizing formation **196** would provide support for the distal or finger grip end of the tab **190** when the tab **190** is in an initial, packaged position.

A finger access depression **195** is formed in the resealable container lid bottom wall reinforcement formation **118** at a location proximate a gripping end of the tab **190**. The finger

access depression **195** provides a clearance for a user's finger easing access to an underside of the tab **190** when initializing the process for fracturing the lid bottom panel score line **136** and opening the resealable container assembly **100**. The tab **190** can be curled at the distal free gripping end to further facilitate a user's finger access to an underside of the tab **190** when initializing the process for fracturing the lid bottom panel score line **136**.

A rivet **197** is formed in the lid bottom wall **134** at a location to position the opening end of the tab **190** at the appropriate location respective to the lid bottom panel score line **136** and lid bottom panel tear panel **138**. The tab **190** is assembled to the body of the resealable container lid **110** by inserting the rivet **197** through the aperture of the tab retention bracket **191**, then the rivet **197** is compressed, expanding the exposed end and entrapping the tab retention bracket **191** between the expanded portion of the rivet **197** and the facing surface of the resealable container lid bottom wall reinforcement formation **118**.

Returning to the process of assembling the resealable container cap **160** onto the resealable container lid **110**; the resealable container cap **160** would be assembled to the resealable container lid **110** by orienting the cap translative motion guide features **181** offset from the restive lid translative motion guide features **152**. The resealable container cap **160** would be inserted into a socket created in the resealable container lid **110** by the lid frustum shaped sidewall **132** as illustrated in FIG. **20**. The resealable container cap **160** would be rotated, engaging each cap translative motion guide feature **181** with each respective lid translative motion guide feature **152**. As the resealable container cap **160** is rotated respective to the resealable container lid **110**, engagement between each cap translative motion guide feature **181** and each respective lid translative motion guide feature **152** translates the rotational motion to an axial motion, drawing a sealing surface of the resealable container cap **160** and a mating sealing surface of the resealable container lid **110** and resealable container cap **160** together, until a sufficient seal is created between the cap lower annular sealing member **167** of the resealable container cap **160** and a mating sealing surface **134** of the resealable container lid **110** as illustrated in FIG. **21**. As mentioned earlier, an elastomer or other sealant material can be provided between the lid bottom wall **134** and the cap lower annular sealing member **167**.

A cap upper annular sealing member **165** can be provided as an alternative for (or in addition to) the cap lower annular sealing member **167**. The cap upper annular sealing member **165** would be formed within an interior portion of the cylindrical sidewall inverted countersink **170**. The cap upper annular sealing member **165** is preferably fabricated of a pliant material, such as an elastomer, molded plastic, polymer, an organic sealing material, cellulose pulp, cork material, a formation that is integral with the resealable container cap **160**, or any other suitable material or combination thereof. The shaping of the cap upper annular sealing member **165** is preferably designed to engage with a container body and lid assembly seam chine (top surface) **108** of the container body and lid assembly seam **109**, an interior radially inward facing surface **122** of the container body and lid assembly seam **109**, an exterior radially surface of the container body and lid assembly seam **109**, or any combination thereof. This can include a cap upper annular sealing member **165** having any suitable cross sectional shape, such as a linear surface, one or more fin shaped surfaces, one or more angled fin shaped surfaces, a wedge cross sectional shape, or any combination thereof.

The frustum shape of the lid frustum shaped sidewall **132** in conjunction with the size and shape of the lid translative motion guide features **152** enables nesting of the resealable container lid **110**, as illustrated in FIG. **7**. A upper tubular sidewall radially inner diameter D**11**, measuring a diameter across an upper edge of the interior surface of the lid frustum shaped sidewall **132** is greater than a lower formation radially outermost diameter D**12**, measuring a diameter across a radially outermost dimension of an exterior surface of the lid annular countersink **126** enabling an upper placed resealable container lid **110** to seat within the lid frustum shaped sidewall **132** of a lower placed resealable container lid **110**. When nesting, the interior surface of the lid translative motion guide feature **152** contacts the radially exterior surface of the lid frustum shaped sidewall **132**. The resealable container lid **110** is designed where the point of contact between the radially interior surface of the lid translative motion guide feature **152** and the radially exterior surface of the lid frustum shaped sidewall **132** positions an exterior or lower surface of the lid bottom wall **134** proximate, but not contacting, the uppermost surface of elements extending upwards from the lid bottom wall **134**, such as a top surface of the tab **190**. The resealable container lid **110** is also designed where the point of contact between the radially interior surface of the lid translative motion guide feature **152** and the radially exterior surface of the lid frustum shaped sidewall **132** positions a lower edge of the seaming panel **120** of the resealable container lid **110** proximate, but not contacting, the uppermost surface of the seaming panel **120** of the lower resealable container lid **110**.

The introduction of a translative motion guide system in conjunction with a frustum shaped sidewall **132** provides several benefits. The first benefit is the introduction of a translative motion guide system provided between an radially interior surface of the lid frustum shaped sidewall **132** of the resealable container lid **110** and the resealable container cap frustum shaped exterior sidewall **162** of the resealable container cap **160**. The second benefit is an ability to nest a plurality of resealable container lids **110**, thus reducing volume for storage, shipping, storage within the canning equipment, and the like. The design also ensures easy and proper pick up and release of each resealable container lid **110** from a stack of nested resealable container lids **110**. Engagement of the two surfaces, as described, automatically centers the first resealable container lid **110** and the second resealable container lid **110** with one another, ensuring pickup at a repeated location of each resealable container lid **110** from a stack of resealable container lids **110**, thus optimizing the manufacturing, conveyance, filling, seaming, and similar processes. The design of the resealable container lid **110**, more specifically, the lid bottom wall **134**, includes sufficient areas for vacuum pickup and placement of the resealable container lid **110**. The design of the resealable container lid **110**, more specifically, the seaming panel **170**, includes sufficient areas for mechanical separation of the resealable container lid **110**.

The resealable container cap **160** is designed with considerations similar to the nesting properties of the resealable container lid **110**. An upper tubular sidewall radially inner diameter D**13**, measuring a diameter across an upper edge of the interior surface of the resealable container cap frustum shaped interior sidewall **163** is greater than a lower formation radially outermost diameter D**14**, measuring a diameter across a radially outermost dimension of an exterior surface of the cap annular countersink formation **166** enabling a first resealable container cap **160** to be inserted into a cavity of a second resealable container cap **160** as illustrated in FIG.

14. A radially exterior surface of the cap translative motion guide feature **181** would nest against the resealable container cap frustum shaped interior sidewall **163**. A lower edge of the cylindrical sidewall inverted countersink **170** of the first resealable container cap **160** would rest against an upper surface of the cylindrical sidewall inverted countersink **170** of the second resealable container cap **160**. A lower surface of the resealable container cap planar transversing surface **164** of the first resealable container cap **160** would be located proximate an upper surface of the resealable container cap planar transversing surface **164** of the second resealable container cap **160**.

The use of frustum shaped sidewalls **132**, **162** introduces another benefit. By drawing two (2) frustum shaped walls towards one another provides several opportunities for two facing surfaces to engage with one another creating a seal. In the illustrations presented in FIGS. **20** and **21**, the cap lower annular sealing member **167** and the lid bottom wall **134** are drawn towards one another creating the seal. A sealing material can be provided between the two sealing surfaces to improve the seal. The illustrated versions present surfaces which are horizontal with one another. The cap lower annular sealing member **167** and the lid bottom wall **134** can be modified to include angled or frustum shaped facing surfaces, where the frustum shaped facing of the cap lower annular sealing member **167** and the frustum shaped facing surface of the lid bottom wall **134** would engage with one another forming a seal. The frustum shaped surfaces of the cap lower annular sealing member **167** and the lid bottom wall **134** would be one of (a) parallel to the frustum shaped surfaces of the lid frustum shaped sidewall **132** and the resealable container cap frustum shaped exterior sidewall **162** or (b) slightly more horizontally designed than the frustum shaped surfaces of the lid frustum shaped sidewall **132** and the resealable container cap frustum shaped exterior sidewall **162**. When drawn together, the frustum shaped surface of the cap lower annular sealing member **167** and the frustum shaped surface lid bottom wall **134** would create a wedge between one another and improve the seal created between the lid frustum shaped sidewall **132** and the resealable container cap frustum shaped exterior sidewall **162** accordingly. The same concept can be applied to any sealing feature integral the resealable container lid **110** and the resealable container cap **160**. This will become more apparent in subsequent variants presented herein.

A second sealing interface can be provided between an interior surface of the cylindrical sidewall inverted countersink **170** of the resealable container cap **160** and an upper surface of the seaming panel **120** of the resealable container lid **110**, as illustrated in FIG. **22**. A shape of the cylindrical sidewall inverted countersink **170** enables flexure. The axial relational motion between the resealable container cap **160** and the resealable container lid **110** draws the interior (underside) surface of the cylindrical sidewall inverted countersink **170** of the resealable container cap **160** and the upper surface of the seaming panel **120** of the resealable container lid **110** towards one another. The axial relational motion between the resealable container cap **160** and the resealable container lid **110** would continue after the interior (underside) surface of the cylindrical sidewall inverted countersink **170** of the resealable container cap **160** and the upper surface of the seaming panel **120** of the resealable container lid **110** contacts one another, causing the cylindrical sidewall inverted countersink **170** to deform slightly. The deformation increases a normal force between the interior (underside) surface of the cylindrical sidewall inverted countersink **170** of the resealable container cap **160** and the exterior surface of the seaming panel **120** of the resealable container lid **110**, thus improving the seal therebetween. A sealant material can be provided between the interior (underside) surface of the cylindrical sidewall inverted countersink **170** of the resealable container cap **160** and the exterior surface of the seaming panel **120** of the resealable container lid **110**. It would be preferred that the sealant material is applied to and carried by an interior (underside) surface of the cylindrical sidewall inverted countersink **170**, as the material may be removed from the exterior surface of the seaming panel **120** during the seaming process.

Other sealing facing surfaces can be integrated into the resealable container lid **110** and the resealable container cap **160**. One example of a variation is utilized in a resealable container assembly **200**, illustrated in FIGS. **37**, **38**, and **39**, with details being presented in FIGS. **40** through **49**.

The exemplary resealable container assembly **200** and the exemplary resealable container assembly **100** include a number of like elements. Like elements of the resealable container assembly **100** and the resealable container assembly **200** are numbered the same, with the elements of the resealable container assembly **200** being referenced by numbers preceded by the numeral "2". Distinctions between the resealable container assembly **100** and the resealable container assembly **200** are described herein. In the exemplary illustrations, the resealable container body **201** and the resealable container body **101** are similar to one another. The distinctions are included in the resealable container annular component **210** and the resealable container cap **260**. Illustrations presenting the resealable container body **101** lack any views detailing the container body closed bottom wall **104** of the resealable container body **101**. The container body closed bottom wall **104** can be similar to the container body closed bottom wall **204**. Illustrations presenting the resealable container body **201** introduce a shape of the bottom portion of the resealable container body **201**. The exemplary bottom portion of the resealable container body **201**, as illustrated, include a container body annular base **204** about a peripheral edge of a container body closed bottom wall **203**. The container body closed bottom wall **203** can be coplanar with the container body annular base **204**, or, as illustrated, the container body closed bottom wall **203** is preferably recessed from the container body annular base **204**. The recessed design of the container body closed bottom wall **203** provides better support on a table, a wall that can resist upon pressure build up internal to the container with minimal effects upon the shape of the container body annular base **204**, and other benefits. In the exemplary illustrations, the container body closed bottom wall **203** is domed in shape. Although the exemplary illustration presents a desirable domed shape container body closed bottom wall **203**, the container body closed bottom wall **203** can be of any shaped recess. Details of the resealable container annular component **210** are illustrated in FIGS. **23** through **29**. Details of the resealable container cap **260** are illustrated in FIGS. **30** through **36**.

The resealable container lid **110** includes a lid bottom wall **134**, wherein the resealable container lid **110** seals contents within the resealable container assembly **100**. Contents are accessed when a portion of the lid bottom wall **134** is fractured and opened, such as a fracturing of the lid bottom panel score line **136** and an opening of the lid bottom panel tear panel **138** using the currently commercially available Stay-On Tab (SOT) design as described above. Conversely, the resealable container annular component **210** excludes the lid bottom wall **134**, where a lower edge of a cap receiving annular component tubular sidewall **232** of the resealable

container annular component **210** is open. The lower edge of the resealable container annular component **210** is rolled, forming a cap receiving annular component rolled annular end ring **226**. The cap receiving annular component rolled annular end ring **226** creates a lid open passageway **235** passing through an interior of the resealable container annular component **210**.

The exemplary resealable container lid **110** includes four (4) lid translative motion guide features **152**. The exemplary resealable container annular component **210** includes six (6) cap receiving annular component translative motion guide features **252**. The number and/or design of lid translative motion guide features **152**, **252** would be determined by the designer of the container lid **110**, annular ring component **210**. Several features can be considered when determining the number and/or design of lid translative motion guide features **152**, **252**, including type of contents within the resealable container assembly **100**, **200**, anticipated maximum pressure within the resealable container assembly **100**, **200**, desired degree of rotation between the container cap **160**, **260** and the container lid **110**, annular ring component **210**, desired axial relative motion between the container cap **160**, **260** and the container lid **110**, annular ring component **210**, type and thickness of the sealant material, and any other consideration.

In the exemplary illustrations, the cap receiving annular component tubular sidewall **232** is more cylindrical (vertical) than the lid frustum shaped sidewall **132**. This design provides a different nesting arrangement for the resealable container annular component **210** (illustrated in FIG. **29**) compared to the nesting arrangement of the resealable container lid **110** (illustrated in FIG. **7**).

Nesting of a plurality of resealable container annular components **210** is arranged where a first resealable container annular component **210** is inserted into an interior of a second resealable container annular component **210**. A upper tubular sidewall radially inner diameter D**21**, measuring a diameter across an upper edge of the interior surface of the lid tubular sidewall **232** is greater than a lower formation radially outermost diameter D**22**, measuring a diameter across a radially outermost dimension of an exterior surface of the cap receiving annular component rolled annular end ring **226** enabling an upper placed resealable container lid **210** to seat within the lid tubular sidewall **232** of a lower placed resealable container lid **210**, as illustrated in FIG. **29**. More specifically, a lower, outer surface of the cap receiving annular component rolled annular end ring **226** rests against a cap receiving annular component translative motion guide feature upper surface **253** of the cap receiving annular component translative motion guide feature **252**, as illustrated in FIG. **29**. The resealable container annular component **210** can be modified, where the cap receiving annular component tubular sidewall **232** has a more tapered or frustum shape. With this modification, the nesting of a plurality of resealable container annular components **210** can be arranged in accordance with the nesting arrangement of the resealable container annular component **110**, where a radially exterior surface of the cap receiving annular component tubular sidewall **232** would rest against a radially interior surface of the cap receiving annular component translative motion guide feature **252**.

Nesting of a plurality of resealable container caps **260** is arranged where a first resealable container cap **260** is inserted into an interior of a second resealable container cap **260**. An upper tubular sidewall radially inner diameter D**23**, measuring a diameter across an upper edge of the interior surface of the resealable container cap interior sidewall **263** is greater than a lower formation radially outermost diameter D**24**, measuring a diameter across a radially outermost dimension of an exterior surface of the cap annular countersink formation **266**. This arrangement enables a lower, outer portion of the resealable container cap tubular radially exterior (product side) sidewall **262** of the first resealable container cap **260** rests against an upper portion of the resealable container cap tubular radially interior (public side) sidewall **263** of the second resealable container cap **260**, as illustrated in FIG. **36**. The resealable container cap **260** can be modified, where the tubular sidewall (exterior, product side) **262**, (interior, public side) **263** has a more tapered or frustum shape. With this modification, the nesting of a plurality of resealable container caps **260** can be arranged in accordance with the nesting arrangement of the resealable container cap **160**, where a radially exterior surface of the resealable container cap tubular exterior (product side) sidewall **262** would rest against a radially interior surface of the resealable container cap tubular interior (public side) sidewall **263**. Alternatively, the resealable container cap **260** can be designed where a radially exterior surface of the cap translative motion guide feature **281** of the first or nesting resealable container cap **260** would rest against the resealable container cap tubular interior (public side) sidewall **263** of the second or adjacent resealable container cap **260**.

The resealable container annular component **210** is seamed to a container body sidewall seaming flange **206** using the same seaming features and processes described above for the process of seaming the resealable container lid **110** to the container body cylindrical sidewall seaming flange **106**. Details are presented in FIGS. **37** through **39** and section views presented in FIGS. **40** through **42**. The resealable container cap **260** is inserted into a cavity defined by the cap receiving annular component tubular sidewall **232** of the resealable container annular component **210**. The rotational and resulting translative axial motions of the resealable container cap **260** respective to the resealable container annular component **210** are the same as those of the resealable container cap **160** respective to the resealable container lid **110** as described above.

As the resealable container cap **260** and the resealable container annular component **210** are drawn together, a cap sidewall transition **268** provided about a lower radially exterior surface of the cap annular countersink formation **266** is seated against a cap receiving annular component rolled bottom edge sealing surface **227** of the cap receiving annular component rolled annular end ring **226**, as best illustrated in FIG. **44** and in the enlarged view illustrated in FIG. **46**. The cap sidewall transition **268** is preferably formed having a frustum shape. The frustum shape of the cap sidewall transition **268** enhances the seal between the cap receiving annular component rolled bottom edge sealing surface **227** of the cap receiving annular component rolled inner edge **226** and cap sidewall transition **268** as the cap translative motion guide feature **281** and the cap receiving annular component translative motion guide feature **252** engage with one another during a rotational motion therebetween. A cap lower annular sealing member **267** can be provided between the cap receiving annular component rolled bottom edge sealing surface **227** of the cap receiving annular component rolled inner edge **226** and the cap sidewall transition **268** as illustrated in FIG. **49**. The sealant material is preferably applied to the cap sidewall transition **268**, but can be applied to the cap receiving annular component rolled bottom edge sealing surface **227**, or both the cap sidewall transition **268** and the cap receiving annular

component rolled bottom edge sealing surface **227**. A protectant, such as the sealant material, coating, or any other suitable material, is preferably applied to the interior or product side surfaces of the resealable container annular component **210** and the resealable container cap **260** to isolate the base material of the resealable container annular component **210** and the resealable container cap **260** from the contents stored within the interior volume of the resealable container assembly **200**. A cap upper annular sealing member **265** can additionally or alternatively be provided between an interior surface of a cylindrical sidewall inverted countersink **270** of the resealable container cap **260** and a facing, exterior surface of the seaming panel **220** the assembled resealable container annular component **210** as illustrated in FIG. **45**. The cap upper annular sealing member **265** can be provided between the interior surface of the cylindrical sidewall inverted countersink **270** of the resealable container cap **260** and the facing, exterior surface of the seaming panel **220** of the assembled resealable container annular component **210** as illustrated in FIG. **45**. It would be preferable to apply the cap upper annular sealing member **265** to the interior surface of the cylindrical sidewall inverted countersink **270**, as illustrated in FIG. **45**. A cap upper annular sealing member **265**B can also additionally or alternatively be provided between a radially exterior surface proximate a transition between the resealable container cap tubular exterior sidewall **262** and the cylindrical sidewall inverted countersink **270** of the resealable container cap **260** and a facing, radially interior surface proximate a transition between the cap receiving annular component tubular sidewall **232** and the seaming chuck shoulder **224** of the seaming panel **220** of the assembled resealable container annular component **210** as illustrated in FIG. **45**.

The cap upper annular sealing member **265**, cap upper annular sealing member **265**B, and cap lower annular sealing member **267** are examples of various sealing members located between facing surfaces used to seal the resealable container **200**. Other sealing members can be utilized between the resealable container annular component **210** and the resealable container cap **260**. Each of the cap upper annular sealing member **265**, cap upper annular sealing member **265**A, and cap lower annular sealing member **267** utilize a compressible material to create the seal between facing surfaces. Examples of compressible materials suitable for use in sealing a container include: sprayed on or molded on elastomeric compounds, molded low or high durometer plastics, High-density polyethylene (HDPE), Low-density polyethylene (LDPE), polyethylene terephthalate (PET), polyethylene high-density (PEHD) cellulose compounds, polymer polypropylene, polyethylene, bio-sourced materials such as seaweed, mushroom, gelatin, cork, rubber, latex, and the like, and any combination thereof. One exemplary alternative is a cap upper annular sealing member **265**A illustrated in FIGS. **47** and **48**. The cap upper annular sealing member **265**A introduces an alternative to a compression arrangement. The cap upper annular sealing member **265**A introduces a displacement arrangement for the cap upper annular sealing member **265**A, where a shape of the cap upper annular sealing member **265**A is deflected radially inward when the resealable container annular component **210** and the resealable container cap **260**A are drawn towards one another. An arrow in FIG. **47** represents a deflecting motion of the cap upper annular sealing member **265**A. The cap upper annular sealing member **265** includes a projection portion extending freely from a base portion. The projection portion retains a general shape by the annular nature of the sealing ring **265**A. When the container body and lid assembly seam **209** and the cylindrical sidewall inverted countersink **270** are drawn together by the interaction between the cap receiving annular component translative motion guide features **252** and the cap translative motion guide features **281**, the shape of the seaming chuck wall **222** deflects the projection of the cap upper annular sealing member **265**A as illustrated in FIG. **48**. Additionally, the cap upper annular sealing member **265**A presents a compression seal between facing surfaces of the container body and lid assembly seam chine **208** and the cylindrical sidewall inverted countersink **270**.

In each of the previously described variants, the container body **101**, **201** and the container lid **110**, container annular ring **210** are separate elements that are seamed together. Cap receiving features of the container lid **110** and/or the container annular ring **210** can be integrally formed in an upper end of the container body **101**, **201**, such as an exemplary nesting container body with integral cap receiving translative motion guide feature **301**, illustrated in FIGS. **50** through **56**. The exemplary nesting container body with integral cap receiving translative motion guide feature **301** is formed as a cup comprising cap receiving features, such as a nesting container body upper edge cap receiving sidewall **332** and a nesting container body translative motion guide feature **352**. A container or cup body of the nesting container body with integral cap receiving translative motion guide feature **301** includes a nesting container body closed bottom wall **303** circumscribed by a nesting container body annular base **304**, wherein the nesting container body closed bottom wall **303** and the nesting container body annular base **304** collectively extend across a lower end of a nesting container body frustum shaped sidewall **302**. The nesting container body closed bottom wall **303** extends upward from the nesting container body annular base **304**. The upward shape of the nesting container body closed bottom wall **303** accommodates non-level surfaces.

A nesting container body frustum shaped sidewall upper, free edge **306** is formed at an upper end of the nesting container body with integral cap receiving translative motion guide feature **301**, where the nesting container body frustum shaped sidewall upper, free edge **306** is formed as a rolled edge. The rolled formation provides a smooth, comfortable edge providing safety to the user. In certain designs, it may be beneficial to include an outwardly formed container body joining formation, such as the seaming flange **106**, **206** of the container body **101**, **201** in place of the nesting container body frustum shaped sidewall upper, free edge **306**. One or more demarcations can be formed in the nesting container body frustum shaped sidewall **302**. The exemplary illustration presents three demarcations, a nesting container body lower or first measurement demarcation **305**, a nesting container body central or second measurement demarcation **307**, and a nesting container body to cap receiving sidewall annular transition formation **326**. The nesting container body first measurement demarcation **305** provides an upper reference for a nesting container body first measurement volume **314**, the nesting container body central or second measurement demarcation **307** provides an upper reference for a nesting container body second measurement volume **315**, and the nesting container body to cap receiving sidewall annular transition formation **326** provides an upper reference for a nesting container body third measurement volume **317**. The nesting container body annular base **304** can include a centrally located recession, where the centrally located recession leaves an annular ring remaining proud from the recession. This aids in minimizing any

rocking of the nesting container body with integral cap receiving translative motion guide feature **301** when placed on a suitable surface.

At least one nesting container body translative motion guide feature **352** is formed in a nesting container body upper edge cap receiving sidewall **332**; the nesting container body upper edge cap receiving sidewall **332** being formed at an upper end of the nesting container body frustum shaped sidewall **302**. In the exemplary illustration, the nesting container body to cap receiving sidewall annular transition formation **326** provides a transition between the nesting container body frustum shaped sidewall **302** and the nesting container body upper edge cap receiving sidewall **332**. The nesting container body translative motion guide feature **352** can be of any suitable number, size and shape, similar to the lid translative motion guide feature **152** and the cap receiving annular component translative motion guide feature **252** as described above.

The nesting container body with integral cap receiving translative motion guide feature **301** is designed to enable nesting, as illustrated in cross section view presented in FIG. **56**. The frustum shape of the nesting container body frustum shaped sidewall **302** enables nesting. An upper tubular sidewall radially inner diameter D**31**, measuring a diameter across an upper edge of the interior surface of the nesting container body tubular sidewall **332** is greater than a lower formation radially outermost diameter D**32**, measuring a diameter across a nesting container body third measurement volume **317** (lower formation having the largest diameter) enabling an upper placed resealable nesting container body **301** to seat below the nesting container body tubular sidewall **332** of a lower placed nesting container body **301**, as illustrated in FIG. **56**. In the exemplary illustration, the nesting container body upper edge cap receiving sidewall **332** remains proud of the nested sections of the nesting container body with integral cap receiving translative motion guide feature **301**. The greater the angle of the frustum shape of the nesting container body frustum shaped sidewall **302**, the deeper the nesting. The demarcations **305**, **307**, **326** would be formed and sized to support the nesting of adjacent nesting container body with integral cap receiving translative motion guide features **301**. The nesting would be limited by the nesting container body translative motion guide feature **352** and the nesting container body frustum shaped sidewall upper, free edge **306**.

The nesting container body upper edge cap receiving sidewall **332** can be generally cylindrical in shape and offset as illustrated to support optimal nesting. Alternatively, the nesting container body upper edge cap receiving sidewall **332** can have a frustum shape, similar to the lid frustum shaped sidewall **132** of the resealable container lid **110** and a limited offset to support optimal nesting. Although nesting container body upper edge cap receiving sidewall **332** is illustrated as a significantly cylindrical sidewall that enables nesting due to an offset provided by the cap receiving sidewall annular transition formation **326**, in an alternative design, the nesting container body upper edge cap receiving sidewall **332** can be frustum shaped and continuous from the upper end of the nesting container body frustum shaped sidewall **302**, effectively becoming a continuation of the nesting container body frustum shaped sidewall **302**.

The nesting container body with integral cap receiving translative motion guide feature **301** can be fabricate of any suitable material and manufacturing processes, such as those described above for fabricating the container body **101**, **201** and the container lid **110**, container annular ring **210**.

A resealable container cap **360**, detailed in FIGS. **57** through **63** provides a removable seal to the nesting container body with integral cap receiving translative motion guide feature **301**. The resealable container cap **260** and the resealable container cap **360** include a number of like elements. Like elements are numbered the same, wherein elements of the resealable container cap **360** are preceded by the numeral "3". The distinction between the resealable container cap **260** and the resealable container cap **360** is the design of the sealing surfaces and a resealable container cap transversing surface **364**.

The exemplary resealable container cap transversing surface **364** illustrated in FIGS. **57** through **63** is formed as a downwardly or outwardly extending dome shaped wall. The resealable container cap transversing surface **364** can be of any suitable and/or functional shape. A cap sidewall lower transition **368** is provided between a lower edge of the sidewall (radially exterior or product side) **362**, (radially interior or public side) **363** and the resealable container cap transversing surface **364**. Although the exemplary illustration presents the resealable container cap transversing surface **364** as a downwardly extending domed panel, the resealable container cap transversing surface **364** can be provided as an upwardly extending domed panel, a planar panel, including one or more reinforcing formations, and the like. The cap sidewall lower transition **368** can be formed as an arched transition, a chamfered transition, a countersink design, and the like. The cap sidewall lower transition **368** and/or the resealable container cap transversing surface **364** can be shaped to create one or more features that function as a cap sealing surface, wherein the cap sealing surface is designed to engage with any surface of the nesting container body with integral cap receiving translative motion guide feature **301** suitable to be used as a sealing surface.

The resealable container cap **360** is preferably of a design that enables nesting, as illustrated in FIG. **63**. The radially exterior surface of the cap translative motion guide feature **381** would rest against the surface of the inner wall portion of the cylindrical sidewall inverted countersink **370**, as illustrated, or the resealable container cap **360** can be designed enabling the exterior surface cap translative motion guide feature **381** to rest against the frustum sidewall to inverted countersink transition segment **369**. In either condition, it is preferred that the resealable container cap transversing surface **364** is located extending below the frustum sidewall to inverted countersink transition segment **369**.

The resealable container cap **360** would be assembled to the upper section of the nesting container body with integral cap receiving translative motion guide feature **301** in a manner similar to the assembly of the container cap **160**, **260** to the container lid **110** and/or the container annular ring **210** as described above and as illustrated in FIGS. **64** through **67**. More specifically, each at least one cap translative motion guide feature **381** would be rotationally engaging with a respective nesting container body translative motion guide feature **352** translating the rotational motion into an axial motion drawing an interior surface of the cylindrical sidewall inverted countersink **370** and a top surface of the nesting container body frustum shaped sidewall upper, free edge **306** against one another creating a seal therebetween. The resealable container cap **360** can be designed to include any formation that can be utilized as a cap upper annular sealing member **365** against a mating seal surface formed in the resealable container assembly **300**. Collectively, a combination of the nesting container body with integral cap

receiving translative motion guide feature **301** and resealable container cap **360** is referred to as a resealable container assembly **300**.

The resealable container cap **360** can be designed to enable at least partial nesting, as illustrated in FIG. **63**. Each resealable container cap **360** can be designed where a radially exterior surface of the cap translative motion guide feature **381** would rest against the frustum sidewall to inverted countersink transition segment **369** enabling the partial nesting. In a condition where the resealable container cap cylindrical exterior sidewall **362** has a frustum shape, similar to the resealable container cap frustum shaped exterior sidewall **162** of the resealable container cap **160**. With this modification, the resealable container caps **360** can nest in a more compact arrangement, wherein a radially exterior surface of the cap translative motion guide feature **181** would seat against the resealable container cap frustum shaped interior sidewall **163**.

The resealable container **300** can include features to enable stacking and/or nesting. Examples of various stacking and/or nesting arrangements of a plurality of resealable containers **300** are illustrated in FIGS. **68** through **78**. In a first example, the nesting container body annular base **304** would be placed upon an upper surface of the resealable container cap transversing surface **364**, as illustrated in FIG. **68**. The resealable container cap **360** would be designed of a material having a thickness and shape capable of supporting preferably several resealable containers **300** when each resealable container **300** is filled with the anticipated contents. This enables transport of multiple resealable containers **300** filled with contents. This would be focused for use in carry out scenarios, such as fast food restaurants, concerts, plays, sporting events, or other events.

The resealable container **300** and/or the resealable container cap **360** can be modified to improve the stacking of the plurality of resealable containers **300**. In a first example, the resealable container cap **360** is modified (referenced as a resealable container cap **360**A), wherein assembly comprising the resealable container cap **360**A and the nesting container body **301** are referred to as a resealable container assembly **300**A, as illustrated in FIGS. **69** and **70**. A resealable cap container nesting cavity **365**A is formed within the resealable container cap transversing surface **364**. The resealable cap container nesting cavity **365**A includes a peripheral sidewall and a bottom wall having a size and shape to receive at least a portion of the nesting container body with integral cap receiving translative motion guide feature **301** defining the nesting container body first measurement volume **314** as illustrated in FIG. **70**.

In a second example, the resealable container cap **360** is modified (referenced as a resealable container assembly **300**B), wherein assembly comprising the resealable container cap **360**B and the nesting container body **301** are referred to as a resealable container assembly **300**B, as illustrated in FIGS. **71** and **72**. A resealable cap container nesting cavity **365**B is formed within the resealable container cap transversing surface **364**. The resealable cap container nesting cavity **365**B includes a peripheral sidewall and a bottom wall having a size and shape to receive at least a portion of the nesting container body with integral cap receiving translative motion guide feature **301** defining the nesting container body first measurement volume **314** as illustrated in FIG. **72**. A resealable cap container stacking registration feature **366**B extends upward from the resealable cap container nesting cavity **365**B. The resealable cap container stacking registration feature **366**B is preferably of a shape and size that follows a contour of a mating bottom surface of the nesting container body closed bottom wall **303**, as illustrated in FIG. **72**. The resealable cap container stacking registration feature **366**B increases registration and retention between the nesting container body with integral cap receiving translative motion guide feature **301** and the resealable container cap **360**B. The nesting container body closed bottom wall **303** would be seated within the resealable cap container nesting cavity **365**B utilizing the resealable cap container stacking registration feature **366**B to aid in registration and retention. Although the container body closed bottom wall **203** has an inwardly extending dome shape and the nesting container body closed bottom wall **303** is illustrated having a planar recess, the recess can be of any suitable shape.

In a third example, the resealable container cap **360** is modified (referenced as a **360**C), as illustrated in FIGS. **73** through **75**. In the third example, the portion defining the nesting container body first measurement volume **314** of the nesting container body with integral cap receiving translative motion guide feature **301** is modified (referenced as a nesting container body **301**C), wherein assembly comprising the resealable container cap **360**C and the nesting container body **301**C are referred to as a resealable container assembly **300**C, as illustrated in FIGS. **73** through **75**. The portion of the nesting container body first measurement volume **314** of the nesting container body with integral cap receiving translative motion guide feature **301** has a frustum shape. Conversely, the portion of the nesting container body first measurement volume **314** (identified as a nesting container body first measurement volume **314**C) of the nesting container body with integral cap receiving translative motion guide feature **301**C has an inverted frustum shape (the exemplary frustum shape being referenced as having an interlocking frustum shaped sidewall angle **399** as illustrated in the enlarged view shown in FIG. **75**). This inverted frustum shape between the nesting container body annular base **304** and the nesting container body lower reinforcing annular formation **305** provides an ability to snap adjacently nesting resealable container assemblies **300**C to one another as illustrated in FIGS. **74** and **75**.

A resealable cap container nesting cavity **365**C is formed within the resealable container cap transversing surface **364**. The resealable cap container nesting cavity **365**C includes a peripheral sidewall having an inverted frustum shape and a bottom wall, wherein the resealable cap container nesting cavity **365**C is of a size and shape to receive at least a portion of the nesting container body with integral cap receiving translative motion guide feature **301**C defining the nesting container body first measurement volume **314**C as illustrated in FIG. **73**. An optional resealable cap container stacking registration feature **366**C can extend upward from the resealable cap container nesting cavity **365**C. The resealable cap container stacking registration feature **366**C is preferably of a shape and size that follows a contour of a mating bottom surface of the nesting container body closed bottom wall **303**, as illustrated in FIGS. **74** and **75**. The optional resealable cap container stacking registration feature **366**C increases registration and retention between the nesting container body with integral cap receiving translative motion guide feature **301**C and the resealable container cap **360**C. The resealable container cap **360**C can be fabricated of a flexible material enabling insertion of the nesting container body first measurement volume **314**C into the resealable cap container nesting cavity **365**C. Alternatively, the nesting container body with integral cap receiving translative motion guide feature **301**C can be fabricated of a flexible material enabling insertion of the nesting container

body first measurement volume **314**C into the resealable cap container nesting cavity **365**C.

In a fourth example, the resealable container cap **360** is modified (referenced as a resealable container cap **360**D), wherein assembly comprising the resealable container cap **360**D and the nesting container body **301** are referred to as a resealable container assembly **300**D, as illustrated in FIGS. **76** through **78**. The resealable container cap **360**D is a variant of the resealable container cap **360**B, wherein the resealable container cap **360**D lacks a cavity (the resealable cap container nesting cavity **365**B of the resealable container cap **360**B), while retaining a resealable cap container stacking registration feature **366**D extending upwards from an upper surface of the resealable container cap transversing surface **364**. The resealable cap container stacking registration feature **366**B is preferably of a shape and size that follows a contour of a mating bottom surface of the nesting container body closed bottom wall **303**, as illustrated in FIGS. **77** and **78**. The resealable cap container stacking registration feature **366**D increases registration and retention between the nesting container body with integral cap receiving translative motion guide feature **301** and the resealable container cap **360**D. The nesting container body closed bottom wall **303** would be seated upon the resealable cap container stacking registration feature **366**D.

The exemplary illustrations can be enhanced with an introduction of additional features and/or function. For example, a tamper indicator can be integrated into the bottom wall **164**, **264**, **364**.

The resealable container lid **110** includes a stay-on tab design wherein a lid bottom panel tear panel **138** is retained by a tear panel hinge **139** on the resealable container lid **110**. Certain applications prefer to utilize a container design having a larger or full aperture opening by removing a substantial portion of the bottom panel **134**, **434**. A first example is a resealable container lid **410**, illustrated in FIGS. **79** through **81**. The resealable container lid **410** includes features similar to the resealable container lid **110**. Like features of the resealable container lid **110** and the resealable container lid **410** are numbered the same except preceded by the numeral '4'. The primary distinction between the resealable container lid **110** and the resealable container lid **410** is that a lid bottom panel score line **436** of the resealable container lid **410** circumscribes an area proximate the outer diameter of the lid bottom wall **434**, thus enabling removal of the majority of the lid bottom wall **434** from the resealable container lid **410**, as compared to the lid bottom wall **134** of the resealable container lid **110**, where the lid bottom wall **134** creates an opening that is significantly smaller than the full panel and offset from center of the full panel. The remaining distinctions support the difference in the tear panel lid bottom tear panel **438** being a full panel and removable. A user would initially rotate a pull tab **490** upwards, the pull tab **490** being hingeably formed with a tab retention bracket **491**, wherein the tab retention bracket **491** is secured to the lid bottom tear panel **438** by a rivet **497**. Motion of the pull tab **490** is controlled by a fold along a tab bracket hinge **492**. A tab effecting edge **494** of the pull tab **490** is in registration with a portion of the lid bottom panel score line **436**. As the pull tab **490** is rotated upwards, a tab effecting edge **494** of the pull tab **490** initiates a fracture of the lid bottom panel score line **436**. Once the lid bottom panel score line **436** is initially fractured, the user would divert from a rotating action to a pulling action applied through the aperture defined by the tab lightening hole **493**. The lifting force applied to the pull tab **490** continues to propagate the shearing along the lid bottom panel score line **436** causing separation of the lid bottom tear panel **438** from the resealable container lid **410**. Converse to the resealable container lid **110**, where the lid bottom panel tear panel **138** remains attached to the resealable container lid **110** by a tear panel hinge **139**, the lid bottom panel score line **436** is separated and removed from the resealable container lid **410**. The pull tab **490** remains secure to the removed lid bottom tear panel **438** by the rivet **497**. Various reinforcement features (**442**, **498**) can be designed into the lid bottom wall **434** to reinforce the lid bottom wall **434**, which aids in the initial fracturing step and the continued shearing propagation along the lid bottom panel score line **436**.

A second example is a resealable container lid **510**, illustrated in FIGS. **82** through **85**. The resealable container lid **510** includes features similar to the resealable container lid **110**. Like features of the resealable container lid **110** and the resealable container lid **510** are numbered the same except preceded by the numeral '5'. The **510** includes a lid bottom wall contents access passageway **535** cut about an interior edge of the lid bottom wall **534** or slightly radially inward from an inner peripheral edge of a lid annular countersink **526**. A foil panel tab **590** is preferably unitarily formed with the removable foil lid bottom panel **538**; the foil panel tab **590** being an extension of the material fabricating the removable foil lid bottom panel **538**, wherein a foil tab hinge **592** is provided between the removable foil lid bottom panel **538** and the foil panel tab **590**. A peripheral edge of the removable foil lid bottom panel **538** is adhesively bonded to an upper surface of a lid bottom wall **534**. For removal, as illustrated in FIG. **85**, the user would fold upward and grip the foil panel tab **590** (identified as a foil panel tab **590'** once separated) and begin to pull the foil panel tab (in use) **590'** in a radially inward and upward direction until the entire removable foil lid bottom panel **538** is separated and removed from the lid bottom wall **534** of the resealable container lid **510**. Once the removable foil lid bottom panel **538** is removed from the resealable container lid **510**, the lid bottom wall contents access passageway **535** defines and opening allowing access to contents within the container.

The resealable container lid **510** is designed to replicate the nesting capability as the resealable container lid **110** as illustrated in FIG. **7**. A upper tubular sidewall radially inner diameter D**51**, measuring a diameter across an upper edge of the interior surface of the lid frustum shaped sidewall **532** is greater than a lower formation radially outermost diameter D**52**, measuring a diameter across a radially outermost dimension of an exterior surface of the lid annular countersink **526** enabling an upper placed resealable container lid **510** to seat within the lid frustum shaped sidewall **532** of a lower placed resealable container lid **510**.

Each of the above components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** is nestable container components. Multiples of like nestable container components can be nested within one another to optimize containment/minimize air volume for shipping. Additionally, the nested design optimizes space and conveyence requirements along an automated contents packaging line. The higher the quantity of materials that can be placed upon the automated contents packaging line and the more reliably they are conveyed, the less time is required for replenishing inventory of the component on the automated contents packaging line. A process employing benefits of the nestability of the nestable container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** is described in a nestable container component supply and use flow diagram **2000** presented in FIG. **86**.

The nestable container component supply and use flow diagram **2000** initiates with a step of fabricating the nestable container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** (block **2010**). This can be accomplished using any suitable manufacturing process based upon a material selected for the nestable container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510**. The nestable container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** can be fabricated from a sheet of metal, a sheet of steel, a sheet of aluminum, a sheet of plastic, a sheet of processed bamboo or any other suitable material. By initiating the fabricated steps with sheets, the machining processes are reduced and can include a stamping process, a punch process, a step punch process, an ironing process, a turning process, a shearing process, a die forming/cutting process, and the like. Although initiating the fabricated steps with sheets is preferred, the raw material can be provided in other form factors and the manufacturing process can include other steps, such as molding, casting, and the like.

Once fabricated multiples of the nestable container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** are stacked in a nested arrangement (block **2020**). The nesting is based upon the specific component with details being presented above. Features of one nestable container component **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** can be incorporated into any of the other nestable container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510**. For example, the cap receiving annular component tubular sidewall **232** of the resealable container annular component **210** can have a significantly more tapered (frustum) shape similar to the lid frustum shaped sidewall **132** of the resealable container lid **110** to adjust the nesting process. In addition to a more compact storage as noted above, nesting of the nestable container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** also provides radial stability during storage and transport. One nestable container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** can easily be removed in an axial direction from a top of a stack of nested container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510**, while retaining stability of the stack when subjected to any radial or partially radially directed force.

The nested stack or stacks of the nestable container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** is then placed into a box or other container creating a parcel for transport from the manufacturing facility to a packaging house (step **2022**). The box or container can be sealed to avoid exposure to contaminants. The parcel (preferably collected to be multiple parcels such as on a pallet) is transported from the manufacturing facility to a packaging house (step **2024**). Transportation can be accomplished using any common commercially available parcel transportation system, including trucking, rail, ships, air and the like.

The parcel containing the nested stack or stacks of the nestable container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** is received at the packaging house (step **2030**). The nested stack or stacks of the nestable container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** are separated from any unwanted materials used during transport. The nested stack or stacks of the nestable container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** can remain in at least a portion of the packaging which may be suitable and integrated into the contents packaging process carried out at the packaging facility. The nested stack or stacks of the nestable container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** are then positioned in location for use on the packaging assembly line (step **2032**). It is desirous to integrate the manner in which the nested stack or stacks of the nestable container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** are packaged into the parcel into the component presentation process used by the packaging assembly line. This avoids excess time, manpower, materials and costs.

The packaging assembly line utilizes equipment to remove one individual nestable container component **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** from the stack or stacks of nestable container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** located at the respective packaging station (block **2034**). The process of removing one nestable container component **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** from the stack of nestable container components **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** can employ any of a number of a variety of material collection and positioning tools. Examples include a robotic controlled mechanical gripper, a robotically controlled vacuum gripper, a robotically controlled static gripper, a robotically controlled static gripper, a robotically controlled magnetic gripper (where the materials are applicable), or any other suitable robotically controlled collection and positioning device. Preferably, the same device retaining the nestable container component **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** is used to position the nestable container component **110**, **160**, **210**, **260**, **301**, **360**, **360**A, **360**B, **360**C, **360**D **410**, **510** in a desired location for use in the product packaging process along the automated packaging assembly line (block **2036**). The product packaging process would continue until the contents are properly and completely packaged in accordance with the designated process (block **2040**).

The container lids **160**, **260**, **360** can be replaced by an accessory, wherein the accessory would include a sidewall **162**, (represented by the exterior, product side) **262**, (represented by the exterior, product side) **362** and at least one cap translative motion guide feature **181**, **281**, **381**. The accessory can include features similar to a sippy cup, a straw holder and a straw, a bottle nipple, a rotating opening and closure, a drinking spout, a vertically opening and sealing drinking spout, a pivoting opening and sealing drinking spout, a pump dispensing mechanism, a spray dispensing mechanism, or any other suitable accessory.

A safety ring can be provided circumscribing the cylindrical sidewall inverted countersink **170**, **270**, **370**. The safety ring would require a specific applied force to enable rotation of the container cap **160**, **260**, **360**.

The container lid caps **160**, **160**, **360** can be replaced by other container lid caps having more specialized features and related functions, as shown in the various configurations presented in FIGS. **87** through **101**. These specialized caps can be included with the container, sold separately, or both. The specialized caps give the consumer the ability to adapt any container into a specialized application. The specialized caps can be referred to as accessories.

A first exemplary specialized cap is a drinking straw accessory **620**, detailed in FIGS. **87** through **89**. A container assembly **600** refers to an assembly of the drinking straw accessory **620** and the container subassembly comprising the resealable container lid **110** joined to the resealable container body **101**. The exemplary drinking straw accessory

620 introduces a drinking straw accessory cap assembly 660, wherein the exemplary drinking straw accessory cap assembly 660 resembles a Mason jar cap assembly design. The Mason jar cap assembly design is illustrated throughout the various accessories described herein. Although the illustrated examples teach a Mason jar cap assembly design, it is understood that any suitable cap design comprising features for engaging with and preferably sealing to the resealable container cap 160. For example, the Mason jar cap assembly design can be replaced with a single component member.

The assembly design of the drinking straw accessory cap assembly 660 employs two elements, a accessory cap inner member 680, which remains in a fixed rotational position, and a accessory cap outer member 661, which rotates, assembling the drinking straw accessory 620 to a respective container lid, such as the resealable container lid 110 or any other suitable container lid. In the exemplary illustration, the resealable container lid 110 is modified to include a lid full bottom panel score line 136, wherein the lid full bottom panel score line 136 is similar to the lid bottom panel score line 136, while the lid full bottom panel score line 136 opens a majority of the lid bottom wall 134. Although the examples presented in FIGS. 87 through 101 illustrate the accessory being secured to the resealable container lid 110 assembled to the resealable container body 101, the container can be a unitary component, wherein the lid translative motion guide feature are integrated into the container body tubular sidewall 102, such as taught in the nesting container body with integral cap receiving translative motion guide feature 301 introduced in FIG. 50.

In the exemplary embodiment, the accessory cap outer member 661 and the accessory cap inner member 680 are rotationally assembled to one another. An accessory cap inner member radially outward facing surface 689 circumscribes a radially outer surface of the accessory cap inner member 680. An accessory cap inner member interior surface 683 is preferably formed on an interior of the accessory cap inner member 680. The removed material defining the accessory cap inner member interior surface 683 reduces material consumption, reduces weight, and improves a rotational motion between the accessory cap outer member 661 and the accessory cap inner member 680. The accessory cap inner member radially outward facing surface 689 can be a frustum shape (as illustrated), an inverted frustum shape (which aids in retaining the accessory cap inner member 680 within the accessory cap outer member 661 when assembled to the resealable container body 101, cylindrical in shape, or of any shape enabling rotation between the accessory cap outer member 661 and the accessory cap inner member 680. An accessory cap outer member radially inward facing surface 663 circumscribes a radially inner surface of the accessory cap outer member 661. The accessory cap outer member radially inward facing surface 663 and the accessory cap inner member radially outward facing surface 689 are designed to rotationally engage with one another.

An accessory cap outer member translative motion guide feature 668 can be formed within the accessory cap outer member radially inward facing surface 663 of the accessory cap outer member 661. An accessory cap inner member translative motion guide feature 684 can be formed in the accessory cap inner member radially outward facing surface 689 of the accessory cap inner member 680. Engagement between the accessory cap outer member translative motion guide feature 668 and the accessory cap inner member translative motion guide feature 684 retain the accessory cap outer member 661 and the accessory cap inner member 680 as a single assembly or the drinking straw accessory cap assembly 660. In the exemplary drinking straw accessory cap assembly 660, the accessory cap outer member translative motion guide feature 668 and the accessory cap inner member translative motion guide feature 684 are formed to translate a rotational motion into an axial motion. In an alternative arrangement, the accessory cap outer member translative motion guide feature 668 and the accessory cap inner member translative motion guide feature 684 can be formed to simply retain an axial registration between the accessory cap outer member 661 and the accessory cap inner member 680. The accessory cap outer member 661 can be at least partially fabricated of a pliant material enabling insertion of the accessory cap inner member 680 into the accessory cap outer member 661.

The drinking straw accessory cap assembly 660 is designed to rotationally engage with the resealable container lid 110. An accessory container receiving annular channel 670 extends upward from a lower edge of the accessory cap outer member 661 forming an annular recess. An accessory cap outer member container socket facing surface 662 is defined on a radially interior side of the accessory container receiving annular channel 670. At least one accessory cap outer member container engaging translative motion guide feature 681 is formed on the accessory cap outer member container socket facing surface 662. The formation of the accessory cap outer member container engaging translative motion guide feature 681 would be similar to the cap translative motion guide feature 181 of the resealable container cap 160 or any other suitable translative motion guide feature designed to engage with the lid translative motion guide feature 152 of the resealable container lid 110, wherein when the accessory cap outer member 661 is rotated about the resealable container lid 110, the rotational motion translated into an axial motion of the drinking straw accessory cap assembly 660 respective to the resealable container lid 110. The interface between the accessory cap outer member container engaging translative motion guide feature 681 and the cap receiving annular component translative motion guide feature 252 is illustrated in FIG. 89.

A peripheral surface 669 of the accessory cap outer member 661 can include a series of grip features formed about the accessory cap outer member radially peripheral surface 669. In the exemplary illustration, the exemplary series of grip features includes a series of accessory grip element bases 671; each accessory grip element base 671 defines a clockwise rotating accessory grip element force application surface 675 and a counterclockwise rotating accessory grip element force application surface 675 extending inward from an accessory grip element 674. During rotation, the user would grasp the grip features, wherein contact with the series of accessory grip element force application surfaces 675 provides a mechanical interface and contact with the accessory grip element 674 provides frictional interface. The mechanical interface requires less force than the frictional interface.

The exemplary drinking straw accessory cap assembly 660 is designed where the accessory cap outer member 661 can rotate and cause an axial motion while the accessory cap inner member 680 remains stationary. This can ensure a desired orientation of the accessory when the accessory assembly is assembled to the resealable container lid 110. Examples where this would be desired is a configuration where the resealable container body 101 includes a grip feature, where the container body tubular sidewall 102 is non-cylindrical, simply having a desire to align the accessory with a print or indicia applied to the container body tubular sidewall 102, or any of a number of difference

scenarios. In an alternate arrangement, the drinking straw accessory cap assembly **660** can be a single component which provides different benefits compared to the illustrated two piece arrangement.

An accessory upper annular sealing member **665** can be seated within the accessory container receiving annular channel **670**, wherein the accessory upper annular sealing member **665** provides a reliable seal between the accessory cap outer member **661** and the container body and lid assembly seam chine **108** of the resealable container lid **110**. The accessory upper annular sealing member **665** can be any suitable shape and material, including those previously described herein. As the accessory cap outer member **661** is rotated about the resealable container lid **110**, the container body and lid assembly seam chine **108** would engage with the accessory upper annular sealing member **665**, creating an acceptable seal to retain contents within the container assembly **600**.

An accessory cap outer member lower annular seal **667** can be provided about a lower, sealing surface **666** of the accessory cap outer member **661**. The translative motion would draw an accessory cap outer member lower annular surface **666** of the accessory cap outer member **661** towards a mating surface of the resealable container lid **110** providing a lower sealing interface.

The two piece arrangement of the drinking straw accessory cap assembly **660** provides an ability to include an accessory cap inner member lower annular seal **687** about a lower or bottom surface of the accessory cap inner member **680**, such as an accessory cap inner member lower annular surface **686**. The translative motion would draw the accessory cap inner member lower annular surface **686** of the accessory cap inner member **680** towards a mating surface of the resealable container lid **110** providing a second or alternative sealing interface.

The primary function of the drinking straw accessory **620** is to provide a supported drinking straw **622** for use with the container, while provide a seal around all other portions of the container. A drinking straw subassembly **621** is integrated into the drinking straw accessory cap assembly **660** creating the drinking straw accessory **620**. The drinking straw **622** is fabricated having a tubular shape extending between a drinking straw tapered fluid source end **622**A and a drinking straw fluid delivery end **622**B. The drinking straw **622** can be any known design, including a straight configuration, a formed configuration, include one or more bending features, and the like. It would be preferred that the drinking straw **622** is of a length enabling the drinking straw tapered fluid source end **622**A to be positioned proximate the container closed bottom wall **104** of the resealable container **100**. The drinking straw **622** can be formed having a circular cross section shape or any other suitable cross section shape. The drinking straw **622** can be fabricated of any suitable material, including plastic, paper, bamboo, metal, and the like. In the exemplary illustrations presented in FIGS. **87** through **89**, the drinking straw **622** includes a drinking straw tapered fluid source end **622**A and a drinking straw fluid delivery end **622**B. The illustrated drinking straw **622** includes a drinking straw tapered fluid source end **622**A formed having a tapered cut, wherein the tapered cut enables the drinking straw tapered fluid source end **622**A to pierce a foil or any other seal provided on the container prior to use. Alternatively, the drinking straw tapered fluid source end **622**A can be shaped having a transverse cut, similar to the drinking straw fluid delivery end **622**B. A drinking straw **622** is inserted through a bore formed through a drinking straw sealing gasket **626**.

The drinking straw **622** is inserted through a bore formed through a drinking straw sealing gasket **626**. The drinking straw sealing gasket **626** is preferably fabricated of a pliant material, such as rubber, nylon, or any other material that would be suitable for insertion, retention, and sealing about the outer surface of the drinking straw **622**.

A drinking straw sealing gasket inner member socket **624** extends downward from the accessory upper transversing surface **664**. The drinking straw sealing gasket **626** is inserted into the drinking straw sealing gasket inner member socket **624**. The drinking straw sealing gasket **626** would preferably be shaped and sized to substantially or completely seal the drinking straw sealing gasket inner member socket **624**. This would avoid leakage of the contents of the container assembly **600** excluding any dispensing through the drinking straw fluid passageway **628** of the drinking straw **622**. The drinking straw subassembly **621** collectively includes the drinking straw **622** assembled to the drinking straw sealing gasket **626**.

A second exemplary specialized cap is a baby bottle nipple socket accessory **720**, detailed in FIG. **90**. A container assembly **700** refers to an assembly of the baby bottle nipple accessory **720** and the container subassembly comprising the resealable container lid **110** joined to the resealable container body **101**. The baby bottle nipple accessory **720** includes a cap design that are similar to those of the drinking straw accessory **620**. Like features of the baby bottle nipple accessory **720** and the drinking straw accessory **620** are numbered the same except preceded by the numeral '7'. A baby bottle nipple cap subassembly **760** of the baby bottle nipple accessory **720** can be configured to include a Mason jar style cap assembly similar to the drinking straw accessory cap assembly **660** of the drinking straw accessory **620** as shown or a unitary cap design. The accessory includes a baby bottle style nipple comprising a nipple formation **722** provided at a free, distal end of a nipple tubular projection **723**. A nipple fluid dispensing aperture **728** is cut through the distal end of the nipple formation **722**. The nipple portion **772**, **773** of the accessory includes a nipple radial flange **726**. The nipple formation **722**, the nipple tubular projection **723**, and the nipple radial flange **726** are preferably fabricated of a unitary construction and material. The nipple radial flange **726** can be integral with an accessory upper transversing surface **764** of an accessory cap inner member **780** or provided as an assembly of separate components. The baby bottle nipple feature **722**, **723** of the baby bottle nipple accessory **720** is preferably fabricated of a latex, silicone, or any other suitable material. The baby bottle nipple feature **722**, **723**, **726** can be overmolded onto the accessory upper transversing surface **764** flange of the socket mating baby bottle nipple rotational attachment element **760**, adhesively joined with the flange of the socket mating baby bottle nipple rotational attachment element **760**, or by any other suitable joining process. The baby bottle nipple subassembly **721** collectively includes the nipple formation **722** atop a distal end of the nipple tubular projection **723** and the nipple radial flange **726**, all preferably integrally fabricated as a unitary element.

A third exemplary specialized cap is an axial rotation valve dispensing accessory **820**, illustrated in FIGS. **91** and **92**. A container assembly **800** refers to an assembly of the axial rotation valve dispensing accessory **820** and the container subassembly comprising the resealable container lid **110** joined to the resealable container body **101**. The drinking straw accessory **620** and the axial rotation valve dispensing accessory **820** have a number of like features. Like features of the baby bottle nipple accessory **620** and the axial

rotation valve dispensing accessory **820** are numbered the same except preceded by the numeral '8'. An axial rotation valve accessory cap assembly **860** of the axial rotation valve dispensing accessory **820** can be configured to include a Mason jar style cap assembly similar to the drinking straw accessory cap assembly **660** as shown or a unitary cap design. The axial rotation valve dispensing portion of the axial rotation valve dispensing accessory **820** includes an accessory transversing upper surface **864** rotationally assembled to the axial rotation valve accessory cap assembly **860**. The accessory transversing upper surface **864** can be integral with the accessory cap inner member **880** or rotationally independent of the accessory cap inner member **880**. An axially rotating valve contents dispensing projection (spout) **822** extends outward from the accessory transversing upper surface **864**. An axial rotation valve dispensing aperture **828** is provided at a dispensing end of the axially rotating valve contents dispensing projection (spout) **822**. The axially rotating valve contents dispensing projection (spout) **822** can be shaped and include features resembling and associated with a common children's sippy cup (sipping cup). An axial rotation valve actuation aperture **829** is preferably provided through an outer layer of the accessory transversing upper surface **864**. Rotation of the accessory transversing upper surface **864** in accordance with a first direction of an axial rotating valve motion **899** positions the axial rotation valve actuation aperture **829** in registration with a like aperture formed through a second, inner layer of the **864** when placed in an open position and rotation of the accessory transversing upper surface **864** in accordance with a second direction of the axial rotating valve motion **899** positions the axial rotation valve actuation aperture **829** in registration with a solid section of the second, inner layer of the **864** when placed in an closed position. Contents from within the container assembly **800** can be dispensed when the accessory transversing upper surface **864** is placed within the open position and contents are retained within the container assembly **800** when the accessory transversing upper surface **864** is placed within the closed position. Rotating valve elements in lids are known, where the valve provides access and containment of contends within the container. The valve portion described for opening and closing the axially rotating valve contents dispensing projection (spout) **822** is well known by those skilled in the art with the exclusion of introducing a spout formation and is therefore not detailed herein. The axially rotating valve dispenser subassembly **821** collectively includes the axially rotating valve contents dispensing projection (spout) **822** atop the upper portion of the accessory transversing upper surface **864** and a lower portion of the accessory transversing upper surface **864** collectively providing the valve and dispensing functions.

A fourth exemplary specialized cap is a axial translation valve dispensing (sports bottle styled) accessory **920**, detailed in FIGS. **93** and **94**. A container assembly **900** refers to an assembly of the axial translation valve dispensing (sports bottle styled) accessory **920** and the container subassembly comprising the resealable container lid **110** joined to the resealable container body **101**. The drinking straw accessory **620** and the axial translation valve dispensing (sports bottle styled) accessory **920** have a number of like features. Like features of the baby bottle nipple accessory **620** and the axial translation valve dispensing (sports bottle styled) accessory **920** are numbered the same except preceded by the numeral '9'. An axial translation valve accessory cap assembly **960** of the axial translation valve dispensing (sports bottle styled) accessory **920** can be configured to include a Mason jar style cap assembly similar to the drinking straw accessory cap assembly **660** drinking straw accessory cap assembly **660** as shown or a unitary cap design. The axial translation valve dispensing (sports bottle styled) accessory **920** includes an axial translation dispensing valve end piece **922** axially moveably along an axial translation valve actuator projecting base **923**. An axial translation valve dispensing aperture **928** extends through the axial translation dispensing valve end piece **922**. The axial translation dispensing valve end piece **922** includes features providing a function of a valve to enable and restrict dispensing of contents from within the resealable container body **101** based upon an axial position of the axial translation dispensing valve end piece **922** on the axial translation valve actuator projecting base **923**. The design of the valve elements and associated process for opening and closing the axial translation dispensing valve end piece **922** is well known by those skilled in the art and is therefore not detailed herein. When the axial translation dispensing valve end piece **922** is in a retracted position (pressed downward in accordance with an axial closing motion **998**) as illustrated in FIG. **93**, the axial translation dispensing valve end piece **922** seals the container assembly **900**. When the axial translation dispensing valve end piece **922** is in an extended position (pulled upward in accordance with an axial opening motion **999**) as illustrated in FIG. **94**, the position enabled dispensing of contents from within the resealable container body **101**. The axially translating valve dispenser subassembly **921** includes the axial translation dispensing valve end piece **922** axially translative respective to the axial translation valve actuator projecting base **923** collectively providing the valve and dispensing functions.

A fifth exemplary specialized cap is a pivoting valve dispensing accessory **1020**, detailed in FIGS. **95** and **96**. A container assembly **1000** refers to an assembly of the pivoting valve dispensing accessory **1020** and the container subassembly comprising the resealable container lid **110** joined to the resealable container body **101**. The drinking straw accessory **620** and the pivoting valve dispensing accessory **1020** have a number of like features. Like features of the baby bottle nipple accessory **620** and the pivoting valve dispensing accessory **1020** are numbered the same except preceded by the numeral '10'. A radial rotation valve accessory cap assembly **1060** of the pivoting valve dispensing accessory **1020** can be configured to include a Mason jar style cap assembly similar to the drinking straw accessory cap assembly **660** drinking straw accessory cap assembly **660** as shown or a unitary cap design. The pivoting valve dispensing accessory **1020** includes a pivoting valve contents dispensing projection (spout) **1022** extending radially from a projecting member pivoting valve base **1026**. The projecting member pivoting valve base **1026** includes features providing a function of a valve to enable and restrict dispensing of contents from within the resealable container body **101** based upon a pivotal position of a combination of the pivoting valve contents dispensing projection (spout) **1022** and the projecting member pivoting valve base **1026**. The projecting member pivoting valve base **1026** pivots between a sealed position (FIG. **95**) and a dispensing position (FIG. **96**). The pivoting valve contents dispensing projection (spout) **1022** includes a dispensing conduit that extends between a radial rotation valve contents projection dispensing aperture **1028** and a projecting member pivoting base valve aperture **1029**. The projecting member pivoting base valve aperture **1029** toggles between the sealed position (FIG. **95**) and the dispensing position (FIG. **96**) as the projecting member pivoting valve base **1026** is pivoted.

When the pivoting valve contents dispensing projection (spout) **1022** is rotated into the closed position, the projecting member pivoting base valve aperture **1029** is positioned against a solid area of the accessory cap inner member **1080**, creating a seal. When the pivoting valve contents dispensing projection (spout) **1022** is rotated into the open position, the projecting member pivoting base valve aperture **1029** aligns with a passageway formed in the accessory cap inner member **1080** enabling dispensing of the contents from within the container **1000**. The user can employ the pivoting valve contents dispensing projection (spout) **1022** as a lever to aid in pivoting the projecting member pivoting valve base **1026** between the sealed position (FIG. **95**) and the dispensing position (FIG. **96**). A radial rotation valve projecting member accepting recess **1027** can be formed within the accessory transversing upper surface **1064**, wherein the pivoting valve contents dispensing projection (spout) **1022** would seat within the radial rotation valve projecting member accepting recess **1027**, as shown in FIG. **95**, when the pivoting valve contents dispensing projection (spout) **1022** is placed within the closed position. Pivoting valve elements in lids are known, where the valve provides access and containment of contends within the container. The pivoting valve portion described for opening and closing the pivoting valve dispensing accessory **1020** is well known by those skilled in the art and is therefore not detailed herein. The pivoting valve dispenser subassembly **1021** includes the pivoting valve contents dispensing projection (spout) **1022** and the projecting member pivoting valve base **1026** pivotally translative respective to the accessory cap inner member **1080** collectively providing the valve and dispensing functions.

A sixth exemplary specialized cap is a radial translation valve dispensing accessory **1120**, detailed in FIGS. **97** and **98**. A container assembly **1100** refers to an assembly of the radial translation valve dispensing accessory **1120** and the container subassembly comprising the resealable container lid **110** joined to the resealable container body **101**. The drinking straw accessory **620** and the radial translation valve dispensing accessory **1120** have a number of like features. Like features of the baby bottle nipple accessory **620** and the radial translation valve dispensing accessory **1120** are numbered the same except preceded by the numeral '11'. A resealable container cap **160** of the radial translation valve dispensing accessory **1120** can be configured to include a Mason jar style cap assembly similar to the drinking straw accessory cap assembly **660** drinking straw accessory cap assembly **660** as shown or a unitary cap design. A radial translation valve contents dispensing projection (spout) **1122** extends upward from a radial translation valve projecting member sliding base **1126**. The radial translation valve projecting member sliding base **1126** is slideably assembled within a radial translation valve projecting member channel **1127** of the accessory cap inner member **1180**. A dispensing conduit extends between a radial translation valve dispensing aperture **1128** and a projecting member base valve aperture **1129** through the radial translation valve contents dispensing projection (spout) **1122**. The projecting member base valve aperture **1129** in combination with the radial translation valve projecting member sliding base **1126** act as a valve for the radial translation valve dispensing accessory **1120**. When the radial translation valve contents dispensing projection (spout) **1122** is slid into a closed position (FIG. **97**), the projecting member base valve aperture **1129** is in registration with a solid portion of a lower element within the accessory cap inner member **1180**, retaining contents within the container assembly **1100**. When the radial translation valve contents dispensing projection (spout) **1122** is slid into an open position (FIG. **98**), the projecting member base valve aperture **1129** is in registration with a dispensing aperture provided in the lower element of the accessory cap inner member **1180**, enabling dispensing of contents from within the container assembly **1100**. Sliding valve elements in lids are known, where the sliding valve provides access and containment of contends within the container. The sliding valve portion described for opening and closing the radial translation valve dispensing accessory **1120** is well known by those skilled in the art with the exclusion of introducing a spout formation and is therefore not detailed herein. The radially translating valve dispenser subassembly **1121** includes the radial translation valve contents dispensing projection (spout) **1122** extending upward from the radial translation valve projecting member sliding base **1126**, wherein the radial translation valve contents dispensing projection (spout) **1122** and radial translation valve projecting member sliding base **1126** are radially translative collectively providing the valve and dispensing functions.

A seventh exemplary specialized cap is a pump dispenser accessory **1220**, detailed in FIG. **99**. A container assembly **1200** refers to an assembly of the pump dispenser accessory **1220** and the container subassembly comprising the resealable container lid **110** joined to the resealable container body **101**. The drinking straw accessory **620** and the pump dispenser accessory **1220** have a number of like features. Like features of the baby bottle nipple accessory **620** and the pump dispenser accessory **1220** are numbered the same except preceded by the numeral '12'. A pump dispenser accessory cap assembly **1260** of the pump dispenser accessory **1220** can be configured to include a Mason jar style cap assembly similar to the drinking straw accessory cap assembly **660** drinking straw accessory cap assembly **660** as shown or a unitary cap design. The pump dispenser accessory **1220** includes elements to provide a pump dispenser. The exemplary pump dispenser includes a pump dispenser head **1222** extending radially outward form an upper end of a pump dispenser plunger **1223**. The pump dispenser plunger **1223** slideably engages with a pump dispenser plunger base **1226**. A downward force is applied to the pump dispenser head **1222**, causing the pump dispenser plunger **1223** to plunging into the pump dispenser plunger base **1226**, actuating a pump subassembly **1224**. The pump subassembly **1224** draws contents from within the container assembly **1200** into a pump dispenser contents conduit contents sourcing end **1225**A, through a pump dispenser contents supply conduit **1225**, and dispenses the contents through a pump dispenser aperture **1228** of the pump dispenser head **1222**. Compression pumps **1224** are commonly used for dispensing of soaps, shampoos, cleaning solutions, conditioners, hand sanitizers, moisturizing lotions, condiments, flavorings, syrups, and the like are well known by those skilled in the art and is therefore not detailed herein. The pump actuated dispenser subassembly **1221** includes the pump dispenser head **1222**, the pump dispenser plunger **1223**, the pump dispenser plunger base **1226**, and the pump subassembly **1224** collectively providing the dispensing function.

An eighth exemplary specialized cap is a spray pump accessory **1320**, detailed in FIG. **100**. A container assembly **1300** refers to an assembly of the spray pump accessory **1320** and the container subassembly comprising the resealable container lid **110** joined to the resealable container body **101**. The drinking straw accessory **620** and the spray pump accessory **1320** have a number of like features. Like features

of the baby bottle nipple accessory **620** and the spray pump accessory **1320** are numbered the same except preceded by the numeral '13'. A spray pump accessory cap assembly **1360** of the spray pump accessory **1320** can be configured to include a Mason jar style cap assembly similar to the drinking straw accessory cap assembly **660** drinking straw accessory cap assembly **660** as shown or a unitary cap design. The spray pump accessory **1320** includes elements to provide a spray dispenser. The spray pump accessory **1320** differs from the pump dispenser accessory **1220** wherein the spray pump accessory **1320** is designed to atomize and propel the contents of the container assembly **1300** upon dispensing. The spray pump dispenser subassembly **1321** includes the spray pump head **1325**, the spray pump trigger/actuator **1322**, the pump subassembly **1324**, the spray pump dispensing nozzle **1327**, the spray pump handgrip **1323**, and the spray pump supply conduit **1329** collectively providing the spray dispensing function.

A spray pump trigger/actuator **1322** is pivotally assembled to a spray pump head **1325**. The spray pump trigger/actuator **1322** is mechanically coupled to the pump subassembly **1324**. Spray pumps **1324** are commonly used for dispensing of water, cleaning solutions, sanitizers, fungicides, pesticides, surface treatments (plastic moisturizers, etc.), and the like are well known by those skilled in the art and is therefore not detailed herein.

A spray pump dispensing nozzle **1327**, comprising a spray pump dispensing aperture **1328**, is in fluid communication with the pump subassembly **1324**. Features causing the atomizing process are provided within the spray pump dispensing nozzle **1327**. The amount of atomization of the dispensed contents can be adjusted by rotating the spray pump dispensing nozzle **1327**. The spray pump dispensing nozzle **1327** can be screwed to adjust the shape of the discharging spray. The spray is dispensed through the spray pump dispensing aperture **1328** of the spray pump dispensing nozzle **1327**. When the spray pump trigger/actuator **1322** is drawn towards the spray pump handgrip **1323**, the motion of the spray pump trigger/actuator **1322** actuates the pump subassembly **1324**, drawing fluid from the container body tubular sidewall **102** into the spray pump supply conduit **1329** through a spray pump supply conduit sourcing end **1329**A. The fluid continues through the pump subassembly **1324**, passing through a conduit (not show) in the spray pump head **1325** and is delivered to the spray pump dispensing nozzle **1327**, where a shape of the dispensing spray is determined and formed. The spray is then dispensed through the spray pump dispensing aperture **1328**. In the exemplary 1 resealable container **300**, the spray pump accessory **1320** includes a spray pump handgrip **1323** extending between the accessory cap inner member **1380** and a base of the spray pump head **1325**. The user would grip the spray pump handgrip **1323** and draw the spray pump trigger/actuator **1322** towards the spray pump handgrip **1323** to actuate the pump subassembly **1324**.

A ninth exemplary specialized cap is a spray pump accessory **1420**, detailed in FIG. **101**. A container assembly **1400** refers to an assembly of the spray pump accessory **1420** and the container subassembly comprising the resealable container lid **110** joined to the resealable container body **101**. The container assembly **1400** is a modified version of the 1 resealable container **300**. Like features of the spray pump accessory **1320** and the spray pump accessory **1420** are numbered the same except preceded by the numeral '14'. The distinction between the spray pump accessory **1320** and the spray pump accessory **1420** is the configuration of the spray pump accessory **1420** between the spray pump head **1425** and the accessory cap inner member **1480**. In the spray pump accessory **1320**, the spray pump handgrip **1323** extends between the spray pump head **1325** and the accessory cap inner member **1380**, wherein the spray pump handgrip **1323** is used during the squeezing of the spray pump trigger/actuator **1322**. The spray pump dispenser subassembly **1421** includes the spray pump head **1425**, the spray pump trigger/actuator **1422**, the pump subassembly **1424**, the spray pump dispensing nozzle **1427**, and the spray pump supply conduit **1429** collectively providing the spray dispensing function In the spray pump accessory **1420**, the spray pump head **1425** is assembled directly to (or using a very short extension) the accessory cap inner member **1480**, as illustrated in FIG. **100**, wherein the container body tubular sidewall **102** is used during the squeezing of the spray pump trigger/actuator **1322**.

The above are various examples of accessories or specialized caps that are adapted to be assembled to the various containers. More specifically, the various examples of accessories or specialized caps include radially outwardly facing translative motion guide features designed to engage with like radially inwardly facing translative motion guide feature provided on the container (either directly integrated therein or formed within a lid that is seamed to the container body). The exemplary accessories are all illustrated as being provided with the accessory cap outer member. Alternatively, the accessory cap outer member can be procured independent of the accessory, wherein the accessory would be designed for assembly to the accessory cap outer member by the user. This enables the accessory cap outer member to be customized and adaptable to the specific container subassembly. The accessory cap outer member radially inward facing surface would be a common design for each of the accessory cap outer members and the accessory inserts (including the accessory cap inner member).

Although specific embodiments of the present invention have been described, it will be understood by those of skill in the art that there are other embodiments that are equivalent to the described embodiments. Accordingly, it is to be understood that the invention is not to be limited by the specific illustrated embodiments, but only by the scope of the appended claims.

Reference Element Descriptions

| Ref. No. | Description |
|---|---|
| 100 | resealable container assembly |
| 100 | resealable container assembly |
| 101 | resealable container body |
| 102 | container body tubular sidewall |
| 106 | container body sidewall seaming edge |
| 104 | container body closed bottom wall |
| 108 | container body and lid assembly seam chine |

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Reference Element Descriptions

| Ref. No. | Description |
|---|---|
| 109 | container body and lid assembly seam |
| 110 | resealable container lid |
| 118 | resealable container lid bottom wall reinforcement formation |
| 120 | seaming panel |
| 122 | seaming chuck wall |
| 124 | seaming chuck shoulder |
| 126 | lid annular countersink |
| 132 | lid frustum shaped sidewall |
| 134 | lid bottom wall |
| 136 | lid bottom panel score line |
| 138 | lid bottom panel tear panel |
| 139 | tear panel hinge |
| 141 | lid bottom wall to reinforcement formation transition |
| 142 | tear panel to tear panel reinforcing transition |
| 152 | lid translative motion guide feature |
| 160 | resealable container cap |
| 162 | resealable container cap frustum shaped exterior sidewall |
| 163 | resealable container cap frustum shaped interior sidewall |
| 164 | resealable container cap planar transversing surface |
| 165 | cap upper annular sealing member |
| 166 | cap annular countersink formation |
| 167 | cap lower annular sealing member |
| 170 | cylindrical sidewall inverted countersink |
| 171 | resealable container cap grip element base |
| 174 | resealable container cap grip element |
| 181 | cap translative motion guide feature |
| 181A | cap translative motion guide feature leader end |
| 181E | cap translative motion guide feature locking end |
| 190 | tab |
| 191 | tab retention bracket |
| 192 | tab bracket hinge |
| 193 | tab lightening hole |
| 195 | finger access depression |
| 196 | tab stabilizing formation |
| 197 | rivet |
| 198 | tear panel reinforcing formation |
| 200 | resealable container assembly |
| 201 | resealable container body |
| 202 | container body tubular sidewall |
| 203 | container body closed bottom wall |
| 204 | nesting container body annular base |
| 206 | container body sidewall seaming flange |
| 208 | container body and lid assembly seam chine |
| 209 | container body and lid assembly seam |
| 210 | resealable container annular component |
| 220 | seaming panel |
| 222 | seaming chuck wall |
| 224 | seaming chuck shoulder |
| 226 | cap receiving annular component rolled annular end ring |
| 227 | cap receiving annular component rolled bottom edge sealing surface |
| 232 | cap receiving annular component tubular sidewall |
| 235 | cap receiving annular component tubular open passageway |
| 252 | cap receiving annular component translative motion guide feature |
| 253 | cap receiving annular component translative motion guide feature upper surface |
| 260 | resealable container cap |
| 262 | resealable container cap tubular exterior sidewall |
| 263 | resealable container cap tubular interior sidewall |
| 264 | resealable container cap planar transversing surface |
| 265 | cap upper annular sealing member |
| 265A | cap upper annular sealing member |
| 265B | cap upper annular sealing member |
| 266 | cap annular countersink formation |
| 267 | cap lower annular sealing member |
| 268 | cap sidewall transition |
| 270 | cylindrical sidewall inverted countersink |
| 281 | cap translative motion guide feature |
| 281A | cap translative motion guide feature leader end |
| 281E | cap translative motion guide feature locking end |
| 300 | resealable container assembly |
| 300A | resealable container assembly |
| 300B | resealable container assembly |
| 300C | resealable container assembly |
| 300D | resealable container assembly |
| 301 | nesting container body with integral cap receiving translative motion guide feature |
| 301C | nesting container body with integral cap receiving translative motion guide feature |

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Reference Element Descriptions

| Ref. No. | Description |
|---|---|
| 302 | nesting container body frustum shaped sidewall |
| 303 | nesting container body closed bottom wall |
| 304 | nesting container body annular base |
| 305 | nesting container body lower reinforcing annular formation |
| 306 | nesting container body frustum shaped sidewall upper, free edge |
| 307 | nesting container body central or second measurement demarcation |
| 314 | nesting container body first measurement volume |
| 314C | nesting container body first measurement volume |
| 315 | nesting container body second measurement volume |
| 317 | nesting container body third measurement volume |
| 326 | nesting container body to cap receiving sidewall annular transition formation |
| 332 | nesting container body upper edge cap receiving sidewall |
| 352 | nesting container body translative motion guide feature |
| 360 | resealable container cap |
| 360A | resealable container cap |
| 360B | resealable container cap |
| 360C | resealable container cap |
| 360D | resealable container cap |
| 362 | resealable container cap exterior sidewall |
| 363 | resealable container cap interior sidewall |
| 364 | resealable container cap transversing surface |
| 365A | resealable cap container nesting cavity |
| 365B | resealable cap container nesting cavity |
| 365C | resealable cap container nesting cavity |
| 366B | resealable cap container stacking registration feature |
| 366C | resealable cap container stacking registration feature |
| 366D | resealable cap container stacking registration feature |
| 367 | cap bottom wall transition |
| 369 | frustum sidewall to seaming panel transition segment |
| 370 | cylindrical sidewall inverted countersink |
| 381 | cap translative motion guide feature |
| 381A | cap translative motion guide feature leader end |
| 381E | cap translative motion guide feature locking end |
| 399 | interlocking frustum shaped sidewall angle |
| 410 | resealable container lid |
| 418 | resealable container lid bottom wall reinforcement formation |
| 420 | seaming panel |
| 422 | seaming chuck wall |
| 424 | seaming chuck shoulder |
| 426 | lid annular countersink |
| 432 | lid frustum shaped sidewall |
| 434 | lid bottom wall |
| 436 | lid bottom panel score line |
| 438 | lid bottom tear panel |
| 441 | lid bottom wall to reinforcement formation transition |
| 442 | tear panel to tear panel reinforcing transition |
| 452 | lid translative motion guide feature |
| 490 | tab |
| 491 | tab retention bracket |
| 492 | tab bracket hinge |
| 493 | tab lightening hole |
| 494 | tab effecting edge |
| 497 | rivet |
| 498 | tear panel reinforcing formation |
| 510 | resealable container lid |
| 520 | seaming panel |
| 522 | seaming chuck wall |
| 524 | seaming chuck shoulder |
| 526 | lid annular countersink |
| 532 | lid frustum shaped sidewall |
| 534 | lid bottom wall |
| 535 | lid bottom wall contents access passageway |
| 538 | removable foil lid bottom panel |
| 552 | lid translative motion guide feature |
| 590 | foil panel tab |
| 590' | foil panel tab (in use) |
| 592 | foil tab hinge |
| 600 | container assembly |
| 620 | drinking straw accessory |
| 621 | drinking straw subassembly |
| 622 | drinking straw |
| 622A | drinking straw tapered fluid source end |
| 622B | drinking straw fluid delivery end |
| 624 | drinking straw sealing gasket inner member socket |
| 626 | drinking straw sealing gasket |

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Reference Element Descriptions

| Ref. No. | Description |
|---|---|
| 628 | drinking straw fluid passageway |
| 660 | drinking straw accessory cap assembly |
| 661 | accessory cap outer member |
| 662 | accessory cap outer member container socket facing surface |
| 663 | accessory cap outer member radially inward facing surface |
| 664 | accessory upper trans versing surface |
| 665 | accessory upper annular sealing member |
| 666 | accessory cap outer member lower annular surface |
| 667 | accessory cap outer member lower annular seal |
| 668 | accessory cap outer member translative motion guide feature |
| 669 | accessory cap outer member radially peripheral surface |
| 670 | accessory container receiving annular channel |
| 671 | accessory grip element base |
| 674 | accessory grip element |
| 675 | accessory grip element force application surface |
| 680 | accessory cap inner member |
| 681 | accessory cap outer member container engaging translative motion guide feature |
| 683 | accessory cap inner member interior surface |
| 684 | accessory cap inner member translative motion guide feature |
| 686 | accessory cap inner member lower annular surface |
| 687 | accessory cap inner member lower annular seal |
| 689 | accessory cap inner member radially outward facing surface |
| 700 | container assembly |
| 720 | baby bottle nipple accessory |
| 721 | baby bottle nipple subassembly |
| 722 | nipple formation |
| 723 | nipple tubular projection |
| 726 | nipple radial flange |
| 728 | nipple fluid dispensing aperture |
| 760 | baby bottle nipple cap subassembly |
| 761 | accessory cap outer member |
| 764 | accessory upper trans versing surface |
| 771 | accessory grip element base |
| 774 | accessory grip element |
| 775 | accessory grip element force application surface |
| 780 | accessory cap inner member |
| 800 | container assembly |
| 820 | axial rotation valve dispensing accessory |
| 821 | axially rotating valve dispenser subassembly |
| 822 | axially rotating valve contents dispensing projection (spout) |
| 828 | axial rotation valve dispensing aperture |
| 829 | axial rotation valve actuation aperture |
| 860 | axial rotation valve accessory cap assembly |
| 861 | accessory cap outer member |
| 864 | accessory transversing upper surface |
| 871 | accessory grip element base |
| 874 | accessory grip element |
| 875 | accessory grip element force application surface |
| 880 | accessory cap inner member |
| 899 | axial rotating valve motion |
| 900 | container assembly |
| 920 | axial translation valve dispensing (sports bottle styled) accessory |
| 921 | axially translating valve dispenser subassembly |
| 922 | axial translation dispensing valve end piece |
| 923 | axial translation valve actuator projecting base |
| 928 | axial translation valve dispensing aperture |
| 960 | axial translation valve accessory cap assembly |
| 961 | accessory cap outer member |
| 964 | accessory transversing upper surface |
| 971 | accessory grip element base |
| 974 | accessory grip element |
| 975 | accessory grip element force application surface |
| 980 | accessory cap inner member |
| 998 | axial closing motion |
| 999 | axial opening motion |
| 1000 | container assembly |
| 1020 | pivoting valve dispensing accessory |
| 1021 | pivoting valve dispenser subassembly |
| 1022 | pivoting valve contents dispensing projection (spout) |
| 1026 | projecting member pivoting valve base |
| 1027 | radial rotation valve projecting member accepting recess |
| 1028 | radial rotation valve contents projection dispensing aperture |
| 1029 | projecting member pivoting base valve aperture |
| 1060 | radial rotation valve accessory cap assembly |
| 1064 | accessory transversing upper surface |

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Reference Element Descriptions

| Ref. No. | Description |
|---|---|
| 1061 | accessory cap outer member |
| 1071 | accessory grip element base |
| 1074 | accessory grip element |
| 1075 | accessory grip element force application surface |
| 1080 | accessory cap inner member |
| 1100 | container assembly |
| 1120 | radial translation valve dispensing accessory |
| 1121 | radially translating valve dispenser subassembly |
| 1122 | radial translation valve contents dispensing projection (spout) |
| 1126 | radial translation valve projecting member sliding base |
| 1127 | radial translation valve projecting member channel |
| 1128 | radial translation valve dispensing aperture |
| 1129 | projecting member base valve aperture |
| 1160 | radial translation valve accessory cap assembly |
| 1161 | accessory cap outer member |
| 1164 | accessory transversing upper surface |
| 1171 | accessory grip element base |
| 1174 | accessory grip element |
| 1175 | accessory grip element force application surface |
| 1180 | accessory cap inner member |
| 1200 | container assembly |
| 1220 | pump dispenser accessory |
| 1221 | pump actuated dispenser subassembly |
| 1222 | pump dispenser head |
| 1223 | pump dispenser plunger |
| 1224 | pump subassembly |
| 1225 | pump dispenser contents supply conduit |
| 1225A | pump dispenser contents conduit contents sourcing end |
| 1226 | pump dispenser plunger base |
| 1228 | pump dispenser aperture |
| 1260 | pump dispenser accessory cap assembly |
| 1261 | accessory cap outer member |
| 1264 | accessory transversing upper surface |
| 1271 | accessory grip element base |
| 1274 | accessory grip element |
| 1275 | accessory grip element force application surface |
| 1280 | accessory cap inner member |
| 1300 | container assembly |
| 1320 | spray pump accessory |
| 1321 | spray pump dispenser subassembly |
| 1322 | spray pump trigger/actuator |
| 1323 | spray pump handgrip |
| 1324 | pump subassembly |
| 1325 | spray pump head |
| 1327 | spray pump dispensing nozzle |
| 1328 | spray pump dispensing aperture |
| 1329 | spray pump supply conduit |
| 1329A | spray pump supply conduit sourcing end |
| 1360 | spray pump accessory cap assembly |
| 1361 | spray pump accessory cap outer member |
| 1371 | accessory grip element base |
| 1374 | accessory grip element |
| 1375 | accessory grip element force application surface |
| 1380 | accessory cap inner member |
| 1400 | container assembly |
| 1420 | spray pump accessory |
| 1421 | spray pump dispenser subassembly |
| 1422 | spray pump actuator member |
| 1424 | pump subassembly |
| 1425 | spray pump head |
| 1427 | spray pump nozzle |
| 1428 | spray pump dispensing aperture |
| 1429 | spray pump supply conduit |
| 1429A | spray pump supply conduit sourcing end |
| 1460 | spray pump accessory cap assembly |
| 1461 | spray pump accessory cap outer member |
| 1464 | accessory transversing upper surface |
| 1471 | accessory grip element base |
| 1474 | accessory grip element |
| 1475 | accessory grip element force application surface |
| 1480 | accessory cap inner member |
| 2000 | nestable container component supply and use flow diagram |
| 2010 | fabricate nestable container components step |
| 2020 | nest multiple fabricated nestable container components step |
| 2022 | parcel nested multiple fabricated nestable container components step |

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Reference Element Descriptions

| Ref. No. | Description |
|---|---|
| 2024 | transport parceled nested container components to packaging facility step |
| 2030 | receive transported parceled nested container components at packaging facility step |
| 2032 | position stack of nested container components on packaging assembly line step |
| 2034 | remove individual component from stack of nested components step |
| 2036 | locate removed individual component into desired position for use in product packaging process step |
| 2040 | complete product packaging step |

What is claimed is:

**1**. A nestable container component comprising:

at least one container component translative motion guide feature integral with a tubular cap and container translative motion engaging sidewall, the tubular translative motion guide feature containing sidewall extending between an upper peripheral edge and a lower peripheral edge;

an upper tubular sidewall radially inner diameter spanning a radially interior surface of the upper peripheral edge of the tubular cap and container translative motion engaging sidewall; and

a radially outward directed upper formation arranged to be one of

(a) contiguous with the upper peripheral edge of the tubular cap and container translative motion engaging sidewall and

(b) an upper transition extending between and each respective edge being contiguous with the radially outward directed upper formation and the upper peripheral edge of the tubular cap and container translative motion engaging sidewall;

a radially inward directed lower formation arranged to be one of

(a) contiguous with the lower peripheral edge of the tubular cap and container translative motion engaging sidewall and

(b) a lower transition extending between and each respective edge being contiguous with the radially inward directed lower formation and the lower peripheral edge of the tubular cap and container translative motion engaging sidewall;

a radially outermost diameter of the lower formation,

wherein the radially outermost diameter of the lower formation is smaller than the upper tubular sidewall radially inner diameter;

wherein when a first nestable container component is nested within a second nestable container component orienting a radially outward surface of the tubular cap and container translative motion engaging sidewall of the first nestable container component and a radially inward surface of the tubular cap and container translative motion engaging sidewall of the second nestable container component facing in a direction opposing one another,

wherein the at least one container component translative motion guide feature is an assembly element of a plug style container closure arrangement between the-plug style container closure and one of a container lid component or a container body component,

wherein the at least one container component translative motion guide feature has an angular length about the respective circumference of the tubular cap and container translative motion engaging sidewall that is equal to or less than 180 degrees divided by the number of the at least one container component translative motion guide feature,

wherein the at least one container component translative motion guide feature is designed to at least one of:

(a) create an axial motion as a result of a rotation motion when engaged with a mating translative motion guide feature of a mating container component and (b) control an axial motion as a result of a rotation motion when engaged with a mating translative motion guide feature of a mating container component,

wherein the at least one container component translative motion guide feature is oriented as one of:

(a) when the nestable container component is a container body component, the at least one container component translative motion guide feature extends radially from a radially interior surface of the container body sidewall for engaging with a mating translative motion guide feature extending radially from a radially exterior surface of the plug style container closure, the at least one container component translative motion guide feature being located at a location that is below the upper peripheral edge of the container body component,

(b) when the nestable container component is a container lid component, the at least one container component translative motion guide feature extends radially from a radially interior surface of the container lid sidewall for engaging with a mating translative motion guide feature extending radially from a radially exterior surface of the plug style container closure, or

(c) when the nestable container component is a container closure component, the at least one container component translative motion guide feature extends radially from a radially exterior surface of the container closure sidewall for engaging with a mating translative motion guide feature extending radially from a radially interior surface of one of the container body component or the container lid component,

wherein a plurality of like shaped and sized individual nestable container components are arranged into a nested arrangement,

wherein a total height of the nested arrangement that is less than a sum of the overall heights of a total count of the like shaped and sized individual nestable container components contained within the nested arrangement.

**2**. The nestable container component in accordance with claim **1**, wherein when a first like component is inserted nesting within a second like component, a bottommost portion of the first like component resides at a location being at least one of:

(a) contacting a top surface of the at least one container component translative motion guide feature of the second like component,

(b) contacting the at least one container component translative motion guide feature of the second like component,

(c) partially overlapping the at least one container component translative motion guide feature of the second like component,

(d) completely overlapping the at least one container component translative motion guide feature of the second like component, (e) below the at least one container component translative motion guide feature of the second like component.

**3**. The nestable container component in accordance with claim **1**, wherein the tubular cap and container translative motion engaging sidewall extends in accordance with one of:

a) wherein the nestable container component is the container body component, the tubular cap and container translative motion engaging sidewall extends between a transition defining a chine and a transition defining a container body annular base,

b) wherein the nestable container component is the container lid component, the tubular cap and container translative motion engaging sidewall extends between a transition defining a container body joining formation portion and a transition defining a lower annular formation, or

c) wherein the nestable container component is the container closure component, the tubular cap and container translative motion engaging sidewall extends between a transition defining an inverted countersink and a transition defining a lower annular formation.

**4**. The nestable container component in accordance with claim **1**, further comprising a chuck shoulder,

wherein the chuck shoulder is integral with the upper transition.

**5**. The nestable container component in accordance with claim **1**, wherein the at least one container component translative motion guide feature of one of the container body component or the container lid component is a radially interior at least one container component translative motion guide feature comprising an upper engaging surface and a lower engaging surface,

wherein the at least one container component translative motion guide feature of the container closure component includes an upper engaging surface and a lower engaging surface,

wherein when the container closure component and one of the container body component or the container lid component are assembled to one another,

(a) one of the upper engaging surface or the lower engaging surface of the container closure component at least one container component translative motion guide feature engages with one of the upper engaging surface or lower engaging surface of the radially interior at least one container component translative motion guide feature, and

(b) a second feature of the container closure component engages with a mating second feature of the one of the container body component or the container lid component,

wherein each of the second features are independent of the respective at least one container component translative motion guide features.

**6**. The nestable container component in accordance with any of the claim **1**, wherein the nestable container component is the container lid component, in at least one of:

a) the container lid component further comprising a ring end formation defining an open bottom wall,

b) the container lid component further comprising a closed bottom wall, wherein the nesting of the container lid component includes an overlapping of sidewalls of adjacently nested container lid components,

c) the sidewall of the container lid component having a frustum shape, the container lid component further comprising a closed bottom wall,

wherein the nesting of the container lid component includes an overlapping of sidewalls of adjacently nested container lid components,

d) the container lid component is designed wherein a lower portion of an upper nested container lid component overlaps a sidewall of a lower adjacently nested container lid component when placed in nested arrangement of adjacent container lid components.

**7**. The nestable container component in accordance with claim **1**, wherein the tubular cap and container translative motion engaging sidewall is formed having a frustum shape.

**8**. The nestable container component in accordance with claim **1**, wherein when a first nestable container component is nested with a second, like nestable container component the nested first nestable container component and the second, like nestable container component are restricted against an independent radial motion, while enabling an axially independent motion respective to one another.

**9**. The nestable container component in accordance with claim **1**, wherein nesting is enabled by the arrangement of the lower peripheral edge of the first nestable container component tubular cap and container translative motion engaging sidewall having a smaller diameter than an interior diameter of a radially outward extending container joining formation on the upper peripheral edge of the second, like nestable container component tubular cap and container translative motion engaging sidewall.

**10**. The nestable container component in accordance with claim **1**, further comprising a chine, wherein the chine is one of:

(a) an upper surface of a seaming panel peripherally formed about and extending upward and radially outward from the upper peripheral edge of the tubular cap and container translative motion engaging sidewall,

wherein the seaming panel is adapted to assemble the container lid to a container body sidewall seaming edge of a container body, or

(b) an upper surface of a rolled upper, free edge formed about an upper peripheral edge of a nestable container body component.

**11**. The nestable container component in accordance with claim **1**, wherein a plurality of like nestable container components are nested together, wherein adjacent nestable container components are designed to provide a nesting arrangement having at least one of:

(a) the radially outward surface of the frustum shaped tubular cap and container translative motion engaging sidewall of the first nestable container component contacts a radially inward surface of the at least one container component translative motion guide feature of the second, adjacent nestable container component,

(b) the radially inward surface of the frustum shaped tubular cap and container translative motion engaging sidewall of the second nestable container component contacts a radially outward surface of the at least one

container component translative motion guide feature of the first, adjacent nestable container component,

(c) the lower peripheral edge of the tubular cap and container translative motion engaging sidewall of the first nestable container component contacts a radially inward surface of the at least one container component translative motion guide feature of the second nestable container component,

(d) an annular end ring formed at the lower peripheral edge of the tubular cap and container translative motion engaging sidewall of the first nestable container component contacts a radially inward surface of the at least one container component translative motion guide feature of the second nestable container component,

(e) a sidewall transition formed proximate the lower peripheral edge of the tubular cap and container translative motion engaging sidewall of the first nestable container component contacts the radially interior surface of the frustum shaped tubular cap and container translative motion engaging sidewall of the second nestable container component,

(f) an exterior surface of the frustum shaped tubular cap and container translative motion engaging sidewall of the first nestable container component contacts an interior surface of the frustum shaped tubular cap and container translative motion engaging sidewall of the second nestable container component and one of:

(i) the radially inward surface of the at least one container component translative motion guide feature of the second, adjacent nestable container component contacts the radially exterior surface of the frustum shaped tubular cap and container translative motion engaging sidewall of the first nestable container component, and

(ii) a gap is provided between the radially inward surface of the at least one container component translative motion guide feature of the second, adjacent nestable container component and the radially exterior surface of the frustum shaped tubular cap and container translative motion engaging sidewall of the first nestable container component, and

(g) a radially outward surface of the at least one container component translative motion guide feature of the first, adjacent nestable container component contacts an upper surface of a inverted countersink peripherally formed about and extending upward and radially outward from the upper peripheral edge of the second nestable container component.

**12**. The nestable container component in accordance with claim **1**, wherein the nestable container component is fabricated of at least one metal.

**13**. The nestable container component in accordance with claim **1**, wherein the at least one container component translative motion guide feature is unitarily formed with the tubular cap and container translative motion engaging sidewall.

**14**. The nestable container component in accordance with claim **1**, wherein the nestable container component is a container body component, the container body component including at least one of:

(a) the tubular cap and container translative motion engaging sidewall including a frustum shape,

(b) the tubular cap and container translative motion engaging sidewall having a frustum shape,

(c) a substantially cylindrically shaped sidewall,

(d) the translative motion guide feature extending radially inward from the frustum shaped sidewall,

(e) the translative motion guide feature extending radially inward from an upper edge cap receiving sidewall,

(f) the translative motion guide feature extending radially inward from the upper edge cap receiving sidewall, wherein the upper edge cap receiving sidewall is cylindrical in shape,

(g) the translative motion guide feature extending radially inward from the upper edge cap receiving sidewall, wherein the upper edge cap receiving sidewall has a cylindrical shape and is radially outwardly offset from an upper edge of a frustum shaped portion of the frustum shaped sidewall,

(h) the translative motion guide feature extending radially inward from the upper edge cap receiving sidewall, wherein the upper edge cap receiving sidewall has a frustum shape,

(i) the translative motion guide feature extending radially inward from the upper edge cap receiving sidewall, wherein the upper edge cap receiving sidewall has a frustum shape and is radially outwardly offset from an upper edge of a frustum shaped portion of the frustum shaped sidewall,

(j) an outwardly rolled upper edge,

(k) an outwardly formed container body joining formation,

(l) at least one measurement demarcation, wherein the at least one measurement demarcation defines a predetermined volume,

(m) at least two concentrically arranged frustum shaped sections collectively forming the frustum shaped sidewall, each intersection between adjacently located concentrically arranged frustum shaped sections creating a demarcation,

(n) at least two concentrically arranged frustum shaped sections collectively forming the frustum shaped sidewall, each intersection between adjacently located concentrically arranged frustum shaped sections creating a demarcation, wherein the demarcation defines a measurement of a predetermined volume,

(o) a stackable feature provided in a lower portion of the container body component tubular cap and container translative motion engaging sidewall, restricting independent radial motion, while enabling an axially independent motion between a lower portion of the container body component tubular cap and container translative motion engaging sidewall and a stackable feature provided as a cavity formed within the bottom wall of a container closure,

(p) a stackable retention feature provided as an inverted frustum including a retention feature provided in a lower portion of the container body component tubular cap and container translative motion engaging sidewall,

(q) a stackable feature provided as a recessed formation within the bottom wall of the container body component restricting independent radial motion, while enabling an axially independent motion between the container body component stackable feature and a stackable feature provided as a bossed registration formation within the bottom wall of a container closure component, and

(r) a bottom wall of the container body component having a recess extending into an interior void of the container body component.

**15**. The nestable container component in accordance with claim **1**, wherein the nestable container component is a container lid, the container lid comprising at least one of:

(a) the tubular cap and container translative motion engaging sidewall including a frustum shape,
(b) the tubular cap and container translative motion engaging sidewall is a frustum shape,
(c) the tubular cap and container translative motion engaging sidewall having a substantially cylindrically shape,
(d) the tubular cap and container translative motion engaging sidewall having an arched shape,
(e) the translative motion guide feature extending radially inward from the tubular cap and container translative motion engaging sidewall,
(f) the translative motion guide feature extending radially inward from the tubular cap and container translative motion engaging sidewall, wherein a section of the tubular cap and container translative motion engaging sidewall comprising the translative motion guide feature is substantially cylindrical in shape,
(g) the translative motion guide feature extending radially inward from the tubular cap and container translative motion engaging sidewall, wherein the tubular cap and container translative motion engaging sidewall is frustum in shape,
(h) the translative motion guide feature extending radially inward from the tubular cap and container translative motion engaging sidewall, wherein a section of the tubular cap and container translative motion engaging sidewall comprising the translative motion guide feature is arched in shape,
(i) a stay-on tab,
(j) the stay-on tab in conjunction with a tear panel defined by a score line,
(k) a rivet assembling the stay-on tab to a lid bottom wall,
(l) a rolled annular end ring circumscribing a lower peripheral end of the tubular cap and container translative motion engaging sidewall defining a tubular open passageway,
(m) a pull tab,
(n) the pull tab assembled to a lid bottom tear panel, the lid bottom tear panel defined by a score line circumscribing a container lid bottom wall,
(o) the rivet assembling the pull tab to the lid bottom removable tear panel,
(p) a removable foil lid bottom panel,
(q) the removable foil lid bottom panel, removably bonded to the container lid annular bottom wall,
(r) the removable foil lid bottom panel comprising a foil panel tab, and(s)
(s) the foil panel tab and the removable foil lid bottom panel hingeably joined to one another.

**16**. The nestable container component in accordance with claim **1**, wherein the nestable container component is a container closure, the container closure comprising at least one of:

(a) the tubular cap and container translative motion engaging sidewall having a frustum shape,
(b) the tubular cap and container translative motion engaging sidewall having a substantially cylindrical shape,
(c) the tubular cap and container translative motion engaging sidewall having an arched shape,
(d) the closure translative motion guide feature extending radially outward from the frustum shaped sidewall,
(e) the closure translative motion guide feature extending radially outward from the cylindrical shaped sidewall,
(f) the closure translative motion guide feature extending radially outward from the arched shaped sidewall,
(g) a stackable feature provided as a cavity formed within the bottom wall,
(h) a stackable retention feature provided as a cavity including a retention feature formed within the bottom wall,
(i) a stackable feature provided as a bossed registration formation within the bottom wall,
(j) a sealing member provided as a compliant annular sealing member on the radially outward surface of the container closure,
(k) a sealing member provided as a compliant annular sealing member on the radially outward surface of the container closure, where in the sealing member contacts the adjacent sealant surface of the resealable container,
(l) a sealing member including an elongated projection extending from a base, the base being carried by an interior surface of an inverted countersink of the container closure, the projection having a radially inward facing surface and a radially outward facing surface,
(m) a sealing member of a complaint material, the sealing member designed to form a wedge on a sealing surface, the sealing member being carried by the interior surface of the inverted countersink,
(n) a grip enhancing feature, integrally formed in the radially outward surface of the container closure inverted countersink, and
(o) a grip enhancing feature, integrally formed in the radially outward surface of the container closure inverted countersink, wherein the grip enhancing feature can be any one of:
  (i) a radially outward extending boss grip enhancing feature,
  (ii) a radially inward extending deboss grip enhancing feature,
  (iii) a knurled grip enhancing feature,
  (iv) an applied, aggregate coating grip enhancing feature,
  (v) an applied, anti-slip coating grip enhancing feature.

**17**. A container assembly comprising the nestable container component in accordance with claim **1**, the container assembly including at least two of:

a container body component, a container lid component, and a container closure component,
wherein at least one of the container body component, the container lid component, and the container closure component is the nestable container component.

**18**. A container assembly comprising the nestable container component in accordance with claim **1**, wherein the radially outward directed formation includes at least one of a seaming chuck shoulder, a seaming chuck wall, a seaming panel, an axially extending segment, a radially extending segment, an inverted countersink, a sidewall to inverted countersink transition segment, a rolled edge, a chine, and a container sealing formation.

**19**. A container assembly comprising the nestable container component in accordance with claim **1**, wherein the radially inward directed lower formation includes at least one of a countersink, a sealing surface, a rolled annular end ring, a cap sidewall transition, a cap annular countersink transition, a sidewall to bottom panel planar transversing surface, and a rolled bottom edge sealing surface.

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