(19) Europäisches Patentamt
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(11) **EP 4 509 017 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
19.02.2025 Bulletin 2025/08

(21) Application number: **23192036.4**

(22) Date of filing: **17.08.2023**

(51) International Patent Classification (IPC):
A47C 3/029 *(2006.01)* ***A47C 3/04*** *(2006.01)*
A47C 3/16 *(2006.01)* ***A47C 5/12*** *(2006.01)*
A47C 9/00 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
A47C 3/04; A47C 3/029; A47C 3/16; A47C 5/12; A47C 9/002

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

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(54) **STACKABLE ACTIVE SITTING CHAIR**

(57) An active sitting chair is provided that encourages a sitter/user to sit actively by requiring balance adjustments and core engagement. The active sitting chair can be efficiently produced while being relatively sturdy and lightweight. The main body may be a monocoque shell that includes a rounded lower portion that contacts the surface the chair is on and promotes wobble of the chair when a sitter is seated on the chair. The chair may also include built-in handles for ease of lifting and a seat portion at the top of the chair that may include a cushion or similar component for increasing the stability and/or comfort of a sitter. The chair may also include a plurality of counterpart bosses and divots on opposing sides to facilitate stable stacking of the cylindrical active chairs.

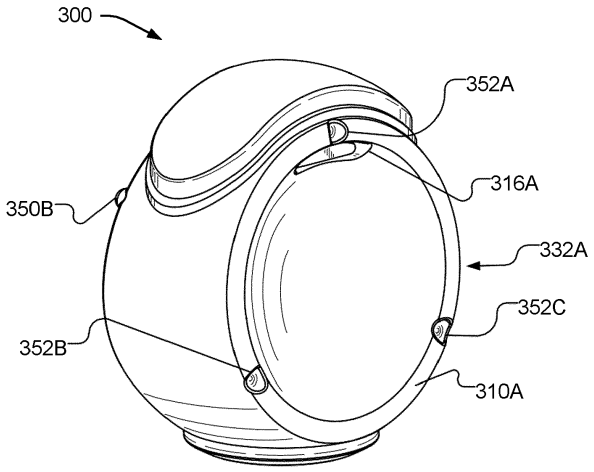

FIG. 14

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to seating devices. In particular, the present invention provides a stackable ergonomic seat for promoting active sitting.

BACKGROUND

[0002] Human bodies are built to move and generally require constant activity to remain supple and healthy. Unfortunately, modem life involves a good deal of sitting; indeed, many professions require many hours of simply sitting, which is an unnatural demand on the human bodies-so unnatural that children instinctively rebel against it.

[0003] Sitting, and especially sitting still, aligns human bodies oddly, and denies joints the constant small adjustments that help to circulate the joint fluid which helps nourish the delicate cartilage lining of the joints. Additionally, sitting still denies core muscles the exercise involved in aligning and realigning our spines, exercise vital to keeping our core musculature strong and responsive. Moreover, extended and repetitive sitting has been linked to other health maladies. Indeed, the mismatch between our 21st-century built environment and our hunter-gatherer-optimized bodies has led to a variety of serious health problems: obesity, diabetes, heart disease, and even cancer, a litany of acquired diseases that can culminate in early death. These effects are not subtle-with a 50% increase in cancer risk among those who sat the most. Perhaps more importantly, simply reducing sitting could increase our lifespans by as much as two years.

[0004] One potential solution to these health issues may be the use of active chairs, which are designed to cause users to sit actively and thus may allow for the recapture of the healthy blood chemistry of our hunter-gatherer forebears. These chairs allow for movement while sitting, and so allow users to sit all day as their modern lives require without suffering the harm brought on by sitting inertly. An example of one such an active chair is described in commonly owned U.S. Pat. No. 10,010,758. However, no single active chair is appropriate for all individuals or all situations, thus there is a need for active chairs provide for other types of motion and/or are appropriate for different users/situations.

SUMMARY OF THE DISCLOSURE

[0005] An active sitting chair includes a monocoque shell having a bottom, a top, a front member, a back member, a first side member, a second side member opposite the first side member, a plurality of bosses on a first rim of the first side member, and a plurality of divots on a second rim of the second side member, wherein the front member connects and curves outwardly between the bottom and the top, wherein the back member connects and curves outwardly between the bottom and the top, wherein the first side member is connected to the bottom and the top, is connected to the front member and the back member, and curves inwardly between the bottom and the top, wherein the second side member is connected to the bottom and the top, is connected to the front member and the back member, and curves inwardly between the bottom and the top, and wherein each of the plurality of divots are configured to receive a respective one of each of the plurality of bosses when a pair of active sitting chairs are stacked with the first side member of one chair facing the second side member of another chair; a seat on the top; and a rounded lower portion attached to the bottom and arranged to rest on a supporting surface.

[0006] A stackable active sitting chair includes a hollow, uninterrupted monocoque shell having a ring-shaped outer portion forming a continuous surface having a bottom portion, a top portion, a front portion, a rear portion, a first side edge having a first rim with a plurality of bosses, and a second side edge opposite the first side edge and having a second rim with plurality of divots. A first side portion is connected to the first side edge, wherein the first side portion curves inwardly from the first side edge. A second side portion is connected to the second side edge, wherein the second side portion curves inwardly from the second side edge. A rounded lower portion is attached to the bottom portion and arranged to rest on a supporting surface, wherein each of the plurality of divots are configured to receive a respective one of each of the plurality of bosses when a pair of active sitting chairs are stacked with the first side edge of one chair facing the second side edge of another chair.

[0007] A method for stacking active sitting chairs includes placing a first chair on a surface and stacking a second chair on the first chair. The first chair and the second chair each include a cylindrical shape and have a top portion, a bottom portion, a first side portion including a plurality of bosses, and a second side portion opposite the first side portion, wherein the second side portion includes a plurality of divots. The first chair and the second chair are aligned such that the first side portion of the first chair faces the surface and the first side portion of the second chair rests on the second side portion of the first chair such that each of the plurality of divots on the second side portion of the first chair engage with respective ones of each of the plurality of bosses on the first side portion of the second chair.

[0008] A method for stacking active sitting chairs is provided that includes placing a first chair on a first side, wherein the first chair includes a monocoque shell having a bottom, a top, a front member, a back member, a second side opposite the first side, a plurality of divots on a first rim of the first side, and a plurality of bosses on a second rim of the second side, wherein the front member connects and curves outwardly between the bottom and the top, wherein the back member connects and curves

outwardly between the bottom and the top, wherein the first side is connected to the bottom and the top, is connected to the front member and the back member, and curves inwardly between the bottom and the top, wherein the second side is connected to the bottom and the top, is connected to the front member and the back member, and curves inwardly between the bottom and the top, wherein the top includes a seat and the bottom includes a rounded portion configured to induce rocking when the first chair is in an upright position. A second chair is placed upon the first chair such that a first side of the second chair faces the second side of the first chair, wherein the second chair includes a monocoque shell having a bottom, a top, a front member, a back member, a second side opposite the first side, a plurality of divots on a first rim of the first side, and a plurality of bosses on a second rim of the second side, wherein the front member connects and curves outwardly between the bottom and the top, wherein the back member connects and curves outwardly between the bottom and the top, wherein the first side is connected to the bottom and the top, is connected to the front member and the back member, and curves inwardly between the bottom and the top, wherein the second side is connected to the bottom and the top, is connected to the front member and the back member, and curves inwardly between the bottom and the top, wherein the top includes a seat and the bottom includes a rounded portion configured to induce rocking when the first chair is in an upright position, such that the plurality of bosses on the second rim of the second side of the first chair engages with the plurality of divots on the first rim of the first side of the second chair. When stacked, the plurality of bosses on the second rim of the second side of the first chair and the plurality of divots on the first rim of the first side of the second chair are arranged around the respective second rim of the second side of the first chair and the first rim of the first side of the second chair such that the top of the first chair is aligned with the bottom of the second chair.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] For the purpose of illustrating the invention, the drawings show aspects of one or more embodiments of the invention. However, it should be understood that the present invention is not limited to the precise arrangements and instrumentalities shown in the drawings, wherein:

FIG. 1 is a perspective view of an active sitting chair in accordance with an embodiment of the present invention;

FIG. 2 is a front view of the chair of FIG. 1;

FIG. 3 is a side view of the chair of FIG. 1;

FIG. 4 is a cross section view of the chair of FIG. 3;

FIG. 5 is a top view of the chair of FIG. 1;

FIG. 6 is a bottom of the chair of FIG. 1;

FIG. 7 is a perspective view of an active sitting chair in accordance with another embodiment of the present invention;

FIG. 8 is a front view of the chair of FIG. 7;

FIG. 9 is a side view of the chair of FIG. 7;

FIG. 10 is a cross section view of the chair of FIG. 9;

FIG. 11 is a top view of the chair of FIG. 7;

FIG. 12 is a bottom of the chair of FIG. 7;

FIG. 13 is a side perspective view of an active sitting chair with stacking bosses and divots in accordance with another embodiment of the present invention;

FIG. 14 is another side perspective view of the chair of FIG. 13;

FIG. 15 is a side view of the chair of FIG. 13;

FIG. 16 is a cross section view of the chair of FIG. 15;

FIGS. 17A-17B are perspective views of a plurality of chairs stacked in accordance with an embodiment of the present invention; and

FIGS. 18A-18B are cross section views of chairs stacked in accordance with an embodiment of the invention.

DESCRIPTION OF THE DISCLOSURE

[0010] An active sitting chair is provided that encourages a sitter/user to sit actively by requiring balance adjustments and core engagement while sitting on the chair. The chair can be efficiently produced while being relatively sturdy and lightweight. The main body may be a monocoque shell that includes a rounded lower portion that contacts a supporting surface the chair is on and promotes wobbling of the chair when in use. The chair may also include built-in handles for ease of lifting/relocating and a seat portion at the top of the chair that may include a cushion or similar component for increasing the stability and/or comfort of a sitter.

[0011] A ring or other similar structure may be included above the rounded lower portion to limit the extent of wobble to prevent the chair from tipping over. The monocoque structure provides structural integrity to support the weight of sitters while also allowing the chair to be hollow, which allows for the chair to be made efficiently and be relatively lightweight. Further, in a preferred em-

bodiment, the front and rear portions connecting the rounded lower portion to the seat portion are convex and the side portions are concave. The concave shapes of the side portions provide additional structural integrity for supporting the weight of a sitter since the arch-like profile created is less likely to buckle. In another preferred embodiment, the profile of the chair when viewed from the front or back tapers such that the chair is narrower toward the top.

[0012] Turning to the figures, an embodiment is shown in FIGS. 1-6 of an active sitting chair 100 that includes a hollow, single outer monocoque shell 104, a seat potion 108, a cushion 112 on seat portion 108, a front portion 120A, a back portion 120B, a ring 124, a rounded lower portion 128, a first side portion 132A, and a second side portion 132B. A first indentation 116A that is sized and configured to serve as a handle may be included on front portion 120A and a second indentation 116B that is sized and configured to serve as a handle may be included on back portion 120B. Chair 100 is preferably hollow, with the design and shape of monocoque shell 104 providing the structural integrity necessary to support a sitter.

[0013] Rounded lower portion 128 (as best seen in FIGS. 2, 3, and 6) rests on a supporting surface, such as a floor, when chair 100 is in use and is shaped and configured to promote wobbling motion when a sitter is sitting on chair 100. Ring 124 (as can be seen in FIGS. 2-3) is positioned above rounded lower portion 128 in order to limit the range of tilt otherwise allowed by rounded lower portion 128 to avoid chair 100 tipping over. Each of front portion 120A and back portion 120B extends from rounded lower portion 128 up to seat portion 108 and are preferably convex, as can be seen in FIG. 3, in that they curve away from the center of chair 100 at the middle before curving back toward seat portion 108.

[0014] Preferably, and as shown in FIG. 4, first side portion 132A and second side portion 132B are concave with respect to a vertical axis 102 of chair 100, bending inward between connections at a lower part with rounded lower portion 128 and at an upper part with seat portion 108. The concave profiles of first side portion 132A and second side portion 132B are less likely to buckle than straight sides and allow chair 100 to be hollow and shell 104 to be relatively thin while still supporting a sitter.

[0015] The inward curving portions of the side members may be such that in a preferred embodiment a portion of each of the side members extends more than halfway to a vertical centerline 103 of the shell at least at the most extended portion as shown in FIG. 4.

[0016] Shell 104 may be made of any suitable material, such as acrylonitrile butadiene styrene, and for use as an active chair may have a thickness of from about 0.32 cm to 1.27 cm, and preferably about 0.64 cm

[0017] In another embodiment, as shown for example in FIGS. 7-12, an active sitting chair 200 includes a hollow, single outer monocoque shell 204 including a ring-shaped portion 206 having a seat area 208, a front portion 230A, and a back portion 230B, a ring 224, a rounded lower portion 228, a first side portion 232A, and a second side portion 232B. Ring shaped portion 206 includes a rim or edge 210 on each side (e.g., 210A, 210B) to which first side portion 232A and second side portion 232B are respectively connected. Chair 200 is preferably hollow, with the design and shape of monocoque shell 204 providing the structural integrity necessary to support a sitter.

[0018] Rounded lower portion 228 (as best seen in FIGS. 8, 9, and 12) rests on a supporting surface, such as a floor, when chair 200 is in use and is shaped and configured to promote wobbling motion when a sitter is sitting on chair 200. Ring 224 (as can be seen in FIGS. 8-9) is positioned above rounded lower portion 228 in order to limit the range of tilt otherwise allowed by rounded lower portion 228 to avoid chair 200 tipping over. Each of front portion 230A and back portion 230B extends from rounded lower portion 228 up to seat portion 208 and are preferably convex, as can be seen in FIG. 9, in that they curve away from the center of chair 200 at the middle before curving back toward seat portion 208.

[0019] As can be seen in FIG. 10, first side portion 232A and second side portion 232B are preferably concave with respect to a vertical axis 202, bending inward between connections at a lower part with rounded lower portion 228 and at an upper part with seat portion 208. The concave profiles of first side portion 232A and second side portion 232B allow chair 200 to be hollow and shell 204 to be relatively thin while still supporting a sitter. Shell 204 may be made of any suitable material, such as acrylonitrile butadiene styrene, and for use as an active chair may have a thickness of from about 0.32 cm to 1.27 cm, and preferably about 0.64 cm.

[0020] Chair 200 may preferably have a tapered profile from bottom to top, as can best be seen in FIGS. 8 and 11, in which when viewed from the front or back, the width of chair 200 is wider at the bottom than at the top.

[0021] The inward curving portions of the side members may be such that in a preferred embodiment a portion of each of the side members extends more than halfway to a vertical centerline 203 of the shell at least at the most extended portion as shown in FIG. 10.

[0022] In another embodiment, as shown for example in FIGS. 13-18, an active sitting chair 300 includes a hollow, single outer monocoque shell 304 including a ring-shaped portion 306 having a seat area 312 on a top portion, a lower ring 324 above a rounded lower portion 328, a first side portion 332A, and a second side portion 332B. Ring shaped portion 306 includes a rim or edge 310 on each side (e.g., 310A, 310B) to which first side portion 332A and second side portion 332B are respectively connected. Chair 300 is preferably hollow, with the design and shape of monocoque shell 304 providing the structural integrity necessary to support a sitter.

[0023] Rounded lower portion 328 rests on a supporting surface, such as a floor, when chair 300 is in use and is shaped and configured to promote wobbling motion

when a sitter is sitting on chair 300. Ring 324 is positioned above rounded lower portion 328 in order to limit the range of tilt otherwise allowed by rounded lower portion 328 to avoid chair 300 tipping over.

[0024] Chair 300 may include the features of either chair 100 or chair 200 as described above, and may further include a plurality of bosses 350 (e.g., 350A-350C) and a plurality of counterpart divots 352 (e.g., 352A-352C). Bosses 350 are preferable spaced around rim or edge 310 (i.e., 310A) with divots 352 spaced around opposing edge 310 (i.e., 310B) such that when a first chair is stacked on a second chair with first side portion 332A of one chair against second side portion 332B of another, bosses 350 align with divots 352 to enable stable and efficient stacking of a plurality of chairs, as shown for example in FIGS. 17A-17B. FIG. 18A is a cross sectional view of three chairs stacked showing engagement of bosses 350 and divots 352 when stacked, with FIG. 18B providing a detail view of such engagement. In this way, the generally round and wobbly chairs can be stably stacked on their sides.

[0025] In a preferred embodiment, as shown in FIGS. 13-17B, the divots and bosses on opposite sides of a given chair are configured to be staggered, i.e., positioned such that in order to align the divots and bosses of stacked chairs, the chairs are oriented oppositely with respect to tops and bottoms. In this way, the top of one chair will be facing the same direction as the bottom of the chair it is stacked together with (as can be seen in FIG. 17A).

[0026] Exemplary embodiments have been disclosed above and illustrated in the accompanying drawings. It will be understood by those skilled in the art that various changes, omissions, and additions may be made to that which is specifically disclosed herein without departing from the spirit and scope of the present invention.

Claims

1. An active sitting chair comprising:

a monocoque shell having a bottom, a top, a front member, a back member, a first side member, a second side member opposite the first side member, a plurality of bosses on a first rim of the first side member, and a plurality of divots on a second rim of the second side member, wherein the front member connects and curves outwardly between the bottom and the top, wherein the back member connects and curves outwardly between the bottom and the top, wherein the first side member is connected to the bottom and the top, is connected to the front member and the back member, and curves inwardly between the bottom and the top, wherein the second side member is connected to the bottom and the top, is connected to the front member and the back member, and curves inwardly between the bottom and the top, and wherein each of the plurality of divots are configured to receive a respective one of each of the plurality of bosses when a pair of active sitting chairs are stacked with the first side member of one chair facing the second side member of another chair;

a seat on the top; and

a rounded lower portion attached to the bottom and arranged to rest on a supporting surface.

2. The active siting chair of claim 1, wherein the rounded lower portion is shaped to induce a tilting motion of the chair about a vertical axis when a user is on the seat and the rounded lower portion is on the supporting surface.

3. The active siting chair of claim 2, further including a ring positioned above the rounded lower portion and configured to limit a range of the tilting motion.

4. The active sitting chair of claim 2, further including a first indentation on the front member and a second indentation on the back member, wherein the first indentation and second indentation are shaped to accommodate a grasp of the user.

5. The active sitting chair of claim 2, wherein the shell is of unitary construction and is hollow.

6. The active sitting chair of claim 5, wherein the shell is less than 1 cm thick.

7. The active sitting chair of claim 5, wherein the front member includes a front member bottom width and a front member top width, wherein the front member bottom width is wider than the front member top width, wherein the back member includes a back member bottom width and a back member top width, and wherein the back member bottom width is wider than the back member top width.

8. The active sitting chair of claim 5, wherein the first side member extends more than halfway to a vertical centerline of the shell.

9. The active siting chair of claim 5, wherein the shell does not include any holes passing from the first side member to the second side member.

10. A method for stacking active sitting chairs comprising:

placing a first chair on a surface;

stacking a second chair on the first chair,

wherein the first chair and the second chair each include a cylindrical shape and have a top por-

tion, a bottom portion, a first side portion including a plurality of bosses, and a second side portion opposite the first side portion, wherein the second side portion includes a plurality of divots; and

aligning the first chair and the second chair such that the first side portion of the first chair faces the surface and the first side portion of the second chair rests on the second side portion of the first chair such that each of the plurality of divots on the second side portion of the first chair engage with respective ones of each of the plurality of bosses on the first side portion of the second chair.

11. The method for stacking active sitting chairs of claim 10, wherein, upon aligning the first chair and the second chair, the top portion of the first chair is aligned with the bottom portion of the second chair.

12. The method for stacking active sitting chairs of claim 10, wherein the first chair and the second chair each include a hollow, uninterrupted monocoque shell, wherein the first side portion curves inwardly, wherein the second side portion curves inwardly, and wherein the first chair and the second chair each include a rounded lower portion attached to the bottom portion configured to induce rocking when in an upright position.

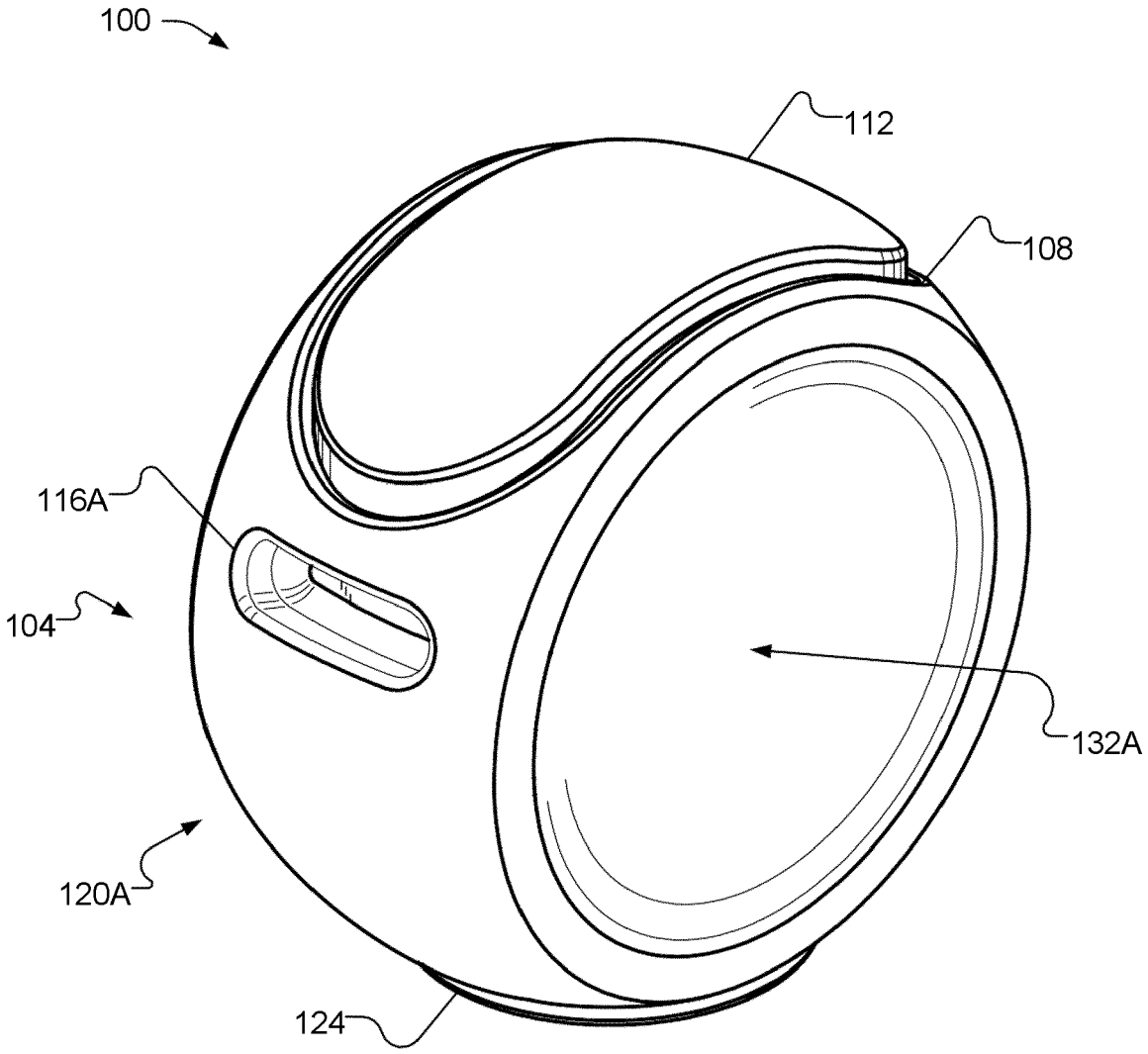

Fig. 1

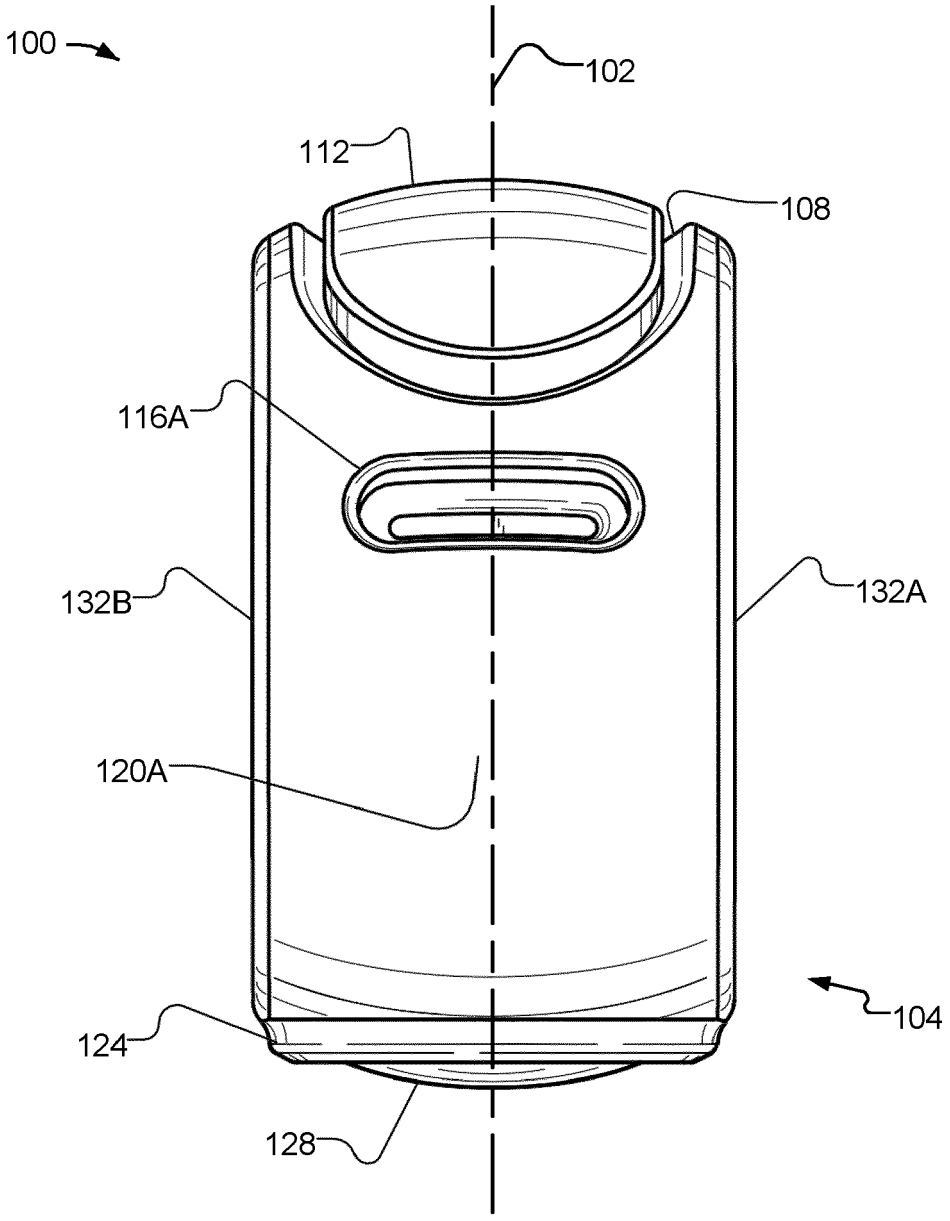

Fig. 2

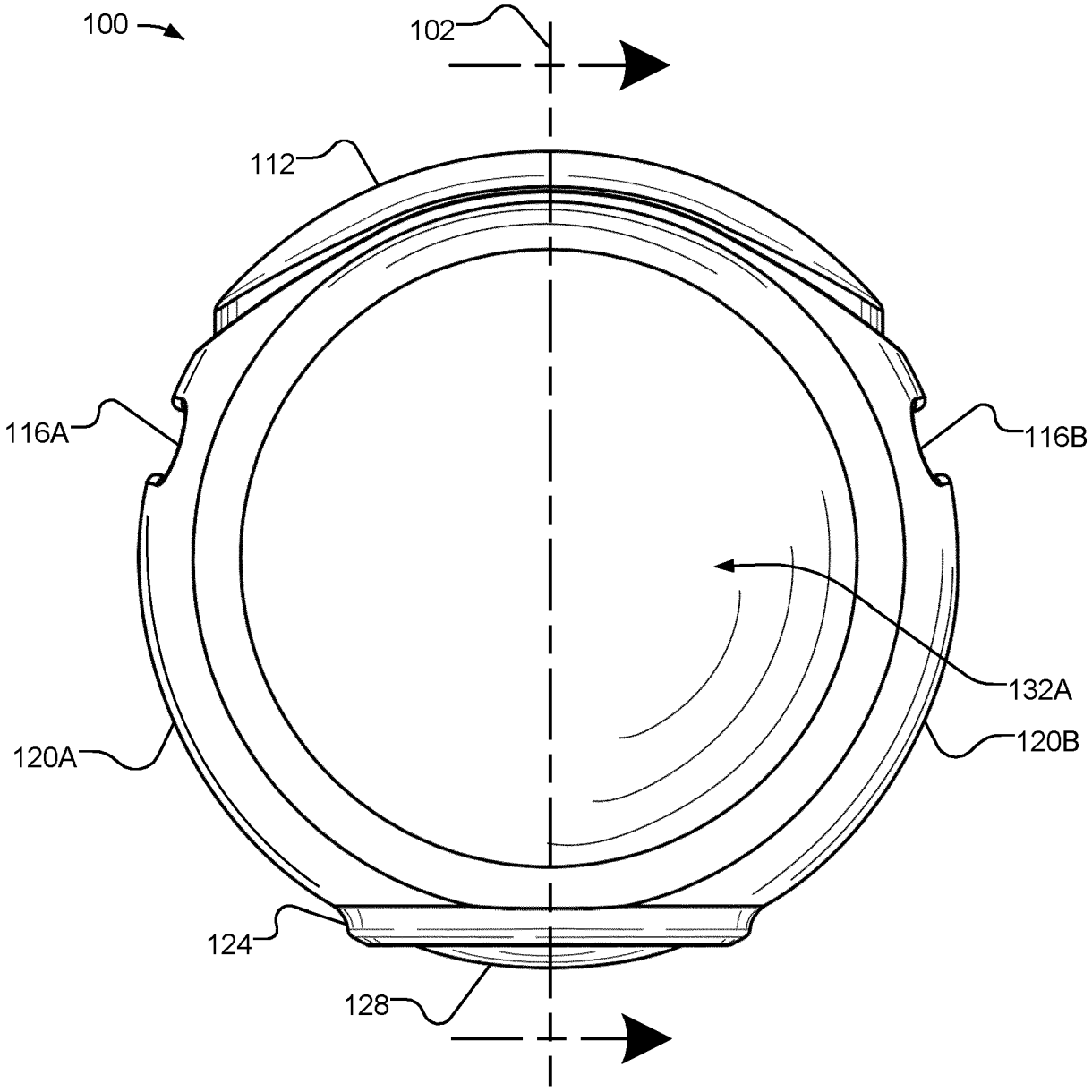

Fig. 3

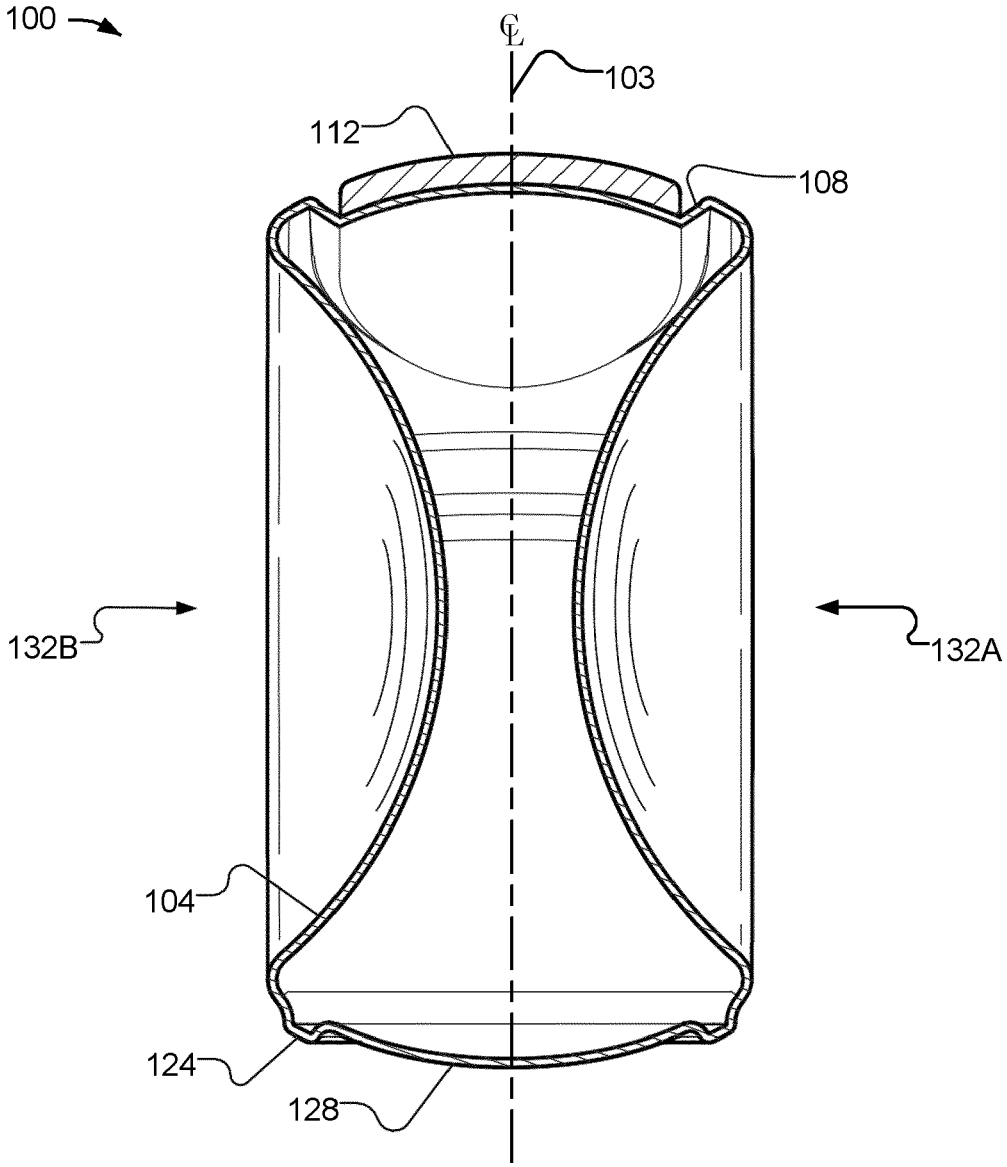

Fig. 4

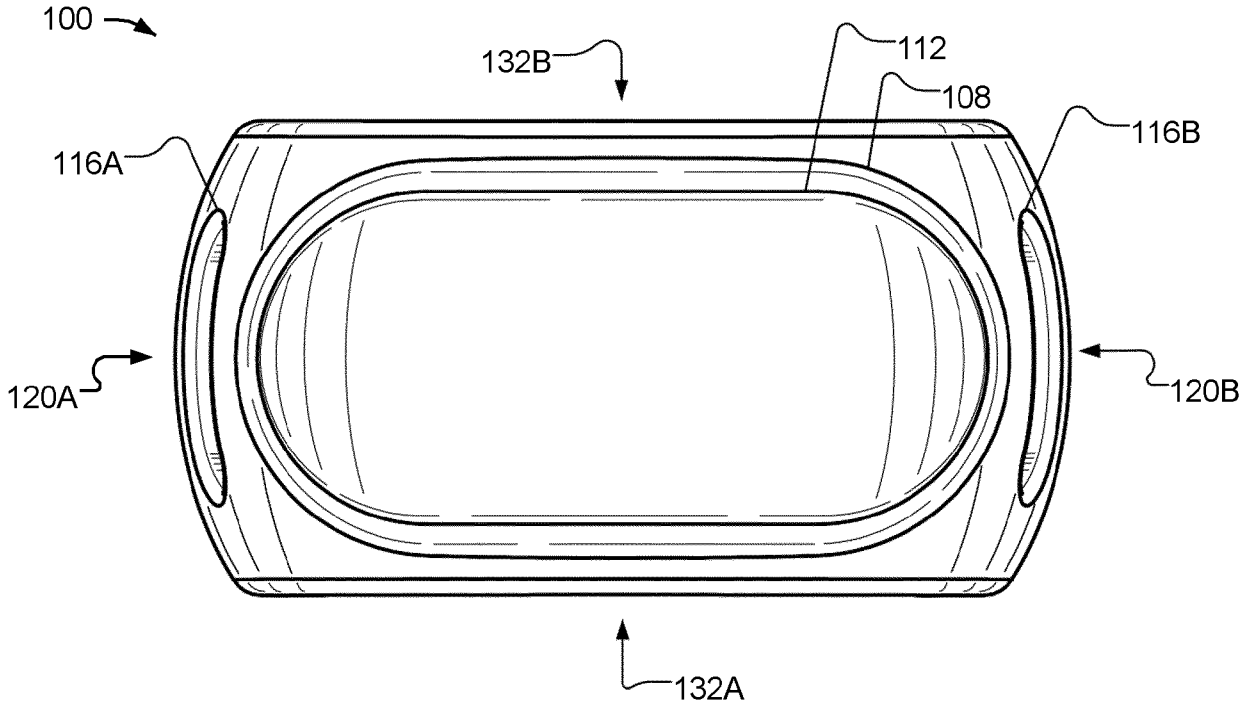

Fig. 5

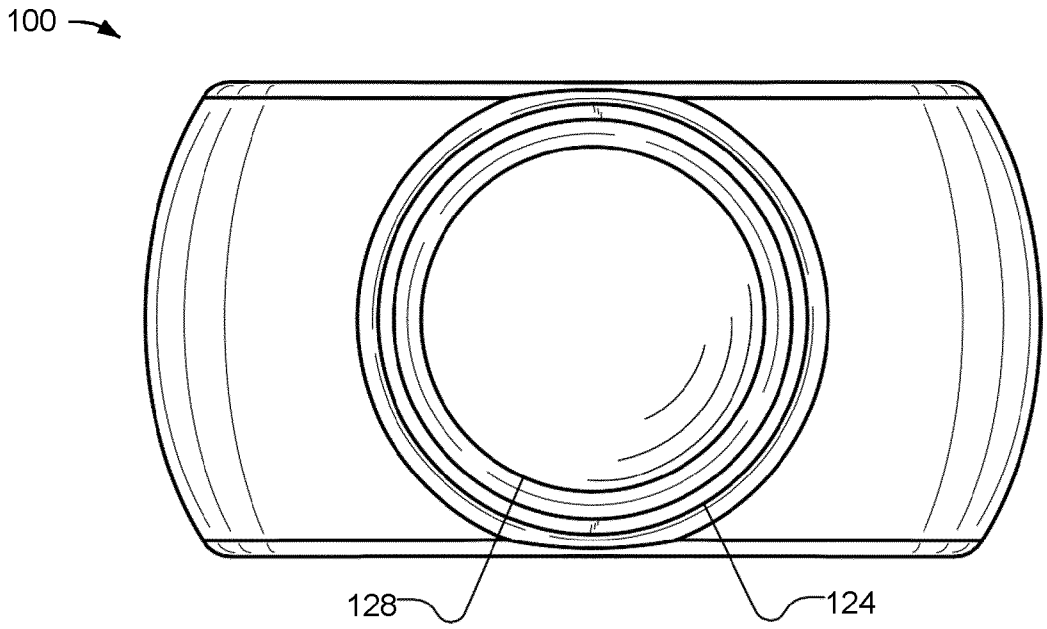

Fig. 6

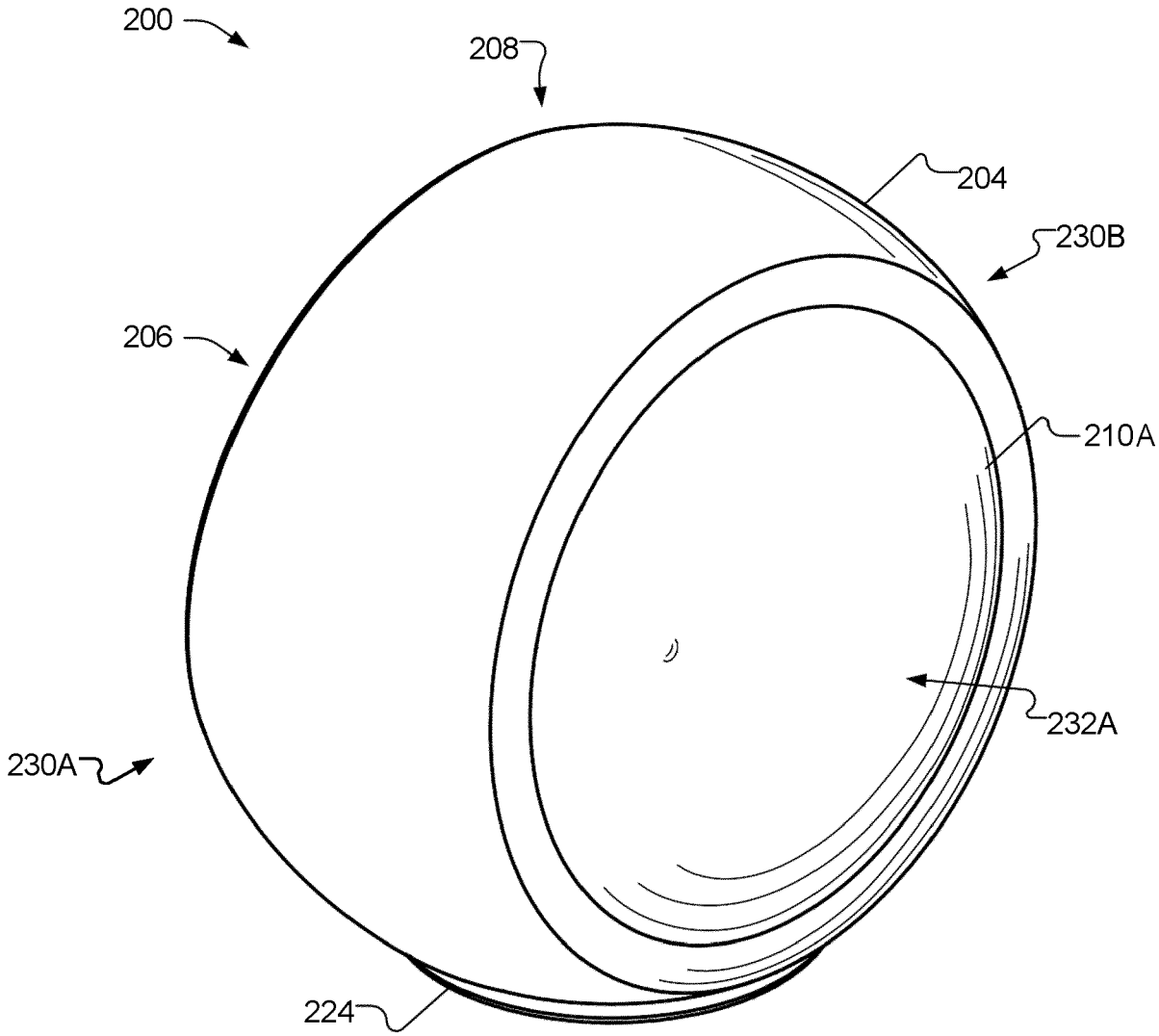

Fig. 7

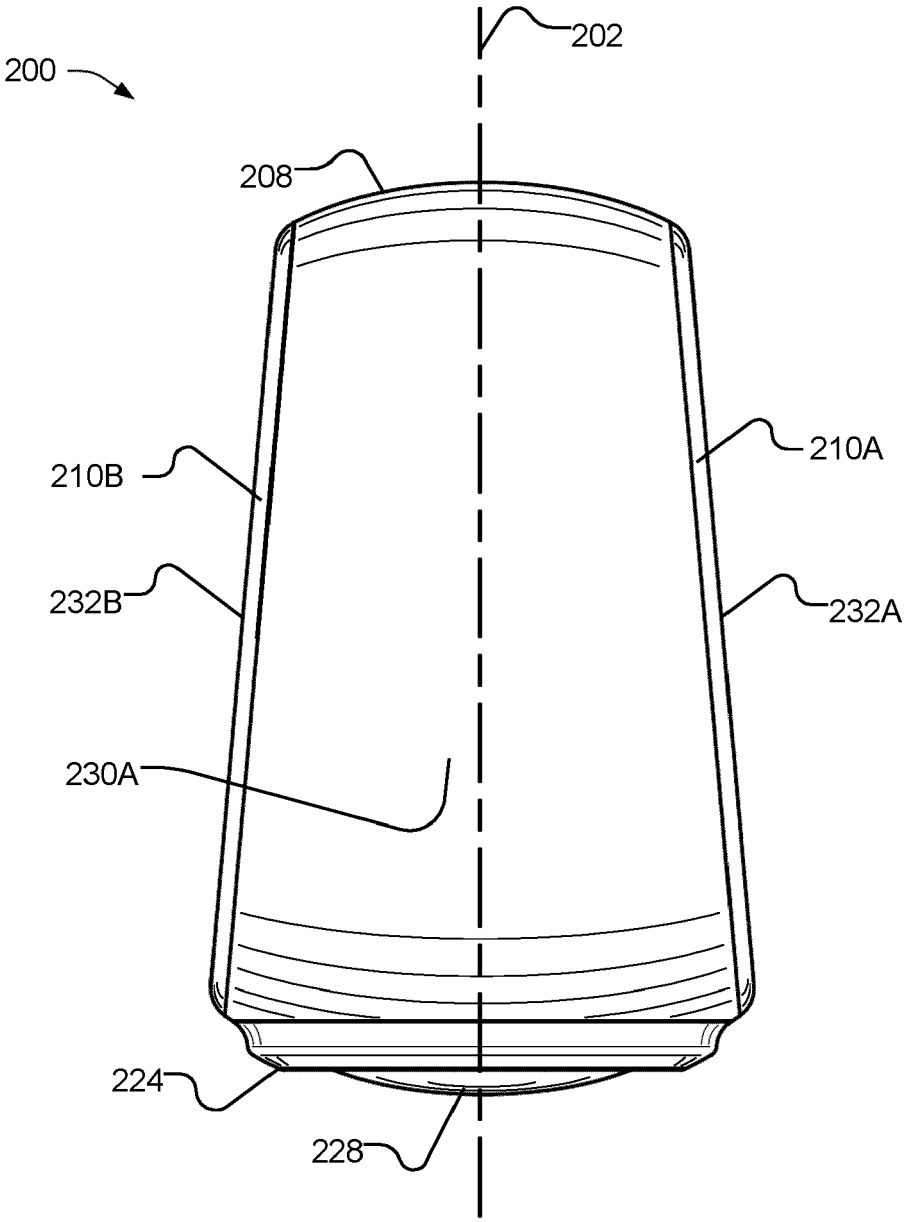

Fig. 8

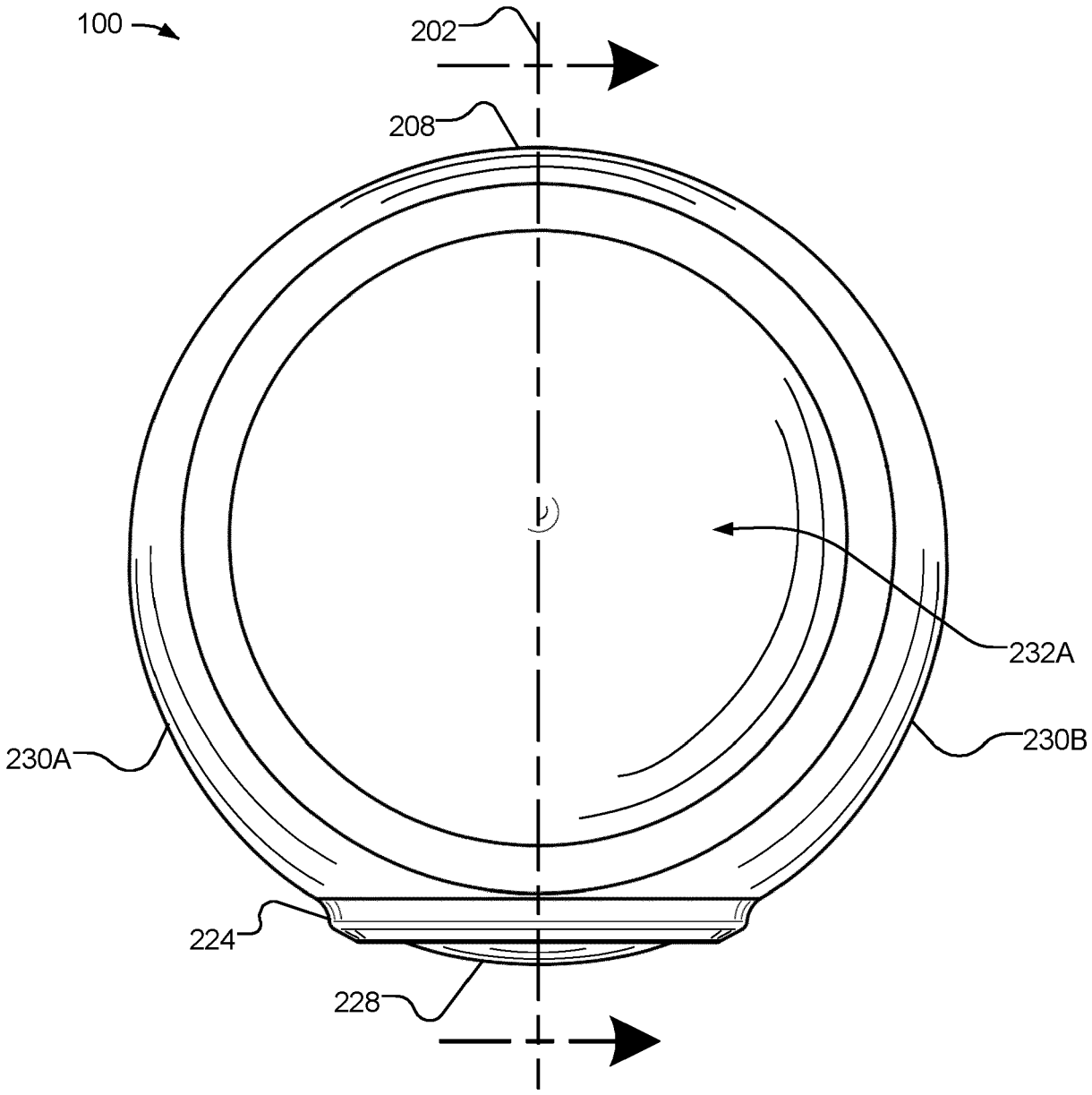

Fig. 9

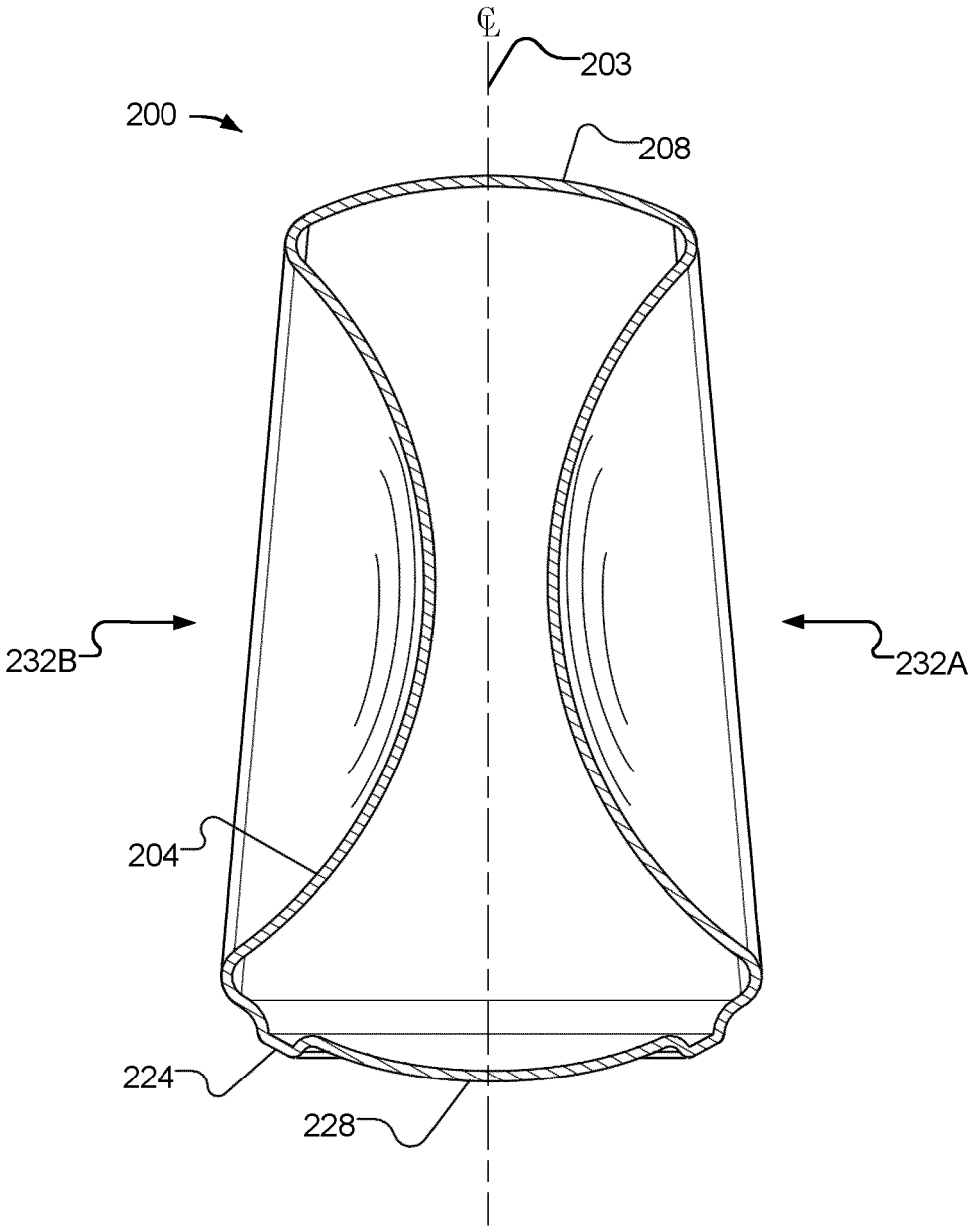

Fig. 10

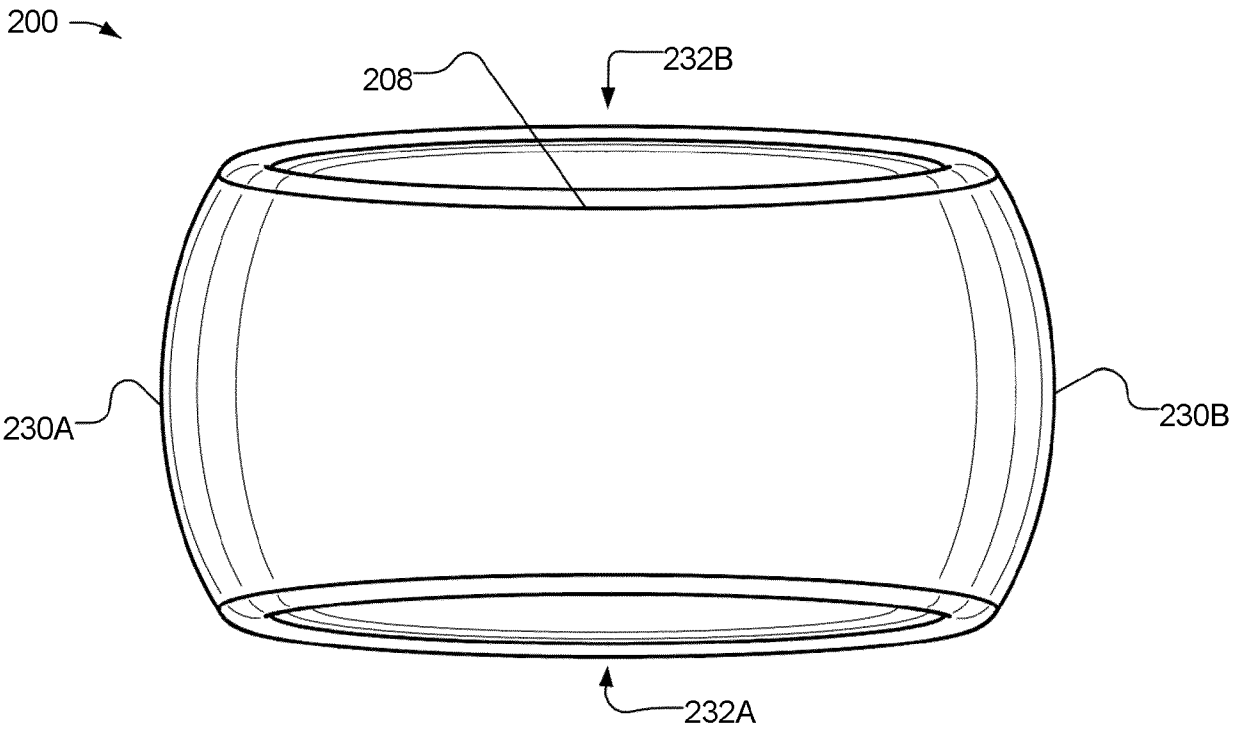

Fig. 11

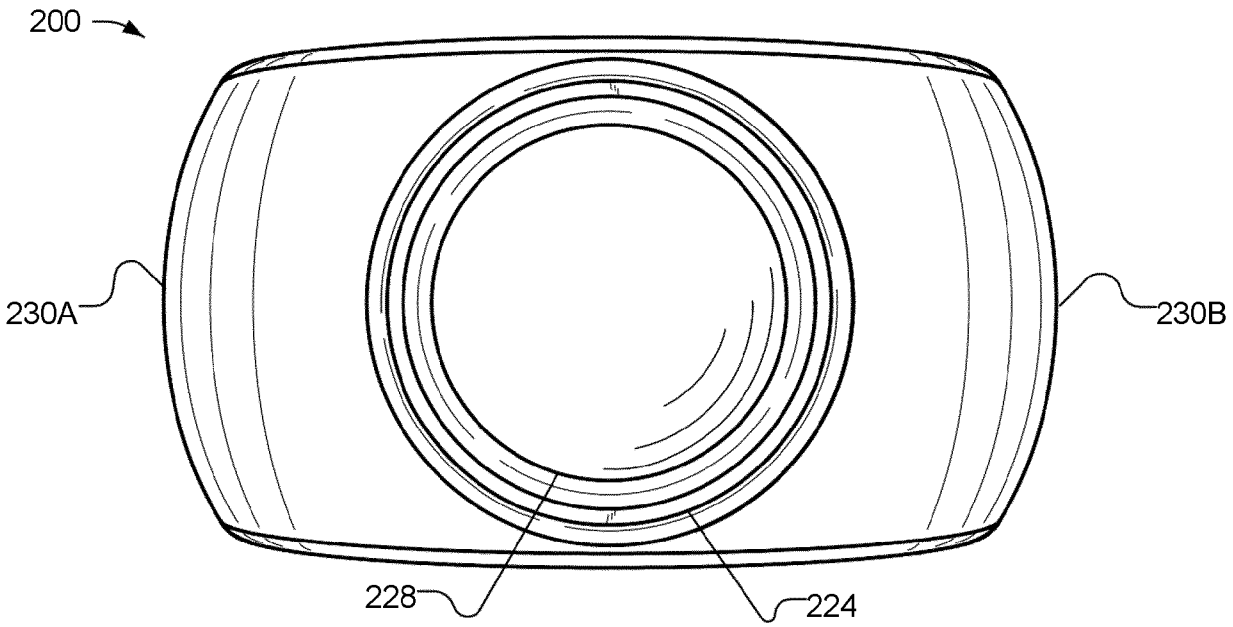

Fig. 12

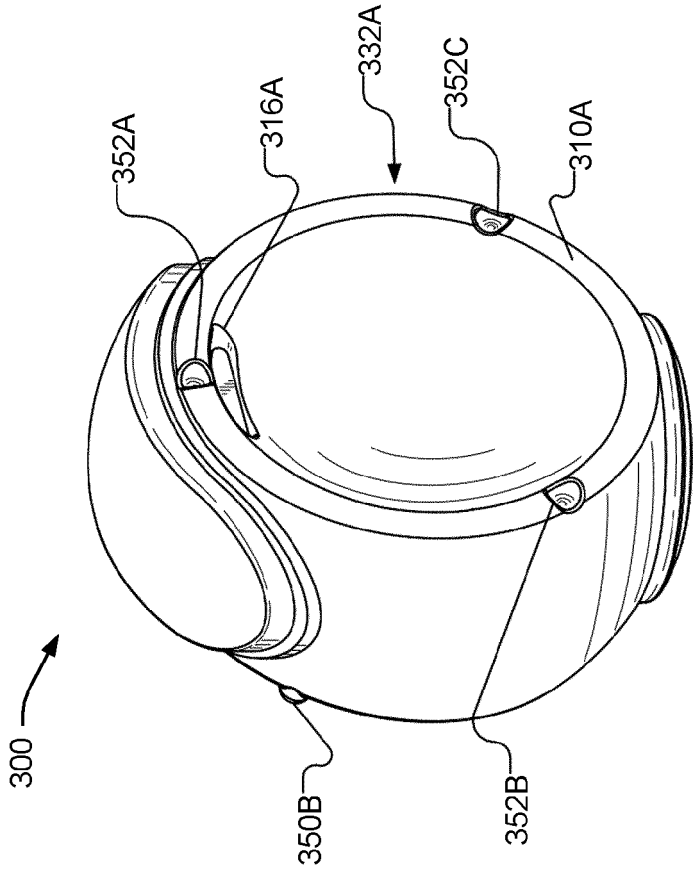
300
352A
316A
332A
352C
310A
350B
352B

FIG. 14

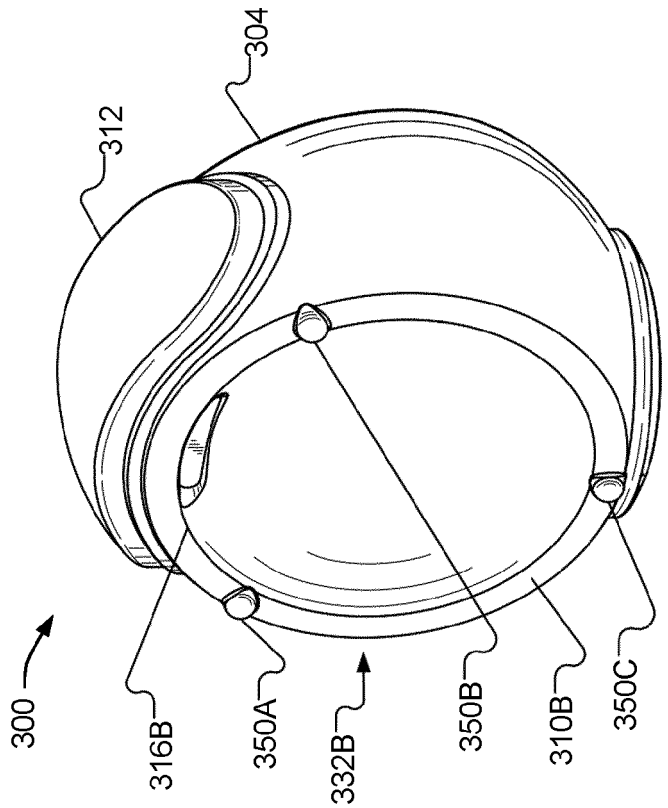
300
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FIG. 13

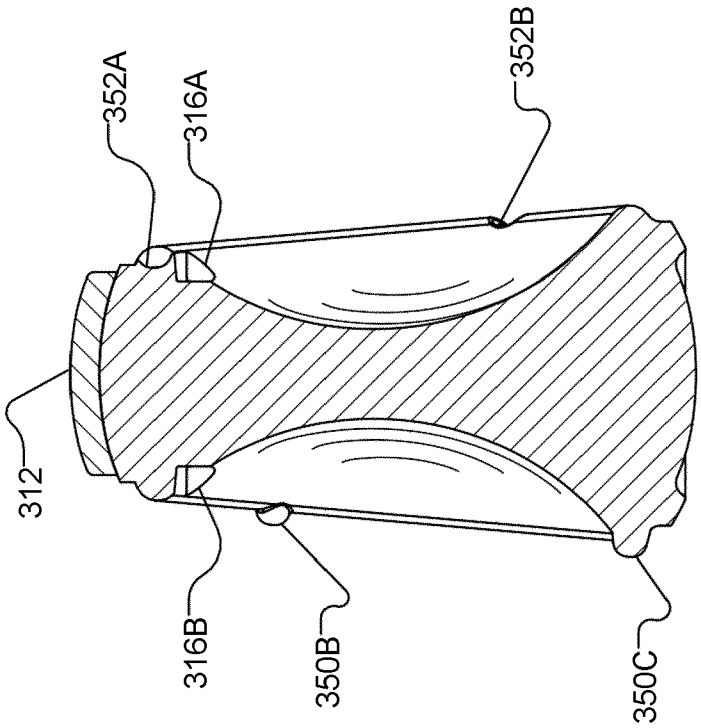

FIG. 16

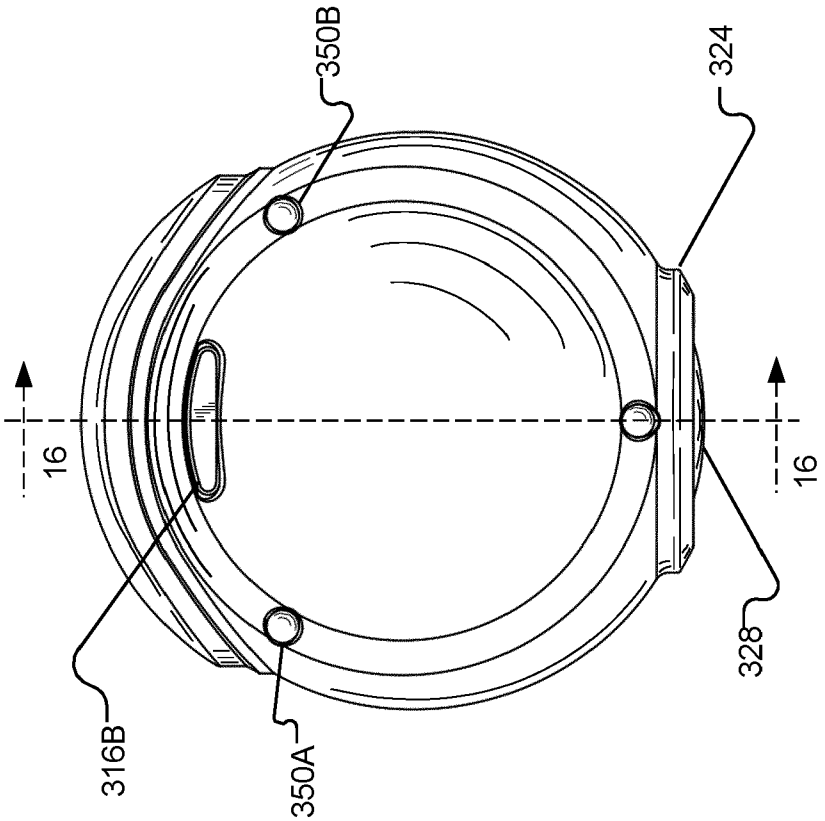

FIG. 15

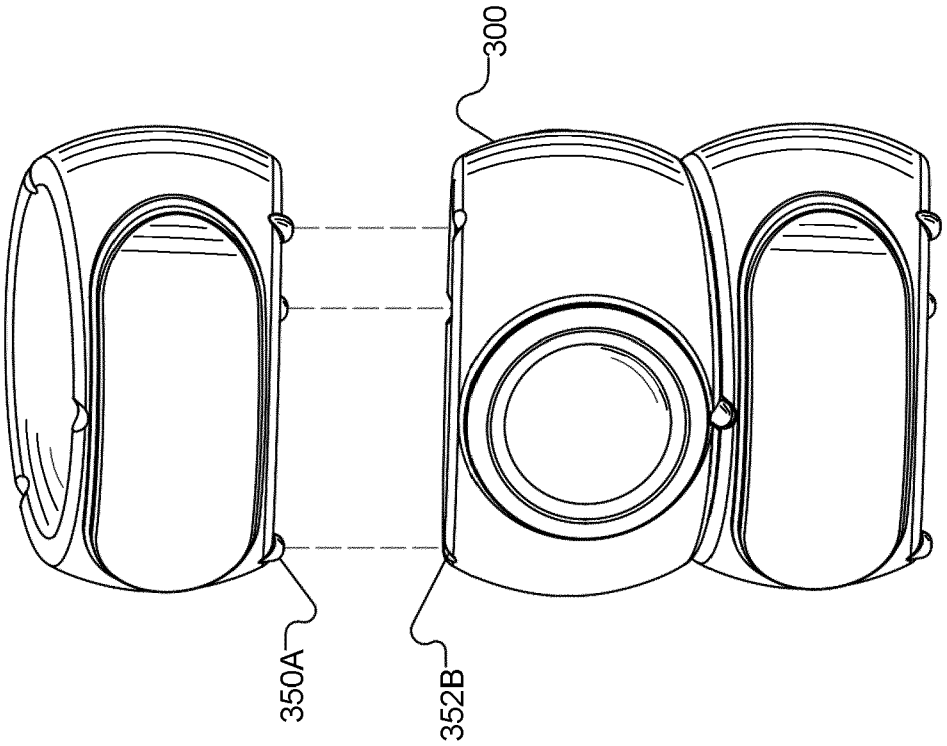

FIG. 17B

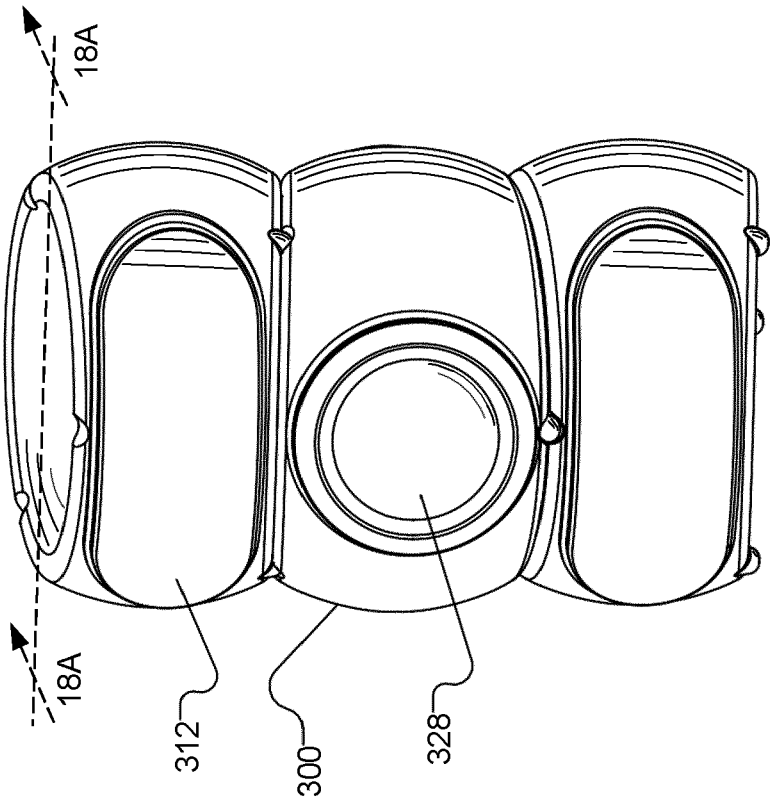

FIG. 17A

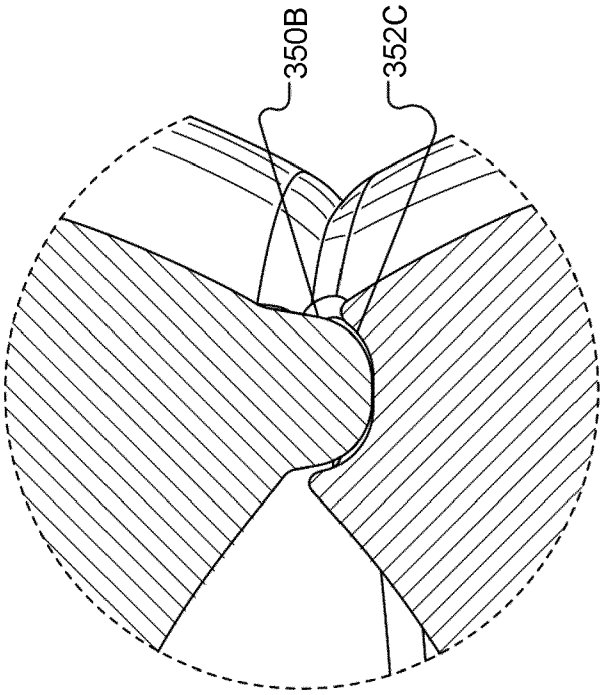

FIG. 18B

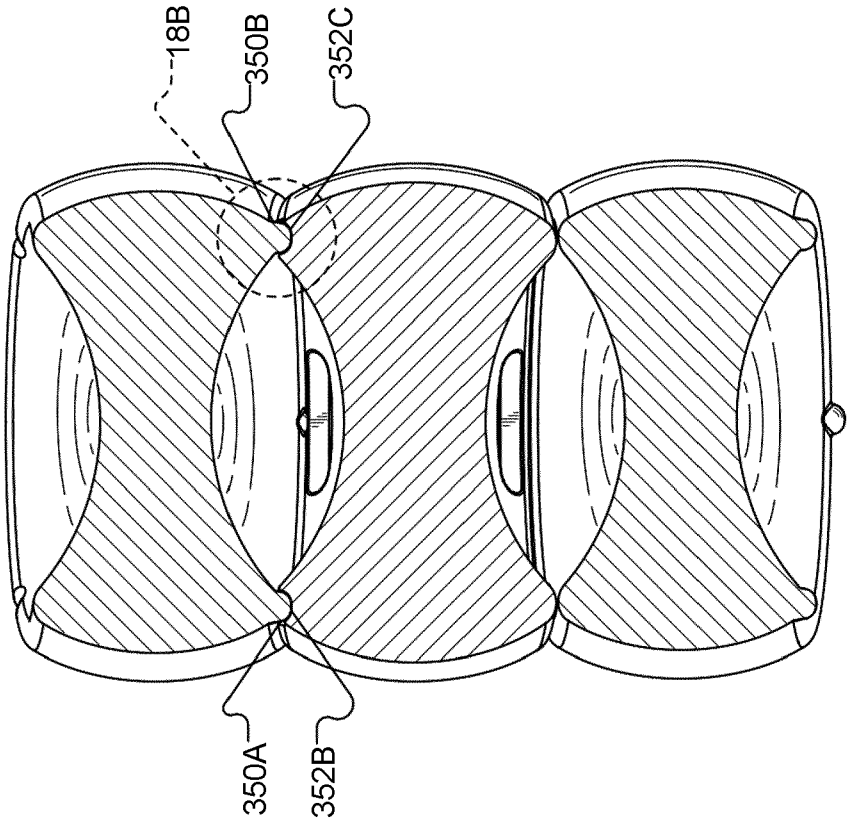

FIG. 18A

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EUROPEAN SEARCH REPORT

Application Number
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A47C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	12 January 2024	Linden, Stefan

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