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(54) Title: BEVERAGE CONTAINER

(57) Abstract: The present disclosure relates to beverage container (10) that includes a lower vessel (12) having a lower vessel neck (16), an upper vessel (22) that is attached to the lower vessel neck (16) and is sized and shaped to hold a liquid therein, a removable cap (40) that is attached to the upper vessel (22), a vessel seal (42) that serves as a liquid- tight barrier between the interior of the upper vessel (22) and the interior of the lower vessel (12), and a tether (44) attached to the vessel seal (42) at one end and the removable cap (40) at the other end. When the removable cap (40) is twisted or removed, it pulls on the tether (44), which pulls and releases the vessel seal (42), thereby allowing liquid from inside the upper vessel (22) to enter the interior of the lower vessel (12).

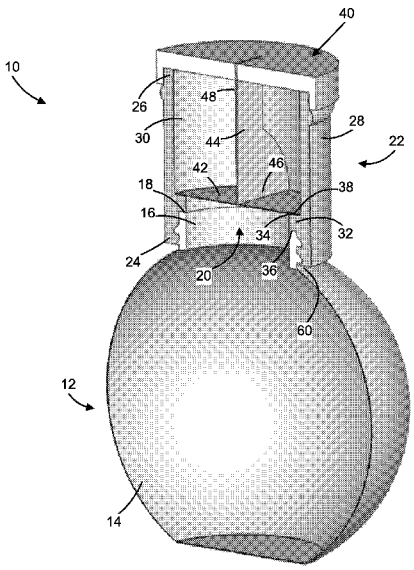

FIG. 2

WO 2018/169978 A1

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BEVERAGE CONTAINER

TECHNICAL FIELD

[0001] The disclosed embodiments relate to containers and mixers, and more particularly, to containers having two compartments separated by a removable barrier for holding separate two substances, and a mechanism for removing the barrier to allow one substance to be introduced to the other.

BACKGROUND

[0002] A "bomb" type alcoholic beverage is a beverage where a small cup or glass holding a small volume of liquor or liqueur (often called a "shot") is dropped into a larger cup or glass holding a higher volume of liquid, such as a beer or soft drink, and the mixture of the two liquids is then consumed before the two liquids have become completely blended. Such beverages have become popular night-life and recreation drinks in the United States, particularly amongst young adults.

[0003] The amount of glassware typically used for bomb beverages is substantial. Most such drinks are created using a pint glass to hold the high-volume liquid and a shot glass to hold the low volume liquid, and such glasses are heavy and fragile and not suitable for use outside of a home or a commercial establishment. Further, receptacles with wide mouths, such as cups and glasses, can allow for splashing to occur when the small receptacle is dropped into the high-volume liquid, which causes spillage.

SUMMARY OF INVENTION

[0004] In view of the foregoing background, a two-compartment container is provided. The container includes a vessel including a lower end, an upper end, and a vessel wall extending from the upper end to the lower end. The upper end, lower end, and vessel wall define an internal volume of the vessel.

[0005] The container also includes a cap secured to the upper end of the vessel, a seal removably-secured to the vessel wall, and a tether that is secured to the cap at one end and to the seal at an opposite end. The seal is sized and positioned to span the internal volume of the vessel when secured to the vessel wall and to separate the internal volume into an upper portion and a lower portion. The cap, seal, and tether are adapted to allow the seal to remain secured to the vessel wall when the cap is in a closed position at the upper end of the vessel and to cause the seal to at least partially separate from the vessel wall when the cap is moved to an active position.

[0006] In one embodiment, the container is a beverage container including a lower vessel having a lower vessel base and a lower vessel neck, the lower vessel base being sized and shaped to hold a liquid and the lower vessel neck having an annular ridge that defines a lower vessel opening through which liquid may enter the lower vessel base. The beverage container also includes an upper vessel having a lower end, an upper end, an exterior surface extending from the lower end to the upper end, an interior surface extending from the lower end to the upper end opposite the exterior surface, and a sealing lip located proximate to the lower end that extends radially inwardly from the interior surface to a lip edge. The interior surface and the sealing lip define an interior of the upper vessel between the upper end and the sealing lip, and the lower end of the upper vessel is sized and shaped to receive the lower vessel neck such that the annular ridge of the lower vessel neck abuts the sealing lip.

[0007] In one embodiment, the beverage container further includes a removable cap attached to the upper end of the upper vessel, a vessel seal attached to the sealing lip of the upper vessel, and a tether having a first end and a second end, the first end of the tether being connected to the vessel seal and the second end of the tether being connected to the removable cap. The vessel seal is sized and shaped to form a liquid-tight barrier that prevents liquid from traveling from the interior of the upper vessel to the lower vessel, and the tether is sized and shaped to pull the vessel seal away from the sealing lip when the removable cap is rotated about or removed from the upper end of the upper vessel. In this regard, pulling the vessel seal away from the sealing lip allows liquid from the interior of the upper vessel to travel inside the lower vessel.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] For a more complete understanding of the present invention, reference is made to the following detailed description of an embodiment considered in conjunction with the accompanying drawings, in which:

[0009] FIG. 1 is a perspective view of a beverage container constructed in accordance with an embodiment of the present invention;

[0010] FIG. 2 is the view of FIG. 1 with a cross-section of the beverage container showing the beverage container's interior;

[0011] FIG. 3 is a top perspective of an embodiment of a cap to be used with the beverage container shown in FIG. 1;

[0012] FIG. 4 is a side elevational exploded view of the cap shown in FIG. 3;

[0013] FIG. 5 is a bottom perspective view of the cap shown in FIG. 3;

[0014] FIG. 6 is a top perspective of another embodiment of a cap to be used with the beverage container shown in FIG. 1;

[0015] FIG. 7 is a bottom perspective view of the cap shown in FIG. 6; and

[0016] FIG. 8 is a side elevational exploded view of the cap shown in FIG. 6.

DETAILED DESCRIPTION OF THE INVENTION

[0017] The following disclosure is presented to provide an illustration of the general principles of the present invention and is not meant to limit, in any way, the inventive concepts contained herein. Moreover, the particular features described in this section can be used in combination with the other described features in each of the multitude of possible permutations and combinations contained herein.

[0018] All terms defined herein should be afforded their broadest possible interpretation, including any implied meanings as dictated by a reading of the specification as well as any words that a person having skill in the art and/or a dictionary, treatise, or similar authority would assign particular meaning. Further, it should be noted that, as recited in the specification and in the claims appended hereto, the singular forms “a,” “an,” and “the” include the plural referents unless otherwise stated. Additionally, the terms “comprises” and “comprising” when used herein specify that certain features are present in that embodiment, but should not be interpreted to preclude the presence or addition of additional features, components, operations, and/or groups thereof.

[0019] The following disclosure is intended to be read in connection with the accompanying drawings, which are to be considered part of the entire written description of the invention. The drawing figures are not necessarily to scale and certain features of the invention may be shown exaggerated in scale or in somewhat schematic form in the interest of clarity and conciseness. In this description, relative terms such as "horizontal," "vertical," "up," "down," "top," "bottom," as well as derivatives thereof (e.g., "horizontally," "downwardly," "upwardly," etc.) should be construed to refer to the orientation as then described or as shown in the drawing figure under discussion. These relative terms are for convenience of description and normally are not intended to require a particular orientation. Terms including "inwardly" versus "outwardly," "longitudinal" versus "lateral" and the like are to be interpreted relative to one another or relative to an axis of elongation, or an axis or center of rotation, as appropriate. Terms concerning attachments, coupling and the like, such as "connected" and "interconnected," refer to a

relationship wherein structures are secured or attached to one another either directly or indirectly through intervening structures, as well as both moveable or rigid attachments or relationships, unless expressly described otherwise, and includes terms such as "directly" coupled, secured, etc. The term "operatively coupled" is such an attachment, coupling, or connection that allows the pertinent structures to operate as intended by virtue of that relationship.

[0020] Turning now to FIGS. 1 and 2, a beverage container 10 constructed in accordance with one embodiment of the present invention is provided. The beverage container 10 includes a lower vessel 12 having a lower vessel base 14 and a lower vessel neck 16 formed in the upper portion of the lower vessel base 14. The lower vessel neck 16 includes an annular ridge 18 that defines a lower vessel opening 20 in the lower vessel 12 to allow liquid to enter the lower vessel 12 and sit in the lower vessel base 14. In one embodiment, the lower vessel 12 has the shape of a bottle.

[0021] Attached to the lower vessel neck 16 is a hollow cylindrical upper vessel 22 having a lower end 24, an upper end 26, an exterior wall surface 28, and an interior wall surface 30, with the lower end 24 including an annular sealing lip 32 extending radially inwardly from the interior wall surface 30 to a lip edge 34. The sealing lip 32 has a lower lip surface 36 and an upper lip surface 38, the lower lip surface 36 facing in the direction of the lower end 24 and the upper lip surface 38 facing in the direction of the upper end 26. The lower end 24 of the upper vessel 22 is sized and shaped to removably fasten to the lower vessel neck 16 such that when the upper vessel 22 is fastened to the lower vessel 12, the annular ridge 18 of the lower vessel neck 16 abuts the lower lip surface 36 of the sealing lip 32, creating a liquid tight seal between the annular ridge 18 of the lower vessel 12 and the sealing lip 32 of the upper vessel 22. The upper end 26 of the upper vessel 22 is sized and shaped to interlock with a removable cap 40, whose function will be discussed further below.

[0022] The upper vessel 22 further includes a removable vessel seal 42 that extends radially from the center axis of the upper vessel 22 to the interior wall surface 30 of the upper vessel 22. The vessel seal 42 is attached to the upper lip surface 38 of the sealing lip 32 by an adhesive to create a liquid tight seal between the vessel seal 42 and the sealing lip 32. The vessel seal 42 creates a liquid-tight barrier of separation between the upper vessel 22 and the lower vessel 12 such that liquid occupying the inside of the upper vessel 22 is not able to transfer to the inside of the lower vessel 12 when the upper vessel 22 is fastened to the lower vessel 12. The vessel seal can have a variety of

shapes known in the art, including half-moon shapes or a lollipop shapes, and the attachment of the seal 42 to the sealing lip 32 can be accomplished by a variety of processes known in the art, including conduction sealing, induction sealing, and ultrasonic sealing. All such shapes and mechanisms are considered within the scope of the present invention.

[0023] The vessel seal 42 is connected to the removable cap 40 by a tether 44. The tether 44 is configured to remove the vessel seal 42 from the sealing lip 32 when pulled by the cap 40, thereby allowing any liquid contents inside the upper vessel 22 to travel through the lower vessel opening 20 and into the lower vessel 12. In one embodiment, the tether 44 is a flat, flexible piece of material with a lower end 46 that extends across a segment of the vessel seal 42 from one point on the circumference of the vessel seal 42 to another point on the circumference of the vessel seal 42, and an upper end 48 that extends across a smaller, parallel segment of the removable cap 40.

[0024] The beverage container 10 has a closed position and an active position. In this application, the "closed position" of the beverage container 10 refers to a state where the vessel seal 42 is secured to the interior wall surface 30 of the upper vessel 22, thereby creating a barrier between the interior volumes of the upper vessel 22 and the lower vessel 12 that prevents a substance in one vessel from entering the other. By contrast, the "active position" of the beverage container 10 refers to a state where the barrier provided by the vessel seal 42 is removed, thereby allowing substances contained in the upper vessel 22 and the lower vessel 12 to travel from one to the other. In one embodiment, transitioning the beverage container 10 from a closed position to an active position involves removing the removable cap 40 from the upper end 26 of the upper vessel 22, thereby creating tension in the tether 44 and causing the tether to pull the vessel seal 42 away from the sealing lip 32. Other embodiments of transitioning the beverage container 10 from a closed position to an active position without separating the cap 40 from the upper vessel 22, as explained below.

[0025] In one embodiment, the beverage container 10 is moved from a closed position to an active position by rotating or twisting the removable cap 40 about the upper end 26 of the upper vessel 22. Doing so causes the tether 44 to twist about itself, increasing the tension in the tether 44 and causing the lower end 46 of the tether 44 to pull the outer edges of the vessel seal 42 inward. This results in the tether 44 pulling the vessel seal 42 away from the sealing lip 32, thereby removing the barrier between the lower and upper vessels 12, 22 and releasing the contents of the upper vessel 22

into the lower vessel 12. The cap 40 may remain attached to the upper end 26 of the upper vessel 22 during this time.

[0026] The tether 44 can be attached to the removable cap 40 in several different ways. FIGS. 3-5 show one embodiment of a removable cap 140 having a two-piece clamp system for attaching the tether 44 to the removable cap 140. To attach the tether 44 to the removable cap 140, the upper end 48 of the tether 44 is threaded through a cap slot 150 and set between two clamp faces 152a, 152b, which interface and create a friction fit around the upper end 48 of the tether 44. The interfacing clamp faces 152a, 152b are then fit into a clamp recess 154 formed in the upper surface of the removable cap 140 proximate to the cap slot 150. The clamp recess 154 is sized and shaped to create a friction fit between the interfacing clamp faces 152a, 152b and the removable cap 140, thereby preventing the tether 44 from sliding out from between the interfacing clamp faces 152a, 152b when the interfacing clamp faces 152a, 152b are inserted into the clamp recess 154. In one embodiment, the clamp recess 154 also includes one or more detents (not shown) that urge the interfacing clamp faces 152a, 152b into the clamp recess 154, creating a snap-lock engagement between the clamp faces 152a, 152b and the clamp recess 154.

[0027] FIGS. 6-8 show another embodiment of a removable cap 240. In this embodiment, the upper end 48 of the tether 44 is threaded through a cap slot 250 and laid against a wall of a wedge recess 255. A wedge lock 253 is then inserted in the wedge recess 255 and against the upper end of the tether 44, clamping the tether 44 between the wedge lock 253 and a wall of the wedge recess 255. The wedge lock 253 and wedge recess 255 are sized and shaped to create a friction fit between the wedge lock 253 and the wedge recess 255, thereby preventing the tether 44 from sliding out from between the wedge lock 253 and the wedge recess 255. In one embodiment, the wedge recess 255 includes one or more detents (not shown) that urge the wedge lock 253 into the wedge recess 255, creating a snap-lock engagement between the wedge lock 253 and the wedge recess 255.

[0028] Other embodiments of attaching the tether 44 to the cap 40 include looping the tether 44 around a securing member (such as the wedge lock 253 shown in FIG 8) and securing the free end to the vessel seal 42, as well as punching the tether 44 through the cap 40 to create a friction fit between the upper end 48 of the tether 44 and the punched portion of the cap 40. All such attachment embodiments are considered within the scope of the present invention.

[0029] Referring back to FIGS. 1 and 2, when the beverage container 10 is ready to be used, the lower vessel base 14 of the lower vessel 12 is filled with a receiving liquid (i.e., a liquid to receive the contents of the upper vessel 22), the upper vessel 22 is filled with a mixing liquid (i.e., a liquid to be mixed with the contents of the lower vessel 12) in the space between the cap 40 and the vessel seal 42, the upper vessel 22 is attached to the lower vessel neck 16 of the lower vessel 12 as discussed above, and the tether 44 of the vessel seal 42 is attached to the cap 40. To use the beverage container 10, the user either lifts the cap 40 off or rotates the cap 40 about the upper end 26 of the upper vessel 22, which causes the tether 44 to lift the vessel seal 42 away from the sealing lip 32, breaking the liquid tight seal therebetween. Once the seal is broken, the mixing liquid is released from the upper vessel 22 and falls into the lower vessel base 14, and the mixing liquid is then mixed with the receiving liquid inside the lower vessel base. The user may then use the mixed contents in a manner he or she sees fit (e.g., consuming the mixed contents).

[0030] In one embodiment, the lower end 24 of the upper vessel 22 has upper vessel threads 60 that engage with the lower vessel neck 16 of the lower vessel 12 via lower vessel threads 62 to create a liquid tight seal between the lower vessel 12 and the upper vessel 22. The upper vessel and lower vessel threads 60, 62 allow the upper vessel 22 to be released from the lower vessel 12 once the upper vessel has been used. This enables the user to reuse the lower vessel 12 with a new upper vessel 22 if desired. Other embodiments may include other attachment means as a substitute for the upper vessel and lower vessel threads 60, 62, including, but not limited to, interlocking detent lips, a tongue-in-groove system, and an exterior clamp system. In an alternative embodiment, the upper vessel 22 and the lower vessel 12 can be unitary, thereby creating a single-use beverage container.

[0031] It should be noted that while the foregoing embodiments are described as being used to mix two liquids, the beverage container 10 can also be used for mixing other combinations of substances where the two substances are kept separated until a time of use. Such combinations include, but are not limited to, any combination of a solvent and a solute where the solute, such as a solid powder, is contained in the upper vessel 22 while the solvent is kept in the lower vessel 12; and any combination of substances that create a chemical reaction when mixed, where experiencing the chemical reaction itself is desired or where the mixed substances are to be applied to something while the reaction is ongoing (e.g., the making and application of an

adhesive). Such different types of combinations may have uses in a variety of applications including, but not limited to, personal care products, pharmaceuticals, adhesive preparations, dietary supplements, and horticulture. All such combinations of substances and uses should be considered as being within the scope of the present invention.

[0032] All examples and conditional language recited herein are intended for pedagogical purposes to aid the reader in understanding the principles of the present invention and the concepts contributed by the inventor in furthering the art. As such, they are to be construed as being without limitation to such specifically recited examples and conditions. Moreover, all statements herein reciting principles, aspects, and embodiments of the invention, as well as specific examples thereof, are intended to encompass both structural and functional equivalents thereof. Additionally, it is intended that such equivalents include both currently known equivalents as well as equivalents developed in the future, i.e., any elements developed that perform the same function, regardless of structure.

[0033] It is to be understood that the embodiments described herein are merely exemplary and that a person skilled in the art may make many variations and modifications without departing from the spirit and scope of the invention. All such variations and modifications are intended to be included within the scope of the invention, as defined by the following claims.

WE CLAIM:

1. A container comprising:

a vessel including a lower end, an upper end distal to the lower end, and a vessel wall extending from the upper end to the lower end, the upper end, lower end, and vessel wall defining an internal volume of the vessel;

a cap secured to the upper end of the vessel;

a seal removably-secured to the vessel wall, the seal being sized and positioned to span the internal volume when secured to the vessel wall and to separate the internal volume into an upper portion and a lower portion, the seal including a tether that is secured to the cap;

wherein the cap, the seal, and the tether are adapted to allow the seal to remain secured to the vessel wall when the cap is in a closed position at the upper end of the vessel and to cause the seal to at least partially separate from the vessel wall when the cap is moved to an active position.

2. The container of Claim 1, further comprising:

a first ingredient located in the upper portion of the internal volume; and

a second ingredient located in the lower portion of the internal volume, the second ingredient being of a different composition than that of the first ingredient.

3. The container of Claim 1, wherein the cap is in a different rotational position relative to the vessel in the closed position and the active position.

4. The container of Claim 1, wherein the upper end of the vessel is covered by the cap with the cap is in the closed position and open when the cap is in the active position.

5. The container of Claim 1, wherein the vessel comprises an upper vessel located proximate to the upper end and a lower vessel located proximate to the lower end, the upper vessel including an upper vessel wall formed from a portion of the vessel wall that defines the upper portion of the internal volume, the lower vessel including a lower vessel wall formed from a portion of the vessel wall that defines the lower portion of the internal volume, and the upper vessel being removably coupled to the lower vessel.

6. The container of Claim 5, wherein the seal is located within the upper vessel.

7. The container of Claim 6, wherein the upper vessel includes a sealing lip extending inwardly from the upper vessel wall, and the seal is configured to adhere to the sealing lip.

8. The container of Claim 1, wherein the tether has a first end and a second end distal from the first end, the first end being attached to the seal and the second end being attached to the cap.

9. The container of Claim 8, wherein the cap includes a cap slot, and the second end of the tether is threaded through the cap slot.

10. The container of Claim 9, wherein the tether is secured to the cap via a friction fit.

11. The container of Claim 10, wherein the friction fit is provided by a two-piece clamp system that fits within a clamp recess proximate to the cap slot.

12. The container of Claim 10, wherein the friction fit is provided by a wedge that fits within a wedge recess proximate to the cap slot.

13. A beverage container comprising:

a lower vessel including:

a base having a closed end, an open end opposite the closed end, and an outer wall extending from the closed end to the open end, the base defining an internal volume, and

a neck extending from the open end of the base to an annular ridge that defines a lower vessel opening through which liquid may enter the base;

an upper vessel including a lower end, an upper end opposite the lower end, an interior surface extending from the lower end to the upper end, and a sealing lip extending radially inwardly from the interior surface to a lip edge, the interior surface and the sealing lip defining an internal volume of the upper vessel between the upper end

and the sealing lip, and the upper vessel being sized and shaped to receive the lower vessel neck;

a vessel seal attached to the sealing lip of the upper vessel, the vessel seal being sized and shaped to form a liquid-tight barrier that prevents liquid from traveling from the interior of the upper vessel to the lower vessel; and

a tether having a first end and a second end, the first end of the tether being connected to the vessel seal and the second end of the tether being connected to the upper end of the upper vessel, the tether being sized and shaped to pull the vessel seal away from the sealing lip when upward force is applied to the tether;

wherein pulling the vessel seal away from the sealing lip allows liquid from the interior volume of the upper vessel to travel inside the lower vessel.

14. The container of Claim 13, further comprising a cap attached to the upper end of the upper vessel, the cap including a means for attaching the second end of the tether to the cap.

15. The container of Claim 14, wherein the upper vessel includes a vertical axis and the cap is adapted to pull the vessel seal away from the sealing lip via the tether when the cap is rotated about the vertical axis of the upper vessel.

16. A method of combining two substances housed in separate vessels of a container, the method comprising:

providing a container having an internal volume that is separated into an upper portion and a lower portion by a barrier, a first substance located in the upper portion and a second substance located in the lower portion;

removing the barrier by manipulating a cap that is attached to the container and is tethered to the barrier, thereby allowing the first substance to come on contact with the second substance.

17. The method of Claim 16, wherein the barrier includes an attached tether that extends from the barrier through the upper portion of the container to the cap, and wherein the step of removing the barrier includes pulling the tether away from the lower portion of the container.

18. The method of Claim 17, wherein the step of removing the barrier includes rotating the cap relative to the upper portion of the container without separating the cap from the container.

19. The method of Claim 16, wherein the barrier is a liquid-tight seal that is releasably attached to the upper portion of the container.

20. The method of Claim 16, wherein the first substance has a different composition than that of the second substance.

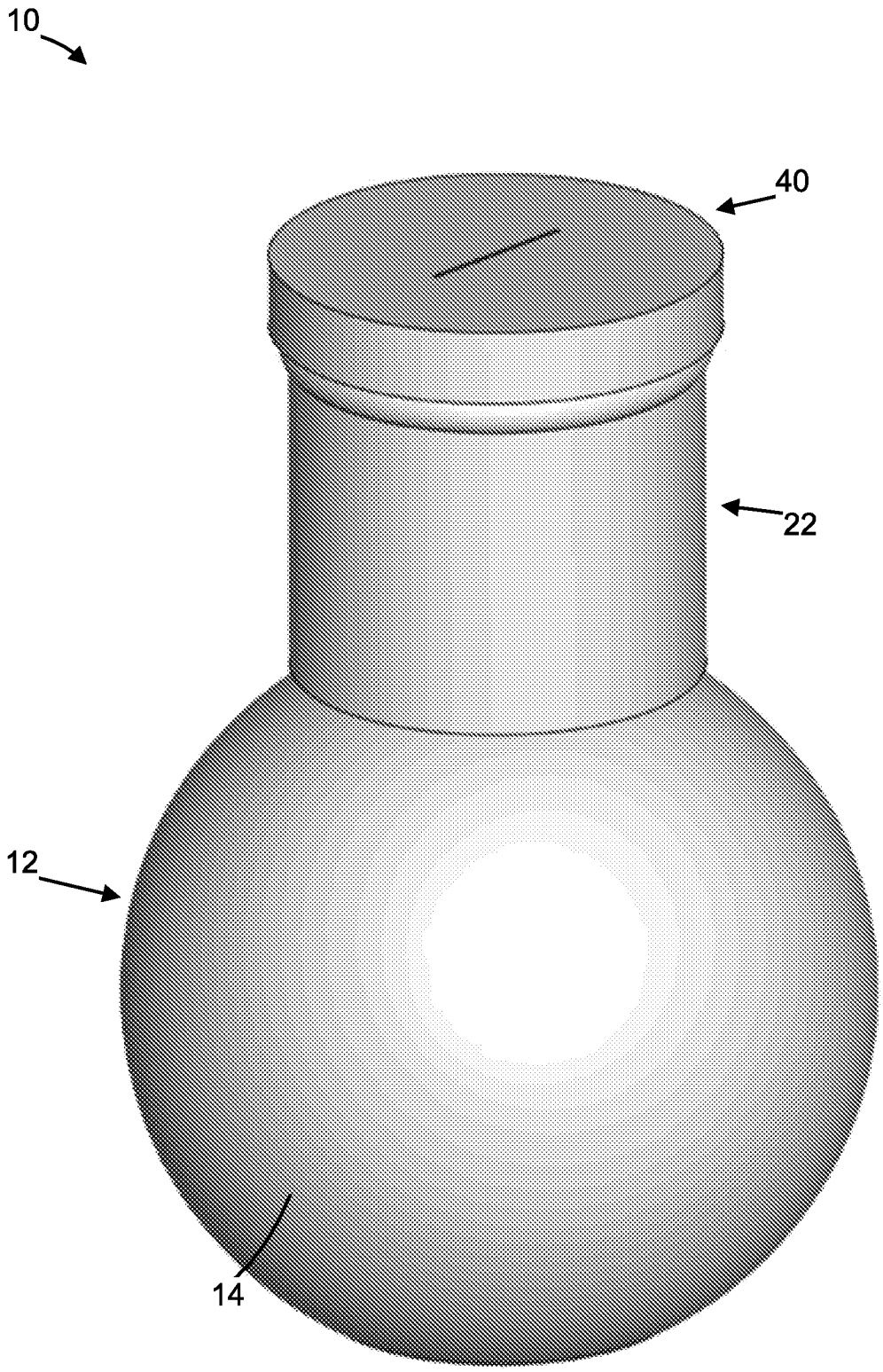

FIG. 1

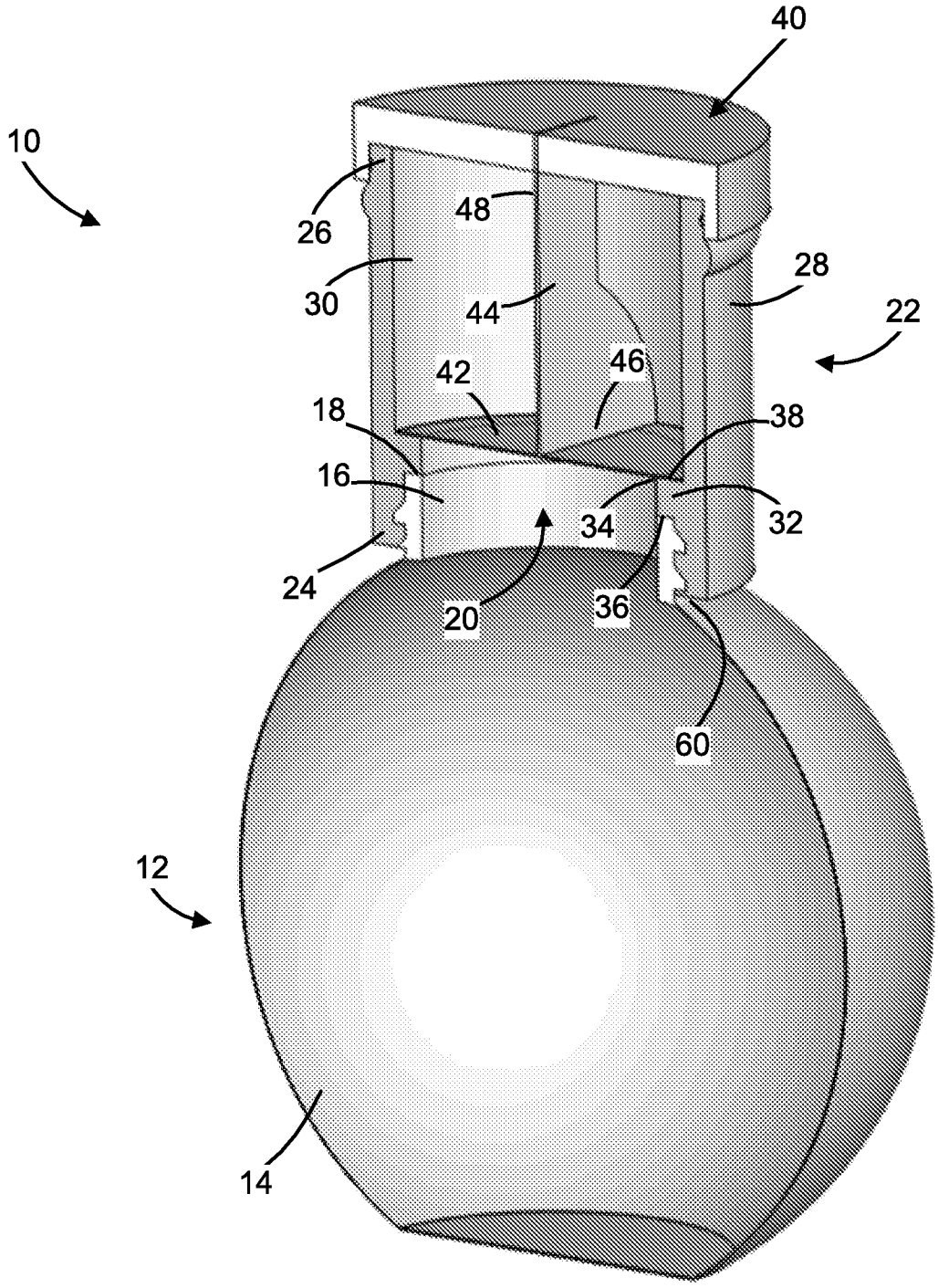

FIG. 2

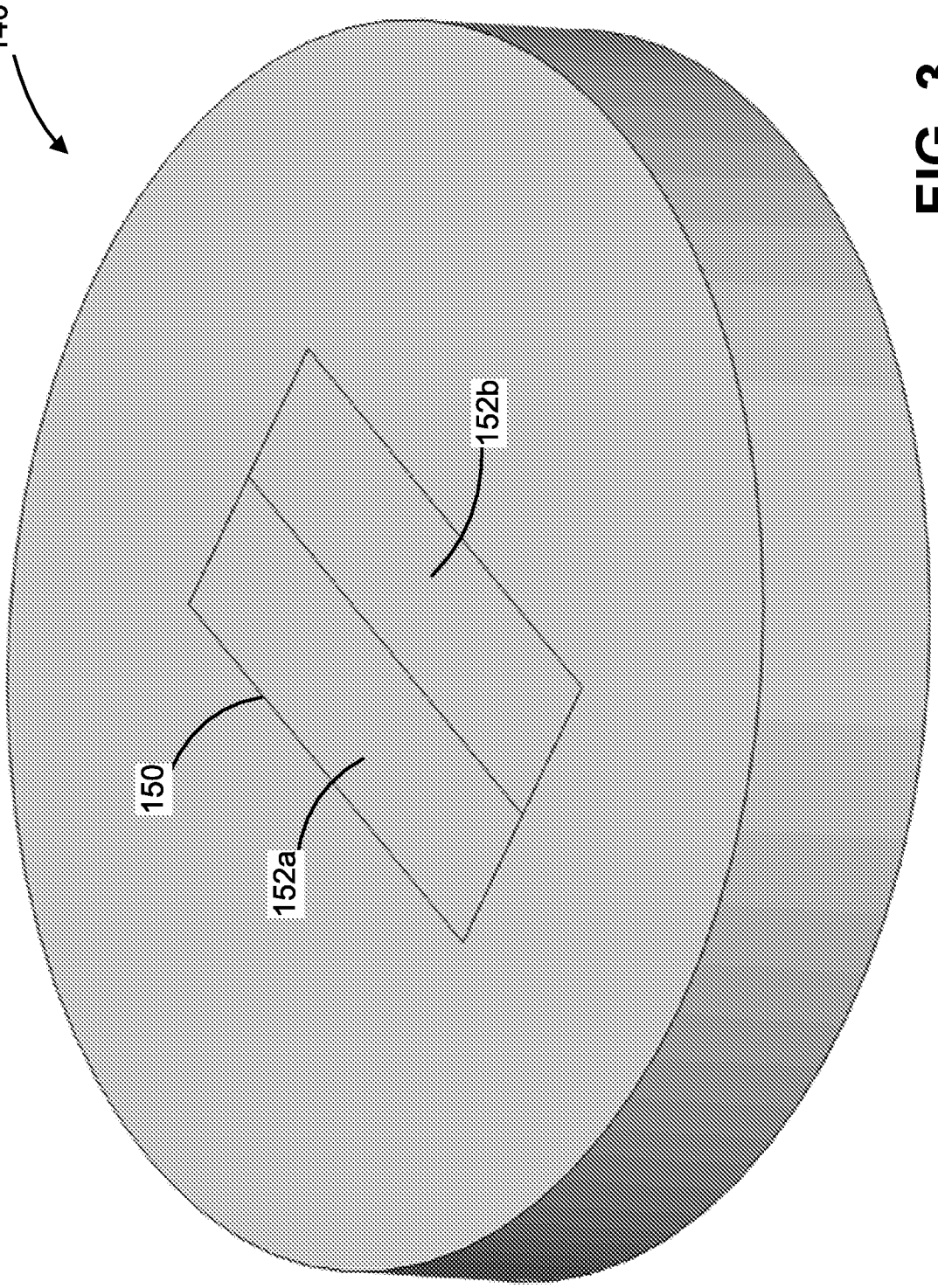

FIG. 3

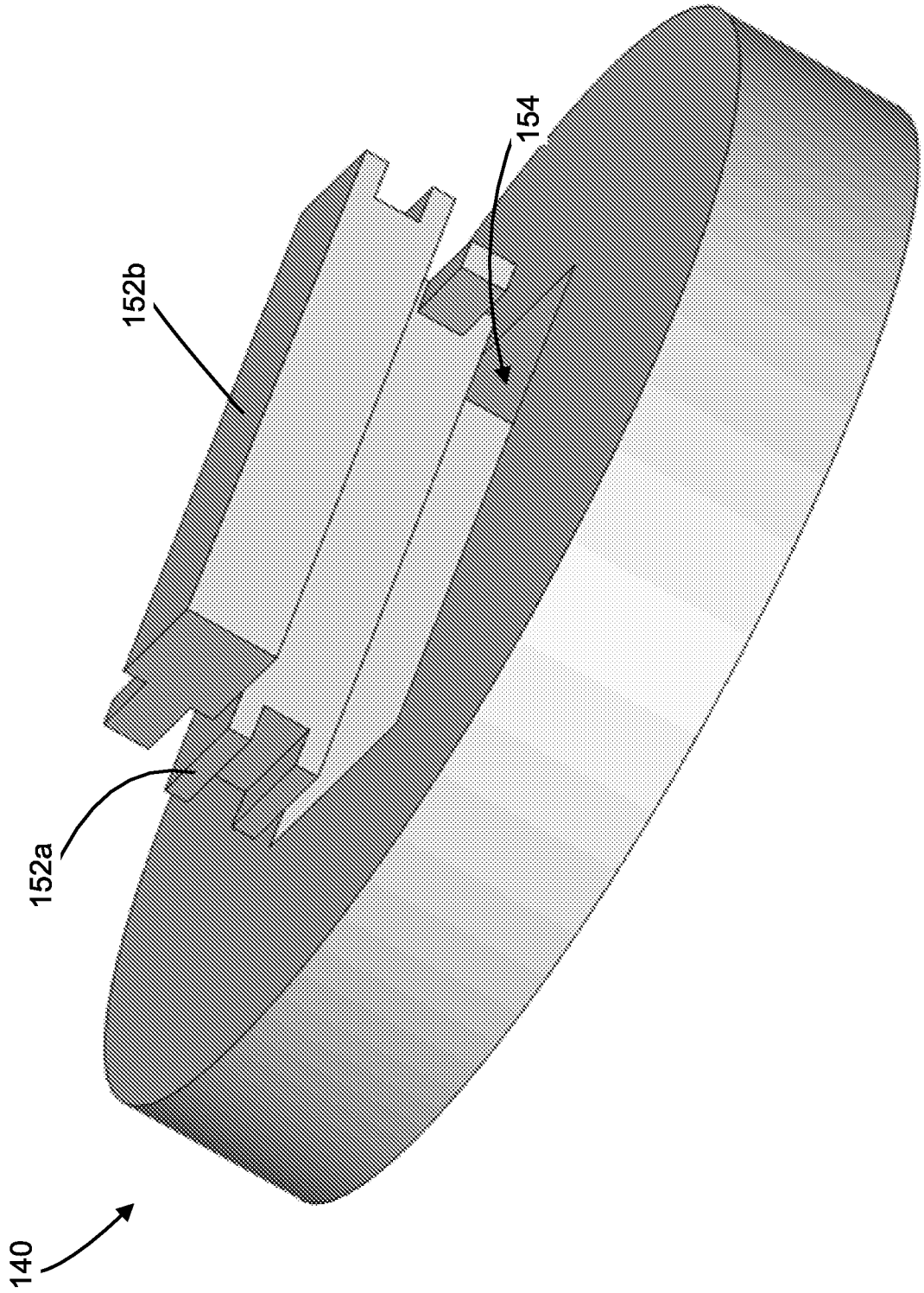

FIG. 4

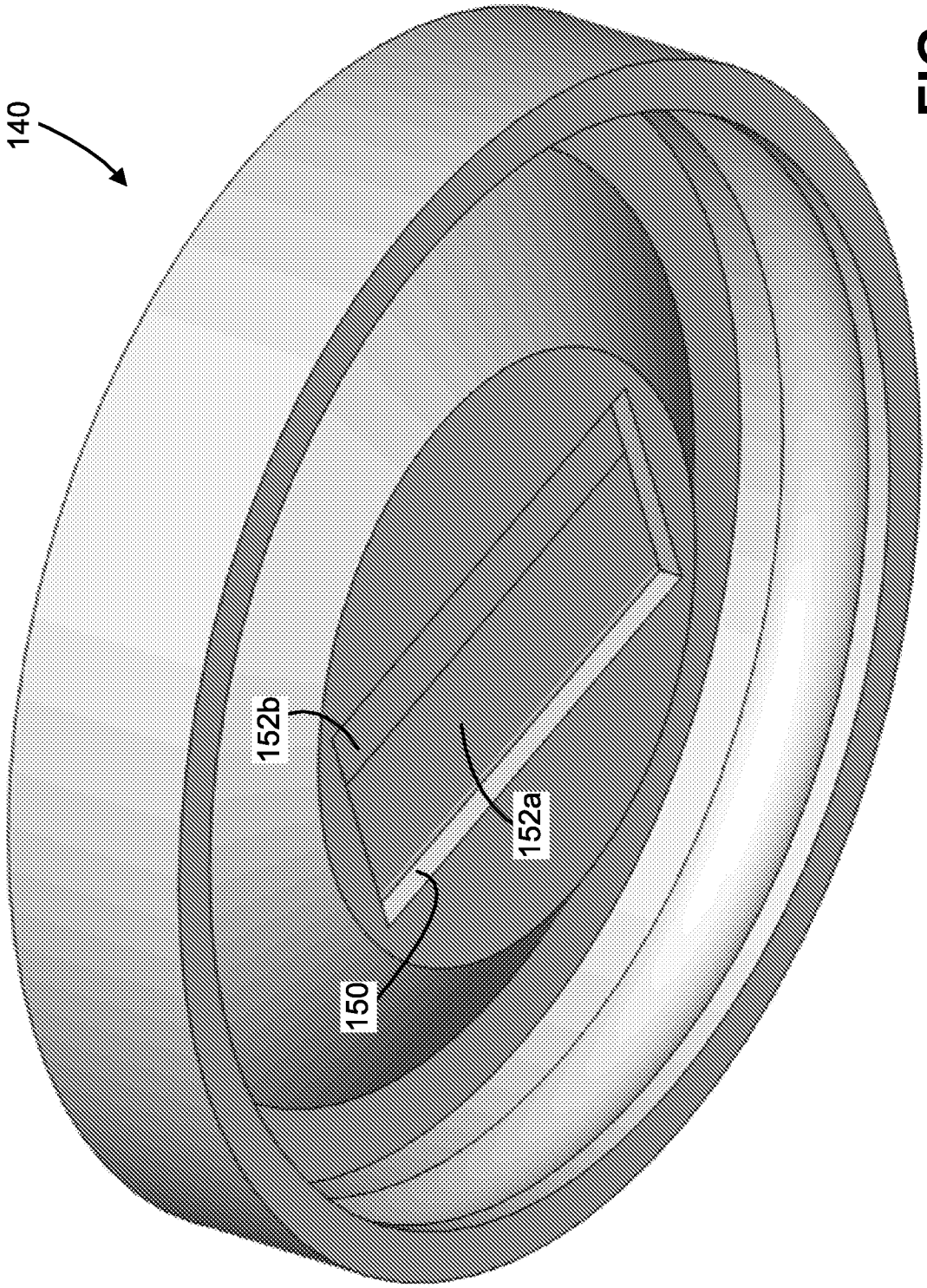

FIG. 5

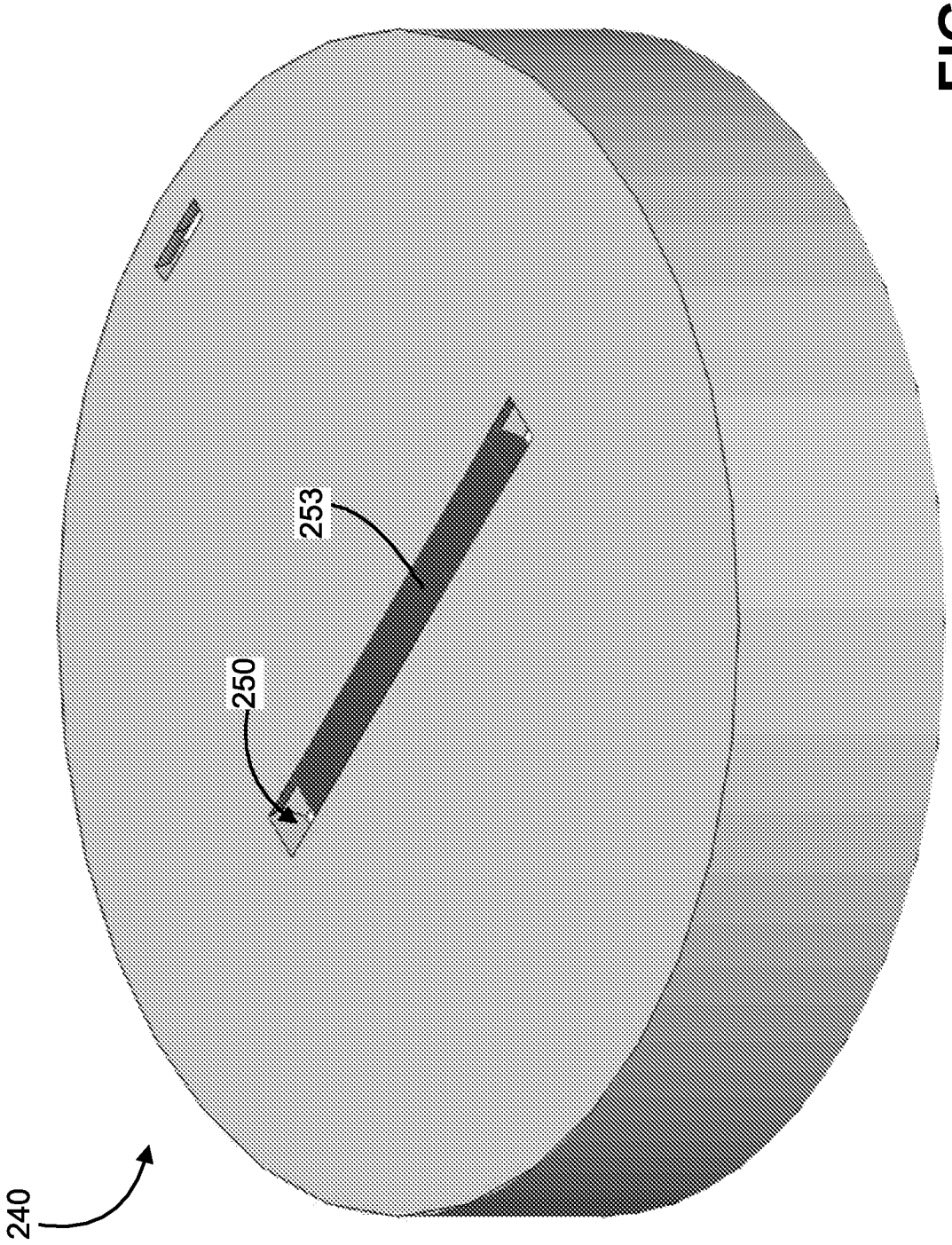

FIG. 6

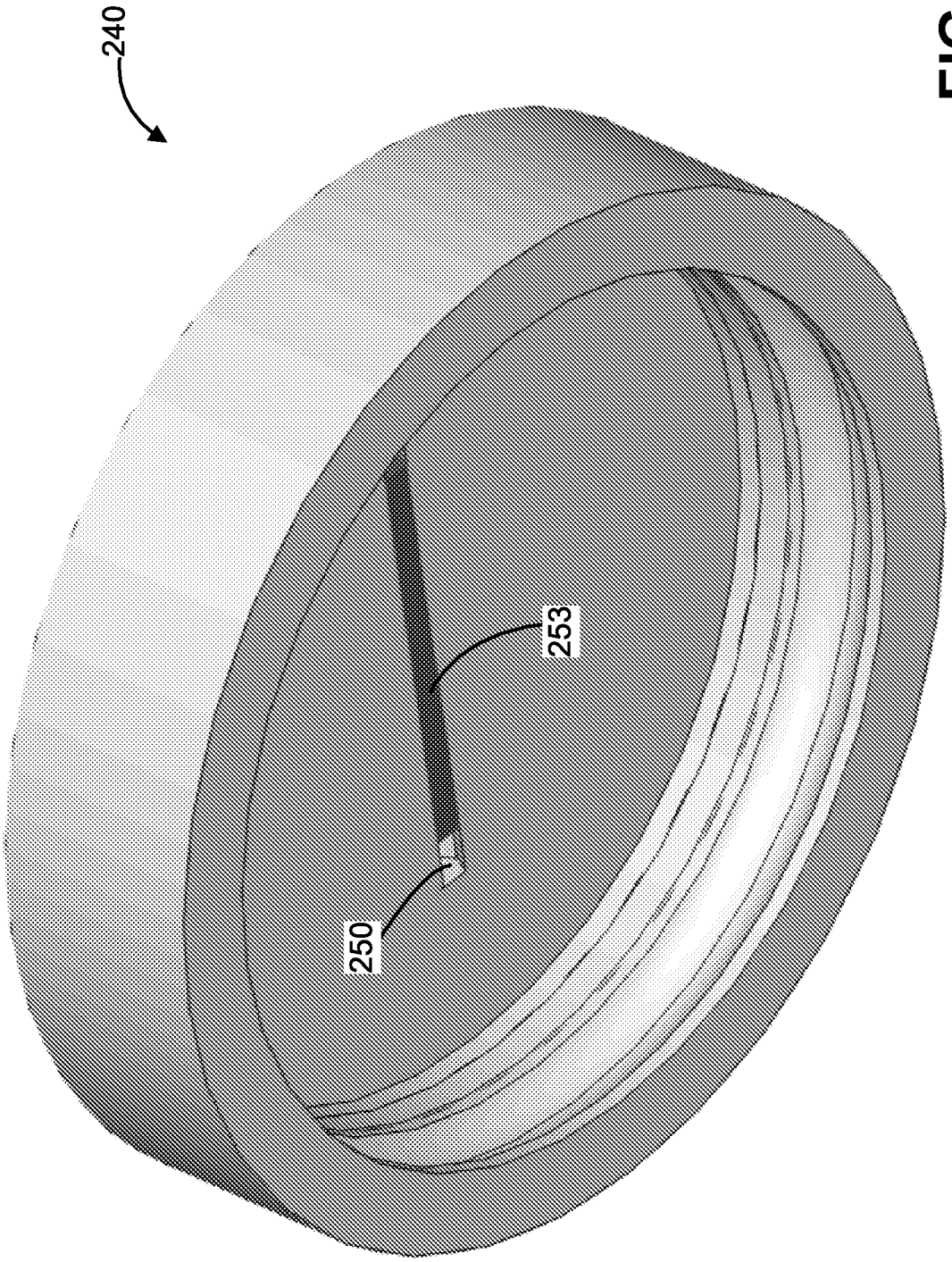

FIG. 7

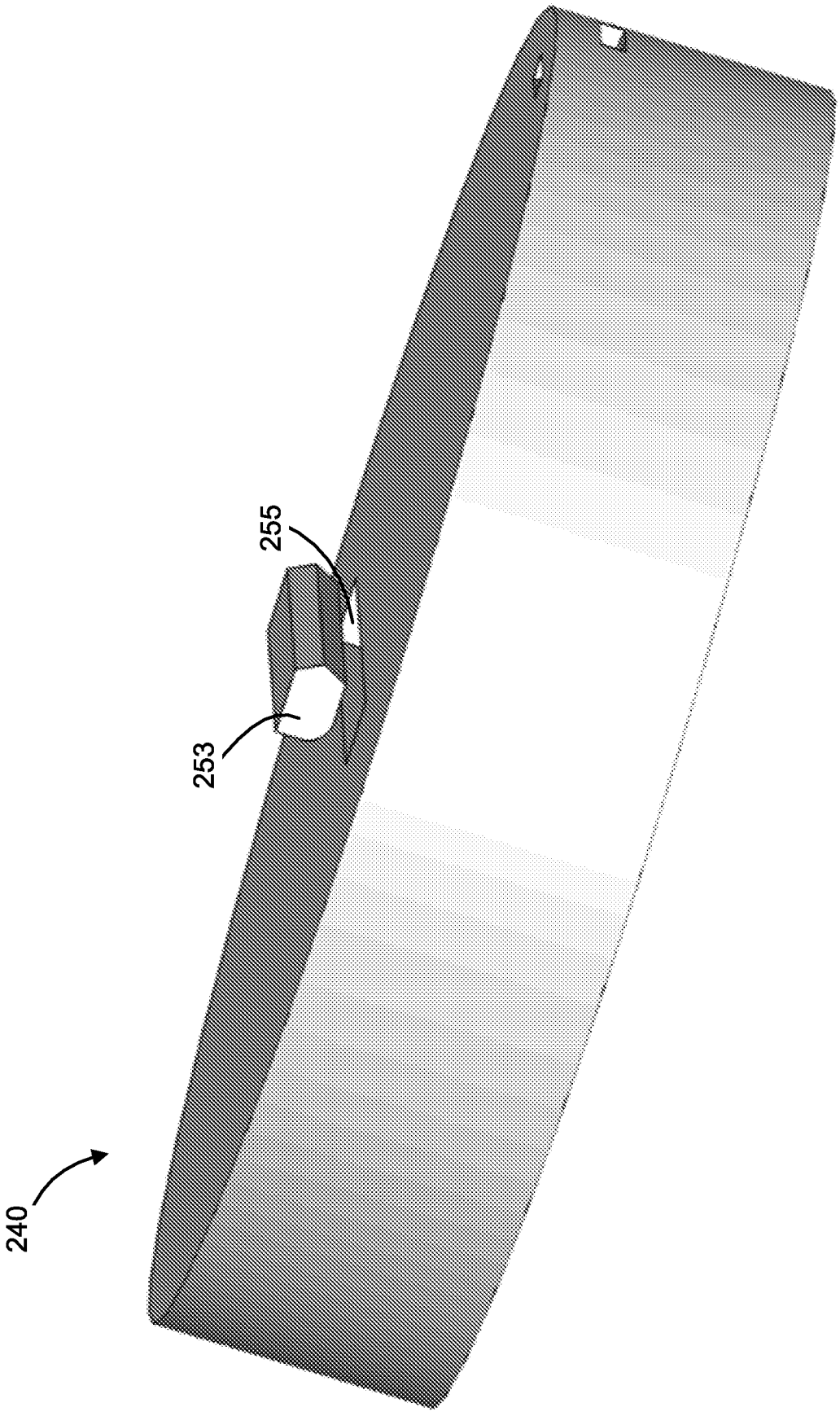

FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2018/022215

A. CLASSIFICATION OF SUBJECT MATTER

B65D 51/28(2006.01)i, B65D 81/32(2006.01)i, B65D 41/04(2006.01)i, B65D 85/72(2006.01)i, B65B 29/10(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65D 51/28; B65D 41/34; B65D 47/36; B65D 47/06; B65D 41/32; B65D 49/12; B65D 51/24; B65D 81/32; B65D 41/04; B65D 85/72; B65B 29/10

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords:container, blend, sealing, tether and different ingredient

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KR 10-2001-0076431 A (CHO, GI WON) 16 August 2001 See page 2, lines 6-35 and figures 1-3.	1-20
Y	US 2014-0326725 A1 (CLARKSON, ARON JOSEPH) 06 November 2014 See paragraphs [0072]-[0078] and figures 14-16.	1-20
A	JP 2008-529919 A (WU KUO CHENG et al.) 07 August 2008 See paragraphs [0006]-[0008] and figures 1-4.	1-20
A	JP 2011-016581 A (SHINOBE, MASAHARU et al.) 27 January 2011 See paragraphs [0078]-[0099] and figures 1-7.	1-20
A	JP 5248614 B2 (FRESH K.K.) 31 July 2013 See paragraphs [0023]-[0095] and figures 1-10.	1-20

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
02 July 2018 (02.07.2018)	**02 July 2018 (02.07.2018)**

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/US2018/022215

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