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(71) **Demandeur/Applicant:**
BATTEN INDUSTRIES INC., CA
(72) **Inventeurs/Inventors:**
ROBERTS, JAMES, CA;
HANSEN, TODD, CA
(74) **Agent:** OYEN WIGGS GREEN & MUTALA LLP

(54) **Titre : DISTRIBUTEUR DE PRODUIT D'HYGIENE PERSONNELLE RECHARGEABLE**
(54) **Title: REFILLABLE PERSONAL HYGIENE PRODUCT DISPENSER**

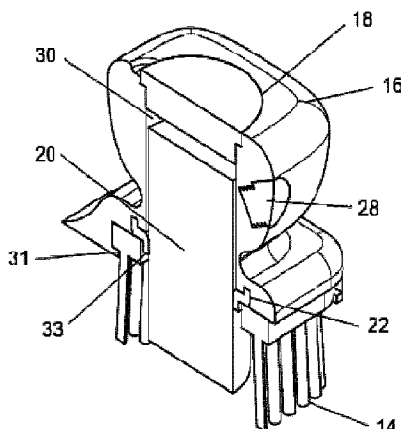


Fig. 6

(57) **Abrégé/Abstract:**

A cleaning implement includes an implement body that receives a bar of solid hygiene product in a cavity extending through the implement body. The hygiene product is selectively movable downward to protrude through an opening among bristles or in a sponge. The implement allows for replacement of the solid hygiene product within the implement. The product may be advanced within the implement by means of a threaded rod or a helical cylinder and an abutment member. A resilient sleeve seals against water ingress while also retaining the product as it is consumed or dissolves.

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Abstract:

A cleaning implement includes an implement body that receives a bar of solid hygiene product in a cavity extending through the implement body. The hygiene product is selectively movable downward to protrude through an opening among bristles or in a sponge. The implement allows for replacement of the solid hygiene product within the implement. The product may be advanced within the implement by means of a threaded rod or a helical cylinder and an abutment member. A resilient sleeve seals against water ingress while also retaining the product as it is consumed or dissolves.

TITLE OF INVENTION

REFILLABLE PERSONAL HYGIENE PRODUCT DISPENSER

FIELD OF THE INVENTION

- 5 This invention relates to cleaning and hygiene implements. In particular, the invention relates to implements that dispense a cleaning or hygiene product in solid form.

BACKGROUND OF THE INVENTION

- 10 It is known to provide cleaning brushes that contain integral means for dispensing liquid soap into the bristles or in the vicinity of the bristles of the brush. Examples of such brushes are disclosed in U.S. Patents 6,326,642 and 7,503,715.

- It is also known to provide a brush with an integral holder for a bar of soap so that the device acts as a reversible brush or soap holder: see for example U.S. Patents 4,621,934 and 4,618,443. Some sponges include an integral cavity or pocket to encapsulate a bar or cake of soap entirely within the sponge: see for example U.S. Patents 1,748,406 and 3,426,464.

Hygiene implements that use a refillable product cartridge are disclosed in U.S. Patents 5,505,041 and 11,304,495.

- 20 It is one object of this invention to provide a dispenser for a solid stick of hygiene product, the stick of product being presented to the surface to be brushed or sponged. It is a further object to allow replacement of the solid stick of hygiene product within the implement.

It is a further object of the invention to provide a means for advancing a solid stick of hygiene product from within the implement.

That and other objects will be better understood by reference to this application as a whole. Not all of the objects are necessarily met by all embodiments of the invention described below or by the invention defined by each of the claims.

SUMMARY OF THE INVENTION

According to one embodiment, the invention is a brush that presents a solid stick or bar of soap in solid form (always called "hard soap") amid the bristles against the surface that is being scrubbed when the brush is in use.

10 In this description and in the claims, the terms "stick" and "bar" are used alternatively to describe a hygiene product in solid form. As sometimes used in this description or in the claims, the terms "stick" and "bar" refer to an elongated solid piece of solid hygiene product regardless of the shape of the "bar", including cylindrical, rectangular cuboid and other shapes.

15 A cavity is provided centrally of the body of the brush, with the cavity opening amidst the bristles of the brush. A bar of hard soap is slidably received within the cavity. Pressure on the top of the bar of soap causes the bar to slide down through the cavity so that the end of the bar soap extends amongst the bristles and can be exposed to the surface being brushed.

20 Extension of the bar of soap to the end of the bristles is not strictly necessary as downward pressure on the bristles can cause the bristles to bend away allowing the end of the bar of soap to reach the surface to be brushed.

Preferably means are provided to seal the cavity from the ingress of water and to prevent retraction of the bar of soap when pressure is applied to the surface
25 being brushed.

In another aspect, the invention is a cleaning implement that presents a solid bar of hard soap through a hole in a sponge directly against the surface being cleaned. As the bar of soap is applied to the surface, water that has been absorbed by the sponge is exuded by compression of the sponge and mixes with the soap to form a cleaning lather.

A cavity is provided centrally of the body of the cleaning implement, with the cavity opening to the hole in the sponge. A bar of hard soap is slidably received within the cavity. Pressure on the top of the bar of soap causes the bar to slide down through the cavity so that the end of the bar soap extends partially into the hole of the sponge and can be exposed to the surface being brushed through downward pressure on the sponge.

Preferably means are provided to seal the cavity from the ingress of water and to prevent retraction of the bar of soap when pressure is applied to the surface being cleaned with the sponge.

In one aspect, the invention is a brush for retaining and presenting solid soap in the vicinity of bristles of the brush. A plurality of bristles are retained on at least one surface of a brush body. A cavity extends through the brush body, and has an opening in the surface. The cavity is configured to slidably receive a bar of solid soap such that an end of said bar protrudes among the plurality of bristles.

In an embodiment, the cavity is cylindrical. The opening may be in the center of the bristles.

In another aspect, the invention is a method of applying hard soap to a surface being brushed by a brush. The method comprises providing a brush having a brush body, a cavity extending through the brush body and bristles retained on the brush body, inserting a bar of hard soap in the cavity to protrude into an area

among the bristles and applying downward pressure on the brush body to cause the bar of hard soap to enter into contact with a surface being brushed.

The brush may include means for applying pressure to the bar of soap to cause it to slide toward the opening. The means may be a resilient cap at the end of the
5 brush body that is opposite the surface.

The brush may comprise a bar of solid soap retained in the cavity.

In an embodiment, the bristle may be mounted on a removable bristle assembly that is retained on one surface of the brush body.

The brush body may include a resilient sleeve for contacting and sealing a bar of
10 solid soap within the brush body.

In another aspect, the invention is a cleaning implement for retaining and presenting solid soap in the vicinity of a sponge. A sponge is retained on at least one surface of an implement body. A cavity extends through the implement body, and has an opening in the surface. The sponge has a sponge opening that
15 is substantially aligned with the cavity. The cavity is configured to slidably receive a bar of solid soap such that an end of the bar protrudes into the sponge opening. The cavity may be cylindrical. The sponge may be a natural sponge. The sponge may be a synthetic sponge, and made from a foamed polymer or a cellulose sponge. The sponge opening may be in a center of the sponge.

20 In a further aspect, the cleaning implement comprises means for applying pressure to the bar of soap to slide the bar of soap toward the sponge opening. The means may comprise a resilient cap at the end of the implement body that is opposite the surface.

In a further aspect, a bar of solid soap is retained in the cavity.

In a further aspect, the sponge is removably retained on the at least one surface of the implement body.

In a further aspect, the cleaning implement comprises a resilient sleeve for contacting and sealing the bar of solid soap. The sleeve may be deformable to
5 present a bent contact surface against the solid bar of soap.

In another aspect, the invention is a method of applying hard soap to a surface being cleaned with a cleaning implement. The method comprises: providing a cleaning implement having an implement body, a cavity extending through the implement body and a sponge retained on the implement body and surrounding
10 an opening of the cavity, inserting a bar of hard soap in the cavity to protrude through the opening surrounded by the sponge, and applying downward pressure on the implement body to cause the bar of hard soap to enter into contact with a surface being cleaned.

In another aspect, the invention is a cleaning implement kit. The cleaning
15 implement kit comprises an implement body, a bristle assembly, and a sponge assembly. A cavity extends through the implement body. The cavity is configured to slidably retain a solid bar of hard soap. The bristle assembly comprises a bristle support. A plurality of bristles extends from the bristle support. The bristle support includes a bristle opening amid the plurality of
20 bristles. The sponge assembly comprises a sponge support. A sponge is mounted to the sponge support. A sponge opening extends through the sponge support and the sponge. The implement body further comprises retention means for selectively retaining one of the bristle assembly or the sponge assembly so that the cavity is substantially aligned with the bristle opening or the sponge
25 opening.

In a further aspect, the retention means comprises a slot with a lower lip. The bristle support and the sponge support are configured for insertion in the slot.

In a further aspect, the cleaning implement kit includes one or more solid bars of hard soap for insertion in the cavity of the implement body.

According to another aspect, the invention is a cleaning implement that presents a refillable hygiene product through an opening in the implement body directly
5 against the surface being cleaned.

The cleaning implement comprises a housing or body having at least two components (a top portion and a base) detachable from one another and that together define a cavity for retaining a solid bar of product within the cavity. A solid bar of product may protrude downward from the cavity through an opening
10 in the base. Detaching the base from the body of the implement provides access for replacing the solid stick of hygiene product.

The top portion includes a rotatable threaded rod. An abutment element is threadedly engaged with the rod. Rotation of the top portion causes the abutment element to advance along the threaded rod as the abutment element is
15 otherwise constrained from rotation by guide channels within the body of the implement. The solid bar of product is pushed downward by the abutment element to urge the bar to protrude through the opening in the base of the implement abutment element.

A resilient annular sleeve retains the bar of product as it protrudes from the base.
20 As the product is gradually consumed, the bar may be pressed further downward through the sleeve to reveal more of the bar product. The sleeve acts to both retain the bar of product and to seal the cavity against the ingress of water which would tend to dissolve unused portions of the bar that are still located within the cavity of the implement.

The hygiene product within the implement may be replaced by detaching the top portion from the base and inserting a new bar of product into the cavity and through the opening in the base.

- 5 In another aspect the invention is an implement that retains a replaceable hygiene product in a hollow cylindrical member having helical grooves that are used to progress an abutment element along the grooves to abut and urge a solid bar of product to move along the cylinder.

10 The implement comprises a housing or body having a top portion and a base which are detachable from one another enabling access to a cavity defined by the combination of the top portion and the base so as to replace a solid bar of a hygiene product contained within the cavity. The hollow cylinder is rotatable within the body by engagement with a rotatable cap. The cylinder includes parallel helical grooves that are radially opposed to one another such that they
15 are 180° out of phase about the circumference of the cylinder. The abutment element engages radially of the cylinder in two radially opposing portions of the helical grooves. Rotation of the cylinder urges the abutment element to progress along the grooves so as to abut and urge the solid bar of product to migrate along the cylinder abutment element. A retaining member may interlock the
20 bottom ends of the cylinder defined between the two helical grooves so that they rotate in synchronization with each other.

In an aspect, the invention is a dispenser for retaining and presenting a solid stick of hygiene product for application of said solid stick to a surface, comprising a dispenser body, an elongated cavity in said body, said cavity having an
25 opening at an end of said cavity, the cavity being configured to receive the stick such that an end of the solid stick protrudes through the opening, and a resilient sleeve disposed co-axially about the opening, said sleeve having an inner

diameter that is smaller than an inner diameter of the opening whereby to snugly engage the solid stick. The sleeve may be in the shape of a flat ring. Alternatively, the sleeve may have an elongated hollow portion and an outwardly extending annular portion about said elongated hollow portion. The elongated
5 hollow portion may be a hollow cylindrical portion. The annular portion may be about an end of said elongated hollow portion.

The dispenser of claim 1 wherein said dispenser is a brush or a sponge and said hygiene product is soap.

The foregoing dispenser may be a brush and the solid stick of hygiene product
10 may be a solid stick of soap. The body may comprise a plurality of bristles on a surface of said body, with the opening being among and between said bristles.

In another aspect, the invention is a brush for retaining and presenting a replaceable stick of solid soap in the vicinity of bristles of the brush, comprising a brush body, a plurality of bristles retained on at least one surface of said brush
15 body, a cavity in said body, said cavity having an opening centrally of said surface, said cavity being configured to receive said solid stick such that an end of said solid stick protrudes through said opening among said bristles; and said body comprising a removable threaded base for providing access to said cavity.

In a further aspect, the invention is a brush for retaining and presenting a
20 replaceable stick of solid soap in the vicinity of bristles of the brush, comprising a brush body, a plurality of bristles retained on at least one surface of said brush body, a cavity in said body, said cavity having an opening in said surface, said cavity being configured to receive said solid stick such that an end of said solid stick protrudes through said opening among said bristles; and a threaded rod
25 depending from said housing and extending centrally of said cavity. The body may comprise a cap and said threaded rod depends from said cap. The dispenser may further comprise an abutment member for abutting one end of

said solid stick, the abutment member threadedly engaged on said threaded rod for progressing along said threaded rod upon rotation of the threaded rod. The abutment member may comprise at least one extension engaged in a guide channel extending parallel to said threaded rod for preventing said abutment member from rotating within said cavity.

In another aspect, the invention is a dispenser for retaining and presenting a solid stick of hygiene product for application of said solid stick on a surface, comprising a dispenser body having an elongated cavity, said cavity having an opening at an end of said cavity, a hollow cylindrical member disposed within said cavity and being rotatable within said body, said cylindrical member comprising at least two parallel helical grooves that are radially opposed to one another, said cylindrical member being configured to receive said solid stick and said cylindrical member being disposed in said body such that an end of said solid stick received in said cylinder member protrudes through said opening of said cavity, an abutment element disposed within said cylindrical member and having two radially opposed extensions that extend into said opposed grooves, whereby rotation of said cylindrical member causes said abutment element to migrate along said grooves.

Each of the radially opposed extensions may engage in respective straight guide channels formed in said body parallel to a longitudinal axis of said cylindrical member, whereby to prevent rotation of said abutment element when said cylindrical member rotates and to force said abutment member to migrate along said grooves. The dispenser may be a brush or a sponge and said hygiene product is soap in solid form. The body may comprise a detachable base threadedly engaged with said body. The dispenser may further comprise a resilient sleeve retained about said opening and having an inner diameter that is smaller than an inner diameter of said opening.

The foregoing may cover only some of the aspects of the invention. Other and sometimes more particular aspects of the invention will be appreciated by reference to the following description of at least one preferred mode for carrying out the invention in terms of one or more examples. The following mode(s) for carrying out the invention are not a definition of the invention itself, but are only example(s) that embody the inventive features of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The embodiments of the invention will be described by reference to the drawings thereof in which:

- 10 Fig. 1 is a top perspective view of a brush with solid soap dispenser according to an embodiment;
- Fig. 2 is a side view of the brush;
- Fig. 3 is a bottom perspective view of the brush, including a bar of soap mounted in the brush;
- 15 Fig. 4 is a bottom view of the brush;
- Fig. 5 is a perspective view of a vertical section of the brush;
- Fig. 6 is a perspective view of a vertical section of the brush with a bar of soap retained in the brush;
- Fig. 7 is an exploded view of the brush including hard soap and an optional
- 20 handle;
- Fig. 8 is a perspective view according to a sponge embodiment of the invention;
- Fig. 9 is a perspective view of a vertical section of the sponge embodiment;

Fig. 10 is a perspective view of a vertical section of the sponge cleaning implement, including a bar of soap mounted in the sponge;

Fig. 11 is a bottom view of the sponge embodiment;

Fig. 12 is an exploded view of the sponge embodiment including hard soap and an optional handle;

Fig. 13 is an exploded side elevation of a refillable implement for dispensing a solid stick of hygiene product using a threaded rod;

Fig. 14 is a top perspective exploded view of the embodiment of Fig. 13;

Fig. 15 is a bottom perspective exploded view of the embodiment of Fig. 13;

Fig. 16 is a vertical sectional view of the embodiment of Fig. 13;

Fig. 17 is a vertical sectional view of the refillable implement according to an embodiment using a flanged cylindrical sleeve and showing a retained bar of hard soap;

Fig. 18 is a vertical sectional view of a hygiene implement according to a brush embodiment of Fig. 13;

Fig. 19 is a vertical sectional view of the embodiment of Fig. 18 with a stick of hygiene product protruding from among the bristles;

Fig. 20 is a vertical sectional view of a hygiene implement according to the invention using a helically grooved cylindrical member to advance the stick of hygiene product from within the body of the implement;

Fig. 21 is a top perspective exploded view of the implement according to the embodiment of Fig. 20;

Fig. 22 is a vertical sectional view of the implement according to the embodiment of Fig. 20 with a solid hygiene product retained within the implement;

Fig. 23 is a vertical sectional view of the implement according to the embodiment of Fig. 20 with the solid hygiene product being urged by the abutment member to protrude from the implement among the bristles;

Fig. 24 is a bottom perspective view of a cap and a top perspective view of the cylinder of the embodiment of fig. 20; and,

Figs. 25A, 25B, and 25C are a side view, a top perspective view and a bottom perspective view respectively of a resilient silicone sleeve in the form of a flanged hollow cylinder.

DETAILED DESCRIPTION OF THE PREFERRED AND OTHER EMBODIMENTS

A brush according to the invention is generally depicted in Figs. 1-7. The brush comprises bristles 14 and a brush body 12 to hold and retain the bristles 14. As will be discussed below, the bristles may be provided as a bristle assembly 36 removably received in the brush body 12.

The brush body 12 includes a grip 16.

Referring to Figs. 5 and 6, the body 12 is provided with a cavity 30 extending preferably from the top of the brush body 12 to a bottom surface 13 of the brush body. The cavity 30 includes a bottom opening 25 amidst the bristles 14. Preferably the opening 25 is in the center of the brush bristles.

The cavity 30 is configured (for example by having smooth internal surfaces), to allow a correspondingly shaped bar of soap 20 to slide along the cavity 30. According to the embodiment, the cavity 30 is cylindrical so as to slidably receive a cylindrical bar of soap 20 of a corresponding diameter. In this description and in the claims, the term "bar" refers to an elongated solid piece of hard soap

regardless of the shape of the “bar”, including cylindrical, rectangular cuboid and other shapes.

A removable cap 18 is provided for sealing the cavity 30 against the ingress of water.

- 5 A resilient silicone sleeve 22 is provided at the cavity opening 25 (preferably adjacent the bristles 14) to retain the hard soap within the cavity 30. The sleeve opening 23 has a diameter that is smaller than the diameter of the cavity opening 25 to assist in retaining the soap 20 in the cavity 30. The sleeve 22 is retained in the brush body 12 by means of a retainer 24 that attaches to the brush body
10 12 and sandwiches the sleeve 22 between the retainer 24 and the brush body 12.

- A user introduces the bar of soap 20 into the cavity 30 of the brush body 12 and urges the bar against the sleeve 22 to retain the bar in the brush. The soap 20 may be urged downward to protrude through the cavity opening 25 among the
15 bristles 14. The brush may then be used such that downward pressure deforms the bristles sufficiently that the bar of soap may contact the surface being brushed. As the soap gets consumed, the user may open the cap 18 and urge the bar of soap deeper into the brush body to expose more of the bar through the opening 25.

- 20 In an embodiment, the cap 18 is made resilient such that pressing down on the center of the cap 18 deforms it downward to exert downward pressure on the bar of soap 20.

- As a result of the resiliency of the silicone sleeve 22 and reduced diameter as compared to the diameter of the cavity 30 and the bar of soap 20, when the bar
25 of soap 20 is pressed down against the sleeve 22, the sleeve 22 deforms to present a bend 33 against the bar of soap, as seen in Fig. 6. In some

embodiments, the bend may be frusto-conical in shape. The bend 33 of the sleeve 22 and the pressure exerted against the soap provides an effective watertight seal against ingress of water into the cavity 30. The bend 33 also resists the tendency of the bar of hard soap 20 to slide upward in the brush body 12 when the hard soap makes contact with a surface being brushed.

The bristles 14 may be provided as part of a removable bristle assembly 36. According to the embodiment, bristle assembly 36 comprises a support 38 from which the bristles 14 depend. An opening 40 is provided in the support 38 to correspond to the opening 25 at the bottom of the cavity 30 of the brush body 12.

The bristle assembly 36 is slidably received in the brush body 12 by a slot 29 having a lower lip 31 to support the bristle assembly 36.

An optional handle 26 is securable in a threaded bore 27 in the side of the brush body 12. The handle can provide additional leverage when using the brush 10. A plug 28 closes the bore 27 when the handle 26 is not attached.

A cleaning implement 100 according to a sponge embodiment of the invention is generally depicted in Figs. 8-12. The cleaning implement comprises a sponge 104 and an implement body 102 to hold and retain the sponge 104. In this description and in the claims, the term "sponge" refers to a porous material used for cleaning that is preferably capable of absorbing liquids and expelling the liquids when compressed. Suitable examples include natural sponges derived from the fibrous skeleton of certain marine animals or synthetic sponges. Suitable synthetic sponges may include cellulose sponges, and foamed polymers such as polyester or polyurethane. As will be discussed below, the sponge may be provided as a sponge assembly 126 removably received in the implement body 102.

The sponge 104 is mounted to a bottom surface 103 of the implement body and includes a sponge opening 105 extending from the bottom surface 103 through

the sponge 104 to a cleaning contact face 107 of the sponge 104. The sponge opening 105 is preferably located in the center of the sponge 104. The sponge 104 is capable of absorbing water and water-based solutions. The cleaning contact face 107 may further include an abrasive layer (not shown) covering a portion or all of the cleaning contact face 107 to improve durability of the sponge 104 and enhance the cleaning efficacy of suitably abrasion-resistant surfaces.

The implement body 102 preferably includes an implement grip 109.

Referring to Figs. 9 and 10, the implement body 102 is likewise provided with the cavity 30 extending preferably from the top of the implement body 102 to a bottom surface 103 of the implement body 102. The cavity 30 includes the bottom opening 25 formed in the bottom surface 103. The bottom opening 25 is substantially aligned with the sponge opening 105.

The cavity 30 remains configured to allow the correspondingly shaped bar of soap 20 to slide along the cavity 30.

A removable cap 108 is provided for sealing the cavity 30 against the ingress of water.

The resilient silicone sleeve 22 is provided at the bottom opening 25 (preferably adjacent the sponge 104) to retain the hard soap within the cavity 30. The sleeve opening 23 has a diameter that is smaller than the diameter of the cavity opening 25 to assist in retaining the soap 20 in the cavity 30. The sleeve 22 is retained in the brush body 12 by means of the retainer 24 attaching to the implement body 102 and sandwiches the sleeve 22 between the retainer 24 and the implement body 102.

A user introduces the bar of soap 20 into the cavity 30 of the implement body 102 and urges the bar against the sleeve 22 to retain the bar in the cleaning implement. The soap 20 may be urged downward to protrude through the cavity

opening 25 into the sponge opening 105. The cleaning implement 100 will then preferably be introduced to a water source so that water may be absorbed by the sponge 104. The cleaning implement 100 may then be used such that downward pressure compresses the sponge 104 sufficiently that the bar of soap 20 may contact the surface being cleaned. Simultaneously, water that has been previously absorbed by the sponge is expelled from the sponge by the compression and mixes with the soap to form a cleaning lather to enhance cleaning efficacy for the surface being cleaned. Soap may also be absorbed from the surface of the bar of soap 20 through walls of the sponge opening 105 and mix with water within the sponge 104. The resulting soap solution will also be expelled by compression of the sponge 104, and the process of emission of the soap solution may aerate the expressed soap solution, resulting in an even more efficacious cleaning lather. As the soap gets consumed, the user may open the cap 108 and urge the bar of soap deeper into the implement body to expose more of the bar through the opening 25.

In an embodiment, the cap 108 is made resilient such that pressing down on the center of the cap 18 deforms it downward to exert downward pressure on the bar of soap 20.

As a result of the resiliency of the silicone sleeve 22 and reduced diameter as compared to the diameter of the cavity 30 and the bar of soap 20, when the bar of soap 20 is pressed down against the sleeve 22, the sleeve 22 deforms to present a bend 33 against the bar of soap, as seen in Fig. 10. In some embodiments, the bend may be frusto-conical in shape. The bend 33 of the sleeve 22 and the pressure exerted against the soap provides an effective watertight seal against ingress of water into the cavity 30. The bend 33 also resists the tendency of the bar of hard soap 20 to slide upward in the implement body 102 when the hard soap makes contact with a surface being cleaned.

The sponge 104 may be provided as part of a removable sponge assembly 126. According to the embodiment, sponge assembly 126 comprises a support 128 from which the sponge 104 depends. An opening 130 is provided in the support 128 to correspond to the opening 25 at the bottom of the cavity 30 of the implement body 102. The sponge assembly 126 is slidably received in the implement body 102 by a slot 129 having a lower lip 131 to support the sponge assembly 126.

The optional handle 26 is securable in a threaded bore 117 in the side of the implement body 102. The handle 26 can provide additional leverage when using the cleaning implement 100. The plug 28 closes the bore 117 when the handle 26 is not attached.

It will be recognized that the brush body 12 and the implement body 102 may be identically configured and the bristle assembly 36 and sponge assembly 126 may be identically configured, such that the implement body 102 may receive the bristle assembly 36 and the brush body 12 may receive the sponge assembly 126. In an embodiment, the invention is a kit comprising the implement body 102, the bristle assembly 36, and the sponge assembly 126. The sponge assembly 126 may be removed from the implement body 102 and replaced with the bristle assembly 36 by the user to adapt the cleaning implement of the kit for use with different surfaces to be cleaned. The kit may further comprise a plurality of bars of soap 20, allowing the user to replace each bar as it is depleted. Each bar of soap of the plurality of bars of soap may be identical or may have differing hardness and constituent cleaning compounds, allowing the cleaning implement of the kit to be used on a variety of surfaces and in a variety of cleaning tasks.

A refillable implement 200 for use with a bar of hygiene product according to another embodiment of the invention is generally depicted in Figs. 13-19. In this description and in the claims, a “hygiene product” refers to any general purpose

or personal cleaning product and personal hygiene products such as deodorants and soaps, particularly those that can be applied by rubbing or contact.

The refillable implement 200 comprises a top portion or cap 202, a base 204 and an implement body 206 to hold and retain a bar of a hygiene product 214 (the bar 214 being shown in Figs. 17-19). The base 204 is threaded to the body 206. A cavity 222 is formed in the body 206 to receive a bar of hygiene product.

The cap 202 may comprise a pair of opposed lugs 219 protruding radially from a bottom part of the cap 202 to engage in an annular groove 220 (see Fig. 16) in a top portion of the body 206. The cap 202 may be rotated with the lugs 219 travelling along the annular groove 220. The cap 202 may be detached from the body 206 by aligning the lugs 219 with notches 223 along the annular groove 220.

A threaded rod 208 extends downward from the cap 202 so as to rotate upon rotation of the cap. As best appreciated by reference to Fig. 16, an abutment element 210 is threadedly engaged on the rod 208. Rotation of the cap 202 causes the element 210 to advance along the threaded rod 208. Referring to Figs. 14 and 15, the abutment element 210 is prevented from rotating by abutment element lugs or protrusions 218 that extend radially from the element 210 and that engage in guide channels 212 within the body 206.

A resilient annular sleeve 211 is seated and retained between the base 204 and the body 206 and has an inner diameter that is smaller than the inner diameter of the opening 224. The sleeve 211 is provided for sealing the cavity 222 against the ingress of water when a bar of hygiene product is provided in the cavity 222.

A user introduces a bar of product 214 into cavity 222 through an opening 224 in the base. Referring to Fig. 17, a bar of hygiene product 214 for use with the implement includes a hollow center 216 for receiving the threaded rod 208. The

user urges the bar against a resilient silicone sleeve 211 that assists in retaining the bar in the refillable implement. The resiliency of the sleeve 211 allows the correspondingly shaped bar of product 214 to be retained in the opening of the annulus of the sleeve and to slide against the sleeve through the opening 224 of the body 206.

When the cap 202 is rotated to thereby rotate the threaded rod 208 and to urge the abutment element 210 to progress downwardly along the threaded rod, the abutment element 210 abuts and presses against the bar of product to urge it downward along the cavity and to protrude from the opening 224 of the base 204.

As the product 214 is gradually consumed, the user may twist the cap to urge the bar downward to present more of the bar to the contact area where the product is to be applied. When the bar is spent or is in need of replacement, the base 204 which is threadedly engaged with the implement body 206, may be removed so that the bar of product 214 can be replaced with a new bar.

Referring to Figs. 14 and 15, the resilient silicone sleeve 211 is provided about the opening 224 to retain the hygiene product within the cavity 222. An inner lip 226 of the base 204 has a diameter that is smaller than the diameter of the base opening 224 to assist in retaining the hygiene product 214 in the cavity 222. The sleeve 211 is sandwiched between the lip 226 of the base 204 and the implement body 206.

The resilient annular silicone sleeve 211 may be in the form of a flat ring form to surround and maintain a hold on the stick of a hygiene product. The resiliency of the sleeve allows it to deform and increase its diameter when loading a bar of product through it. As the diameter of the bar reduces with usage, the sleeve may contract around the bar to continue retaining it in place. The sleeve also continues to seal the cavity 222 against the ingress of water.

The present invention is suitable for dispensing implements for dispensing refillable personal hygiene products in a stick form. Example products include, but are not limited to, skin, body, beauty, and personal care products, such as soap, deodorant, sunscreen, lip balm, makeup, and topical medications.

- 5 A refillable implement 300 according to a helical cylinder embodiment of the invention is generally depicted in Figs. 20-24. According to this embodiment, the bar of product is retained in a hollow helically grooved cylinder used to progress the bar of product downward.

The refillable implement 300 comprises a cap 302, a base 304 and an implement
10 body 306 to hold and retain a bar of a hygiene product 314.

Referring to Fig. 24, the cap 302 includes one or more notches 318 on its inner wall for engaging with one or more locking ribs 319 of a hollow cylinder 308. This allows the cylinder 308 to be rotated by rotating the cap 302.

The cylinder 308 is defined by two helical members 312, 313 with helical grooves
15 320, 321 between them, the grooves being radially opposed to one another such that they are out of phase by 180° about the circumference of the cylinder. As best seen in Figs. 20 and 23, an abutment element 310 is engaged in radially opposed portions of the grooves 320 and 321. Rotation of the cap 302 causes the abutment element 310 to progress along the grooves 320, 321. The
20 abutment element 310 is constrained against simply rotating with the cylinder 308 by lug extensions 329, 330 that project through the grooves 320, 321 and engage in opposed channels 331, 332 formed in the body 306 of the implement. The channels 331, 332 extend parallel to the longitudinal axis of the cylinder. Upon rotation of the cylinder 308, the edges of the helical members 312, 313
25 push against the lug extensions 329, 330 causing the abutment element 310 to migrate along the channels 331, 332 and along the length of the cylinder.

The abutment element 310 pushes the stick of hygiene product 314 to urge it toward the base 304 and to thereby be exposed to the surface being treated. A retaining member 323 may engage the lower ends of the two members 312, 313 to interlock them so that they rotate in synchronization with one another and to provide a more rigid cylinder 308.

In some embodiments, helical member 312 is not connected to helical member 313 except at an upper base of cylinder 308 as shown best in Figs. 21 and 24. That is, helical grooves 320, 321 extend upwards from a lowermost end of cylinder 308 as shown and the lower ends of helical grooves 320, 321 are open, again as shown. When abutment element 310 has migrated to the lowermost extents of channels 331, 332, lug extensions 329, 330 exit helical grooves 320, 321 through the lowermost openings of the helical grooves 320, 321. When lug extensions 329, 330 have exited helical grooves 320, 321, continued rotation of cylinder 308 in a first direction will not push lug extensions 329, 330 further downwards. If cylinder 308 is rotated in a second direction, helical members 312, 313 push upwards on lug extensions 329, 330 to guide lug extensions 329, 330 back into helical grooves 320, 321. Continued rotation of cylinder 308 in the second direction causes the edges of helical members 312, 313 to push upwards against lug extensions 329, 330, causing the abutment element 310 to migrate upwards along channels 331, 332 and retracting the stick of hygiene product 314 into the implement body 306.

A user introduces the bar of hygiene product 314 into the cavity 322 of the implement body 306 by unscrewing the threaded base 304, then urging the bar against a resilient silicone sleeve 311 to retain the bar in the body 306. When the bar is in need of replacement, the base 304 may be disconnected from the body 306 so that the bar of hygiene product 314 can be replaced with a new bar.

An alternative form of resilient sleeve, useful in all of the embodiments, is depicted in Figs. 25A, 25B and 25C. That embodiment of sleeve is also incorporated into the embodiments shown in Figs. 17 to 23. The sleeve 311 is in the form of a hollow cylindrical portion 316 having a flange or rim 315 that is clamped between the inner lip 226 of the base 204 and the implement body 206. The hollow cylindrical portion 316 extends downward from the rim 315. The bottom of the cylindrical portion 316 is partially closed to present a central opening 317 through which the bar of product protrudes. The resiliency of the sleeve 311 allows the sides of the opening 317 to grip the side or sides of the bar of product to seal it against the ingress of water.

In the foregoing description, exemplary modes for carrying out the invention in terms of examples have been described. However, the scope of the claims should not be limited by those examples, but should be given the broadest interpretation consistent with the description as a whole. The specification and drawings are, accordingly, to be regarded in an illustrative rather than a restrictive sense.

Claims

1. A dispenser for retaining and presenting a solid stick of hygiene product for application of said solid stick to a surface, comprising:
 - a dispenser body;
 - an elongated cavity in said body, said cavity having an opening at an end of said cavity;
 - said cavity being configured to receive said solid stick such that an end of said solid stick protrudes through said opening; and,
 - a flexible, elastic sleeve disposed co-axially about said opening, said sleeve having an inner diameter that is smaller than an inner diameter of said opening whereby to snugly engage said solid stick; wherein said sleeve is configured to deform when said solid stick is inserted through said inner diameter so as to provide a seal against ingress of water to said cavity.
2. The dispenser according to claim 1 wherein said sleeve is in the shape of a flat ring.
3. The dispenser according to claim 1 wherein said sleeve has an elongated hollow portion and an outwardly extending annular portion about said elongated hollow portion.
4. The dispenser of claim 3 wherein said elongated hollow portion is a hollow cylindrical portion.
5. The dispenser of claim 4 wherein said annular portion is about an end of said elongated hollow portion.

6. The dispenser of claim 1 wherein said dispenser is a brush or a sponge and said hygiene product is soap.

7. The dispenser according to claims 1, 2, 3, 4 or 6 wherein:

said dispenser is a brush;

said solid stick of hygiene product is a solid stick of soap;

said body comprises a plurality of bristles on a surface of said body;
and,

said opening opens among and between said bristles.

8. A brush for retaining and presenting a replaceable stick of solid soap in the vicinity of bristles of the brush, comprising:

a brush body;

a plurality of bristles retained on at least one surface of said brush body;

a cavity in said body, said cavity having an opening centrally of said surface;

said cavity being configured to receive said solid stick such that an end of said solid stick protrudes through said opening among said bristles;

a flexible, elastic sleeve disposed co-axially about said opening, said sleeve having an inner diameter that is smaller than an inner diameter of said opening whereby to snugly engage said solid stick;
and,

said body comprising a removable threaded base for providing access to said cavity;

wherein said sleeve is configured to deform when said solid stick is inserted through said inner diameter so as to provide a seal against ingress of water to said cavity.

9. A brush for retaining and presenting a replaceable stick of solid soap in the vicinity of bristles of the brush, comprising:

a brush body;

a plurality of bristles retained on at least one surface of said brush body;

a cavity in said body, said cavity having an opening in said surface; said cavity being configured to receive said solid stick such that an end of said solid stick protrudes through said opening among said bristles;

a flexible, elastic sleeve disposed co-axially about said opening, said sleeve having an inner diameter that is smaller than an inner diameter of said opening whereby to snugly engage said solid stick; and,

a threaded rod depending from said housing and extending centrally of said cavity;

wherein said sleeve is configured to deform when said solid stick is inserted through said inner diameter so as to provide a seal against ingress of water to said cavity.

10. The dispenser according to claim 9 wherein said body comprises a cap and said threaded rod depends from said cap.
11. The dispenser according to claim 10 further comprising an abutment member for abutting one end of said solid stick, the abutment member

threadedly engaged on said threaded rod for progressing along said threaded rod upon rotation of the threaded rod.

12. The dispenser according to claim 11 wherein said abutment member comprises at least one extension engaged in a guide channel extending parallel to said threaded rod for preventing said abutment member from rotating within said cavity.

13. A dispenser for retaining and presenting a solid stick of hygiene product for application of said solid stick on a surface, comprising:

a dispenser body having an elongated cavity, said cavity having an opening at an end of said cavity;

a hollow cylindrical member disposed within said cavity and being rotatable within said body, said hollow cylindrical member comprising at least two radially opposed helical members extending towards said opening;

said at least two radially opposed helical members defining between them at least two parallel helical grooves that are radially opposed to one another;

said cylindrical member being configured to receive said solid stick and said cylindrical member being disposed in said body such that an end of said solid stick received in said cylinder member protrudes through said opening of said cavity;

an abutment element disposed within said cylindrical member and having at least two radially opposed extensions that extend into said opposed grooves;

whereby rotation of said cylindrical member causes said abutment element to migrate along said grooves.

14. The dispenser of claim 13 wherein each of said radially opposed extensions engages in respective straight guide channels formed in said body parallel to a longitudinal axis of said cylindrical member, whereby to prevent rotation of said abutment element when said cylindrical member rotates and to force said abutment member to migrate along said grooves.
15. The dispenser of claim 13 or 14 wherein said grooves are open at an end of said hollow cylindrical member facing said opening.
16. The dispenser of claim 13 wherein said dispenser is a brush or a sponge and said hygiene product is soap in solid form.
17. The dispenser of claim 16 wherein said body comprises a detachable base threadedly engaged with said body.
18. The dispenser of claim 17 further comprising an elastic sleeve retained coaxially about said opening and having an inner diameter that is smaller than an inner diameter of said opening, wherein said sleeve is configured to deform when said solid stick is inserted through said inner diameter so as to provide a seal against ingress of water to said cavity.
19. A cleaning implement for retaining and presenting solid soap in the vicinity of a sponge, comprising:
 - an implement body;
 - a sponge retained on at least one surface of said implement body;
 - a cavity extending through the implement body, said cavity having an opening in said surface, said sponge having a sponge opening substantially aligned with said cavity,

said cavity being configured to slidably receive a bar of solid soap such that an end of said bar protrudes into said sponge opening; and

a flexible, elastic sleeve disposed co-axially about said opening, said sleeve having an inner diameter that is smaller than an inner diameter of said opening whereby to snugly engage said solid stick;

wherein said sleeve is configured to deform when said solid stick is inserted through said inner diameter so as to provide a seal against ingress of water to said cavity.

20. The cleaning implement of claim 19 wherein said cavity is cylindrical.
21. The cleaning implement of claim 19 wherein said sponge opening is in a center of said sponge.
22. The cleaning implement of claim 19 further comprising means for applying pressure to said bar of soap to slide said bar of soap toward said sponge opening.
23. The cleaning implement of claim 22 wherein said means comprises an elastic cap at the end of said implement body that is opposite said surface.
24. The cleaning implement of claim 19 further comprising a bar of solid soap retained in said cavity.
25. The cleaning implement of claim 19 wherein said sponge is removably retained on said at least one surface of said implement body.
26. The cleaning implement of claim 19 wherein said elastic sleeve presents a bent contact surface against said solid bar of soap when deformed.

27. A method of applying hard soap to a surface being cleaned with a cleaning implement, comprising:

providing a cleaning implement having an implement body, a cavity extending through said implement body, a sponge retained on said implement body and surrounding an opening of said cavity, and a flexible, elastic sleeve disposed co-axially about said opening, said sleeve having an inner diameter that is smaller than an inner diameter of said opening;

inserting a bar of hard soap through said elastic sleeve and into said cavity to protrude through said opening surrounded by said sponge; and,

applying downward pressure on said implement body to cause said bar of hard soap to enter into contact with a surface being cleaned;

wherein applying said downward pressure causes said sleeve to deform to present a bend against said bar of hard soap, thereby providing a watertight seal against ingress of water into said cavity.

28. A cleaning implement kit comprising:

an implement body, said implement body comprising a cavity extending through said implement body and having an opening on a surface of said implement body, a flexible, elastic sleeve disposed co-axially about said opening, said sleeve having an inner diameter that is smaller than an inner diameter of said opening, said cavity being configured to slidably retain a solid bar of hard soap and said elastic sleeve configured to snugly engage sides of said solid soap, said sleeve being configured to deform when said solid stick is inserted

through said inner diameter so as to provide a seal against ingress of water to said cavity;

a bristle assembly, said bristle assembly comprising a bristle support and a plurality of bristles extending from said bristle support, said bristle support including a bristle opening amid said plurality of bristles; and

a sponge assembly, said sponge assembly comprising a sponge support, a sponge mounted to said sponge support, and a sponge opening extending through said sponge support and said sponge;

wherein said implement body further comprises retention means for selectively retaining one of said bristle assembly or said sponge assembly so that said opening of said cavity is substantially aligned with said bristle opening or said sponge opening.

29. The cleaning implement kit of claim 28 wherein said retention means comprises a slot with a lower lip and said bristle support and said sponge support are configured for insertion in said slot.

30. The cleaning implement kit of claim 28 further comprising one or more solid bars of hard soap for insertion in said cavity of said implement body.

31. A brush for retaining and presenting solid soap in the vicinity of bristles of the brush, comprising:

a brush body;

a plurality of bristles retained on at least one surface of said brush body;

a cavity extending through the brush body, said cavity having an opening in said surface;

a flexible, elastic sleeve disposed co-axially about said opening, said sleeve having an inner diameter that is smaller than an inner diameter of said opening; and,

said cavity being configured to slidably receive a bar of solid soap such that an end of said bar protrudes among the plurality of bristles and such that said sleeve snugly engages sides of said bar;

wherein said sleeve is configured to deform when said solid stick is inserted through said inner diameter so as to provide a seal against ingress of water to said cavity.

32. The brush of claim 31 wherein said cavity is cylindrical.
33. The brush of claim 31 wherein said opening is in a center of said plurality of bristles.
34. A method of applying hard soap to a surface being brushed by a brush, comprising:

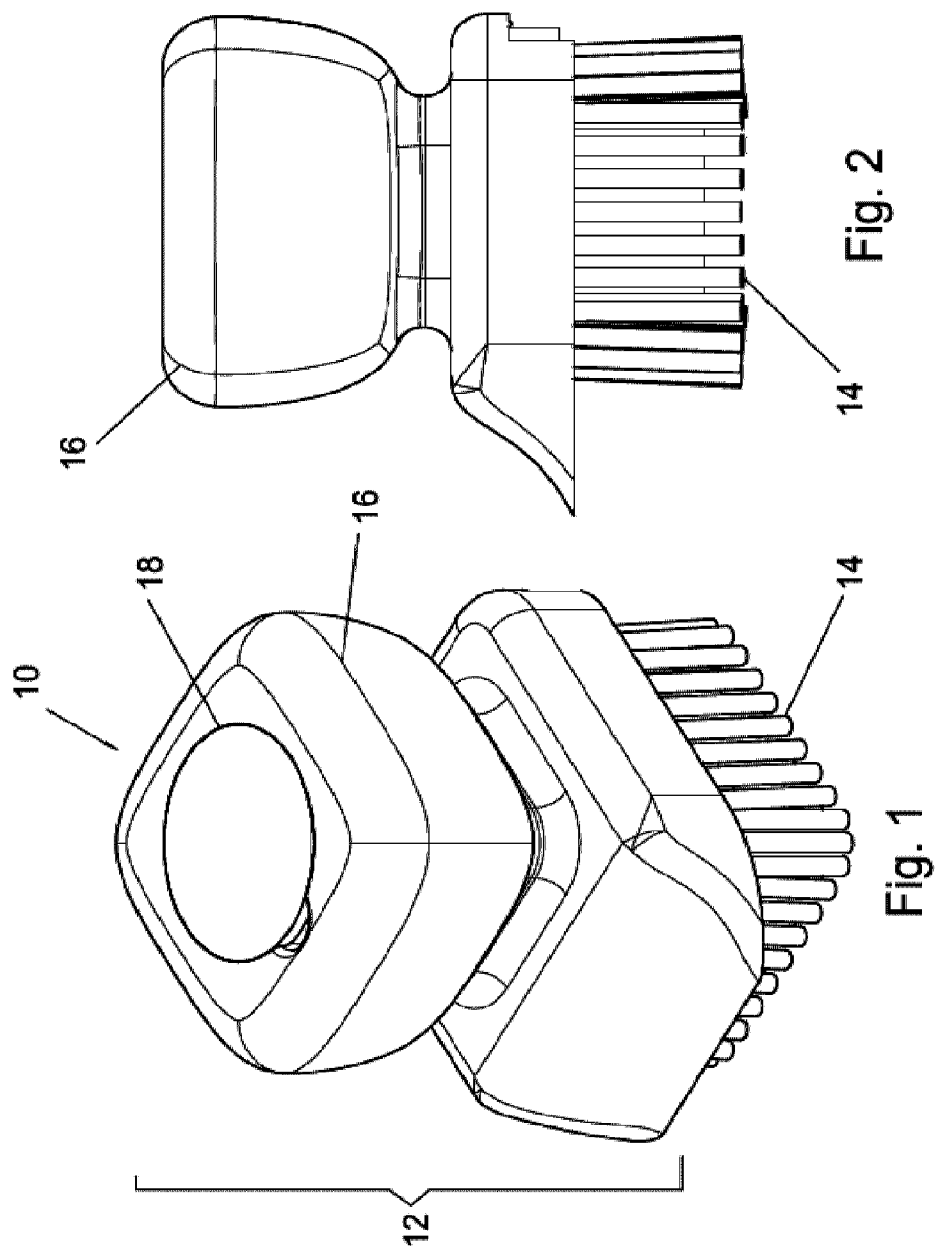
providing a brush having a brush body, bristles retained on said brush body, and a cavity extending through said brush body, said cavity including an opening disposed among said bristles, and a flexible, elastic sleeve disposed co-axially about said opening, said sleeve having an inner diameter that is smaller than an inner diameter of said opening ;

inserting a bar of hard soap in said cavity to protrude into an area among said bristles; and,

applying downward pressure on said brush body to cause said bar of hard soap to enter into contact with a surface being brushed;

wherein applying said downward pressure causes said sleeve to deform to present a bend against said bar of hard soap, thereby providing a watertight seal against ingress of water into said cavity.

35. The brush of claim 31 further comprising means for applying pressure to said bar of soap to slide said bar of soap toward said opening.
36. The brush of claim 35 wherein said means comprises an elastic cap at the end of said brush body that is opposite said surface.
37. The brush of claim 31 further comprising a bar of solid soap retained in said cavity.
38. The brush of claim 31 wherein said plurality of bristles are mounted in a bristle assembly, said bristle assembly being removably retained on said at least one surface of said brush body.
39. The brush of claim 31 wherein said elastic sleeve presents a bent contact surface against said solid bar of soap when deformed.



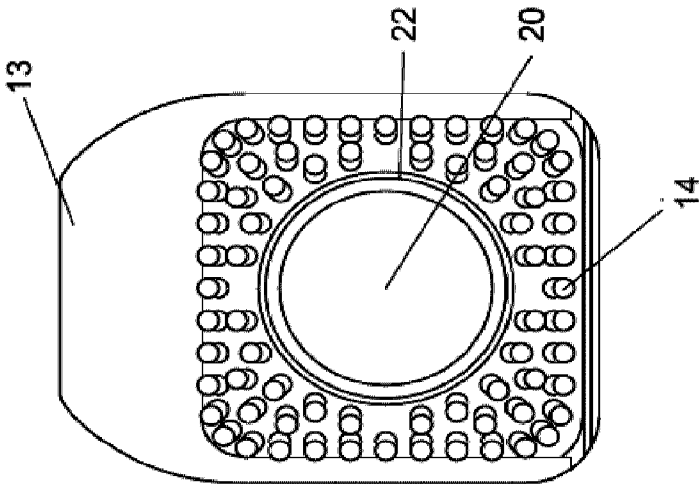


Fig. 4

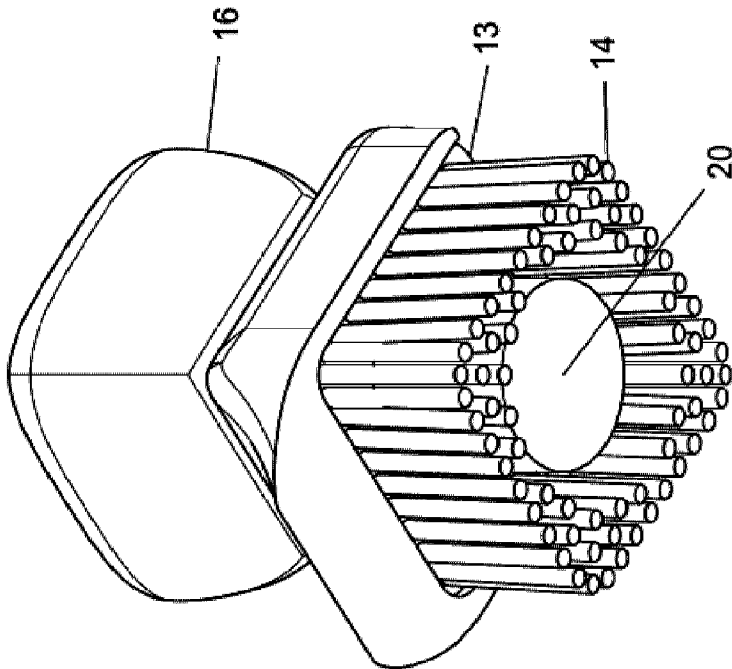


Fig. 3

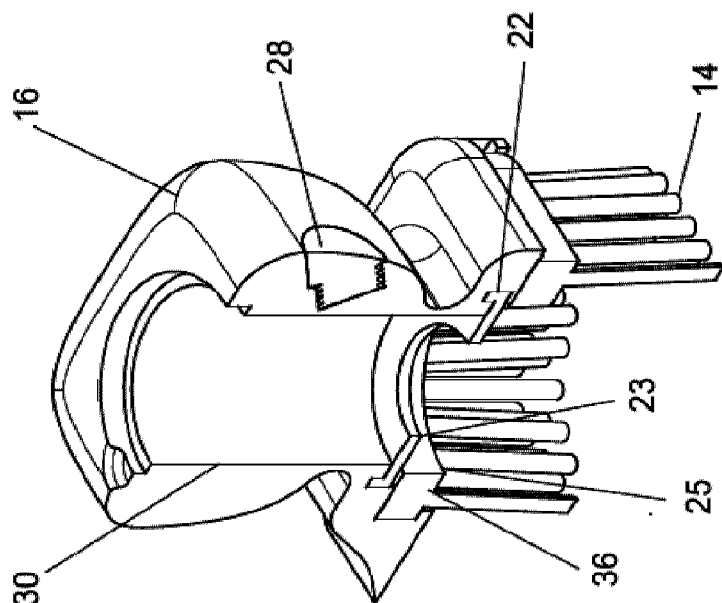


Fig. 5

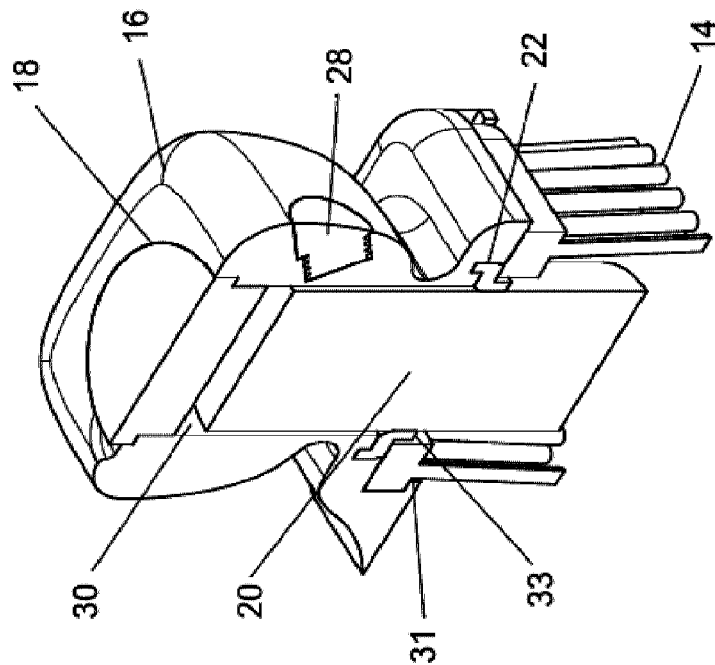


Fig. 6

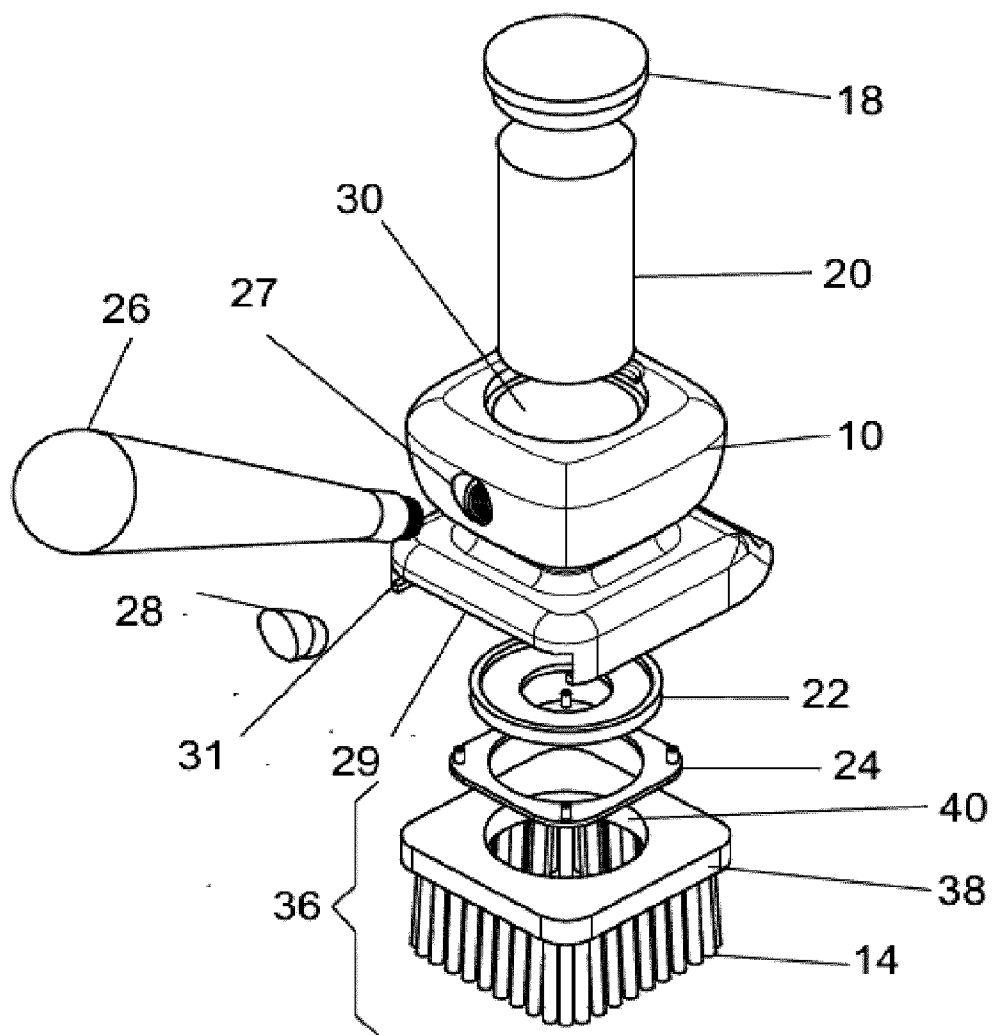


Fig. 7

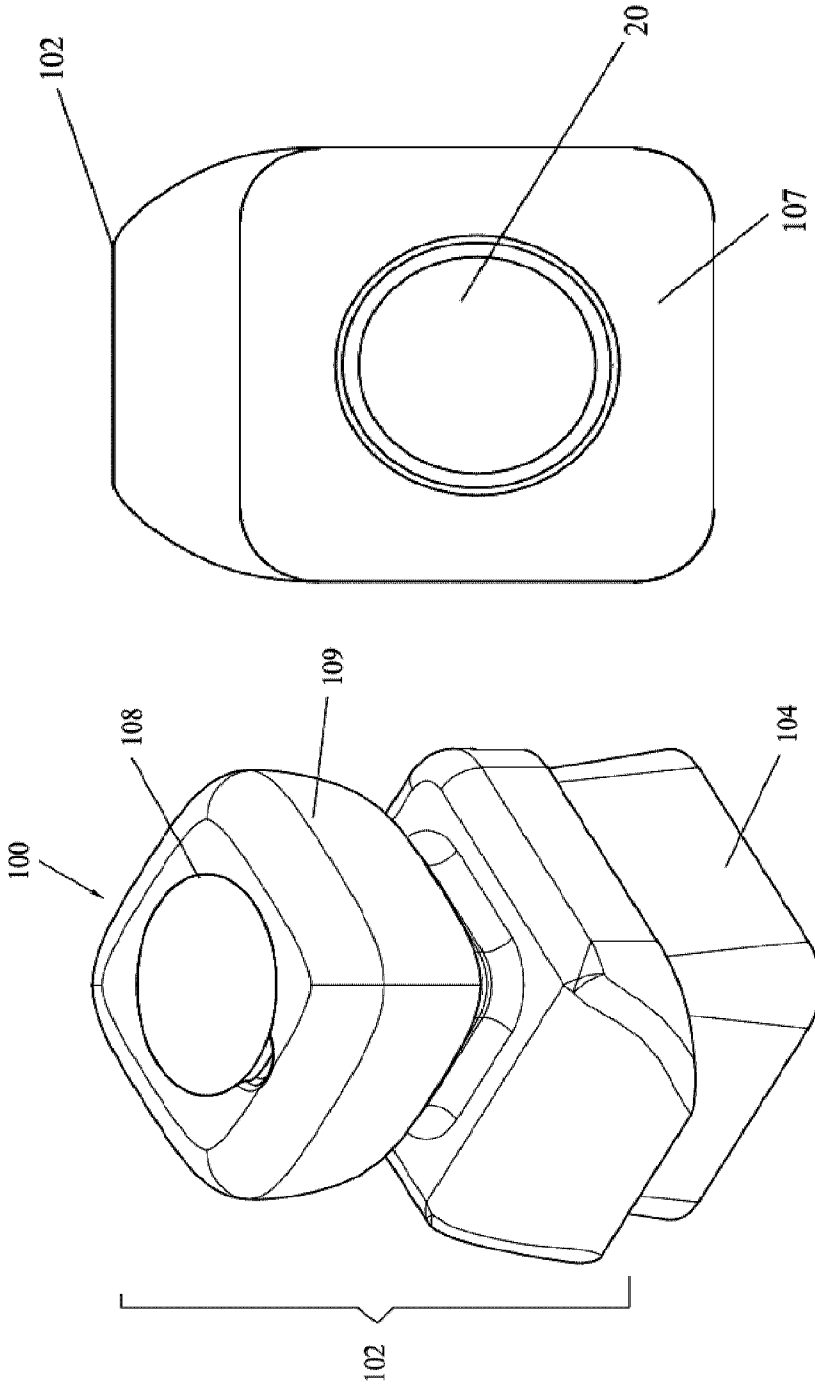


FIG. 11

FIG. 8

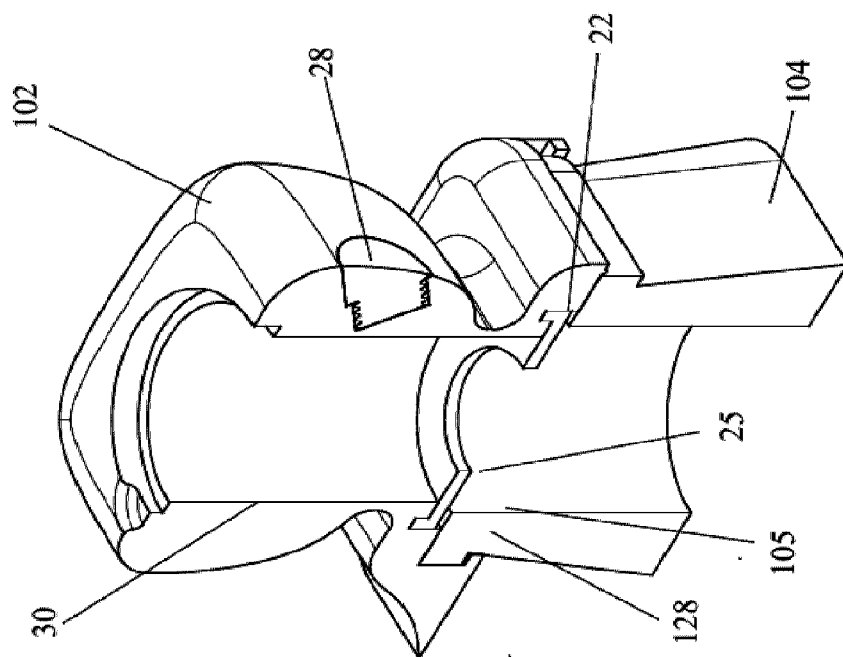


FIG. 9

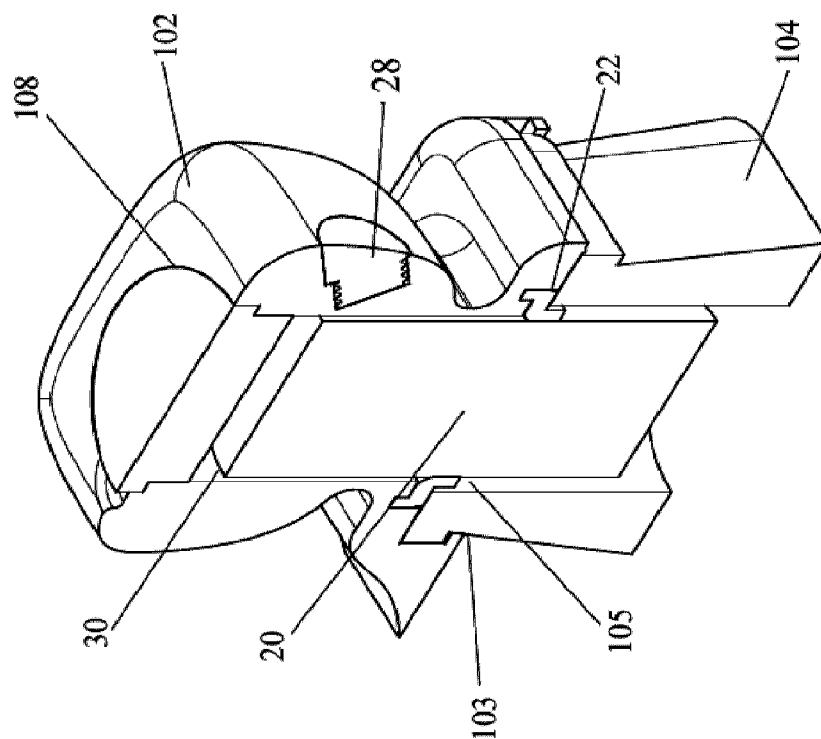


FIG. 10

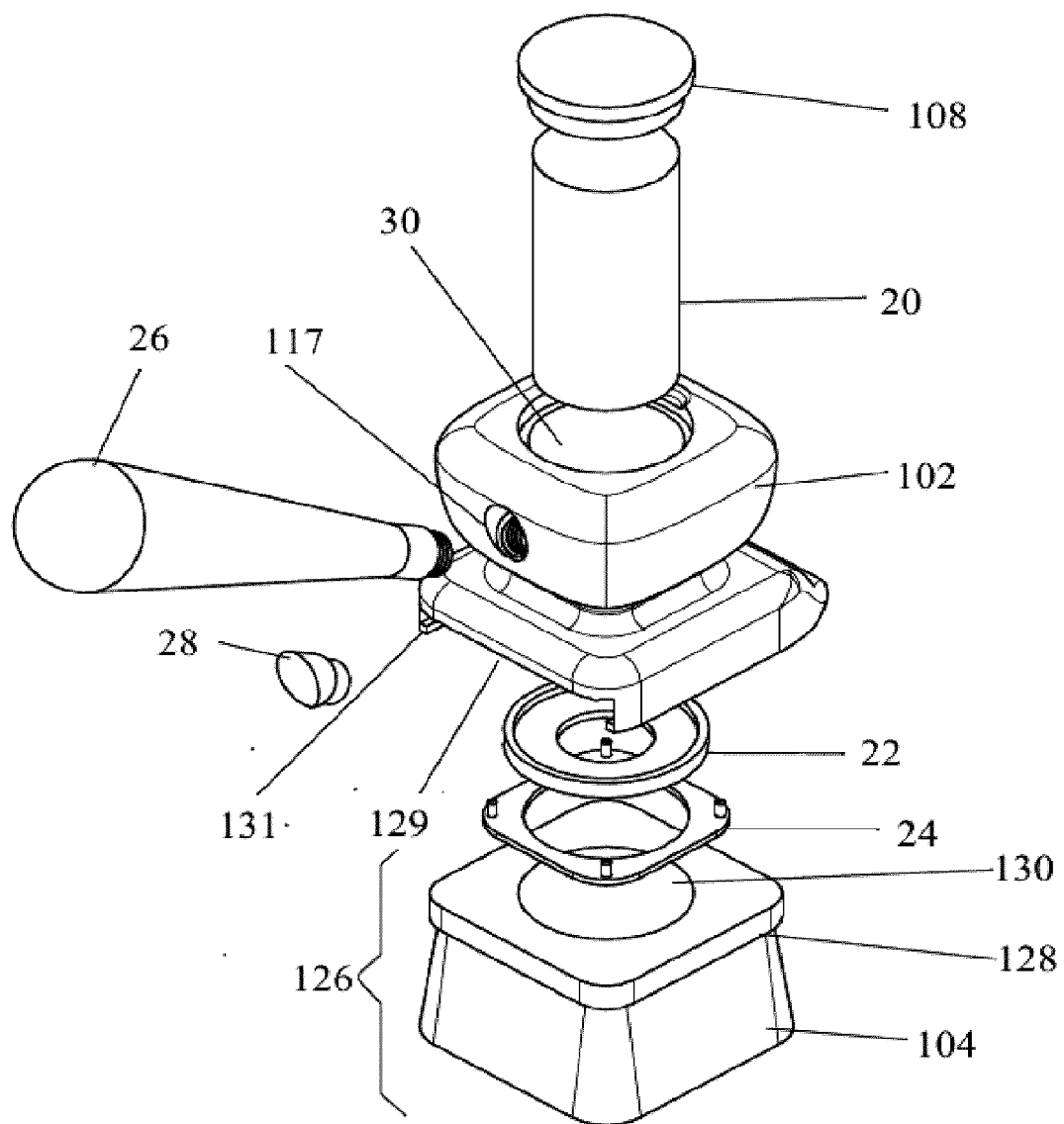


FIG. 12

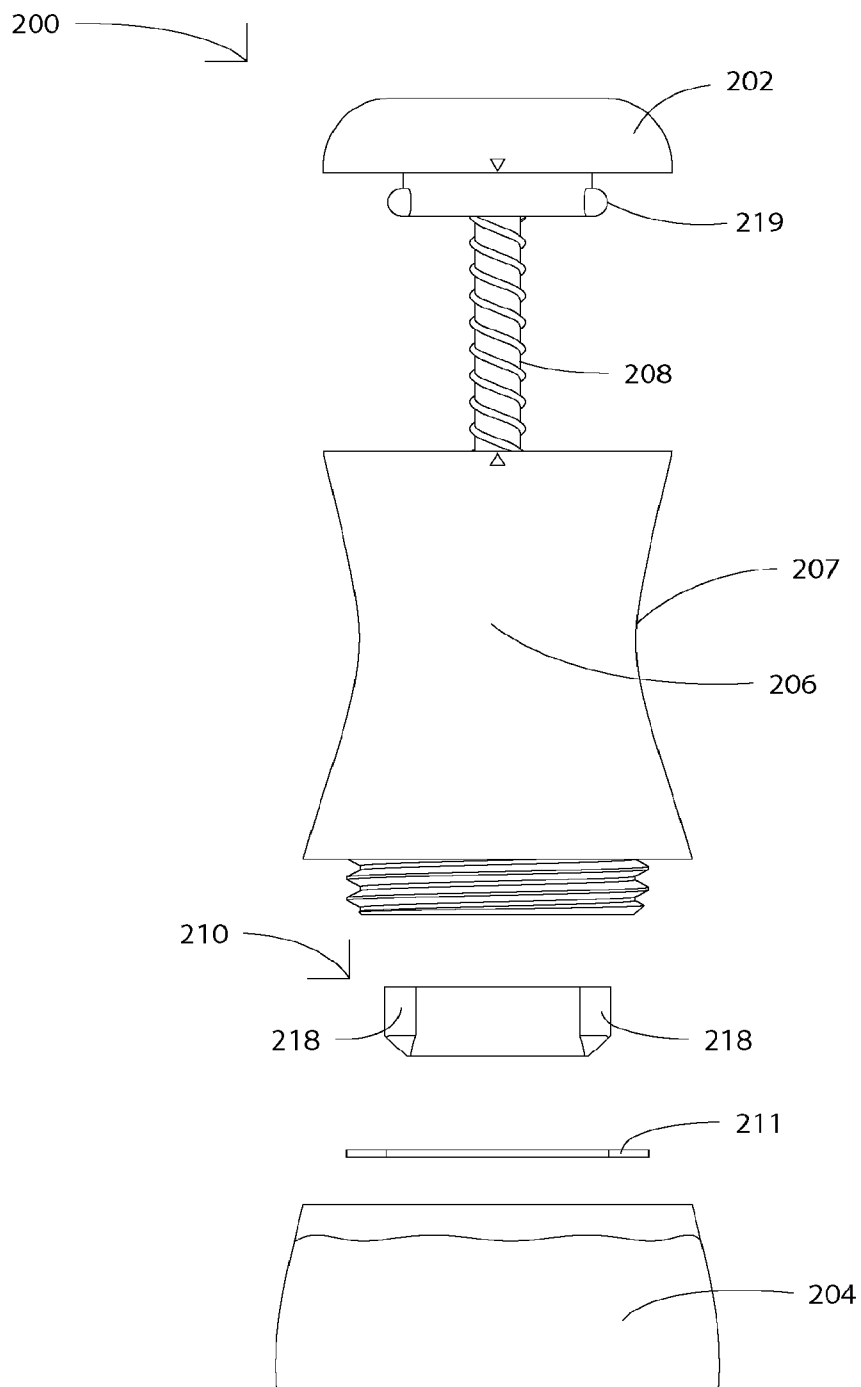


FIG. 13

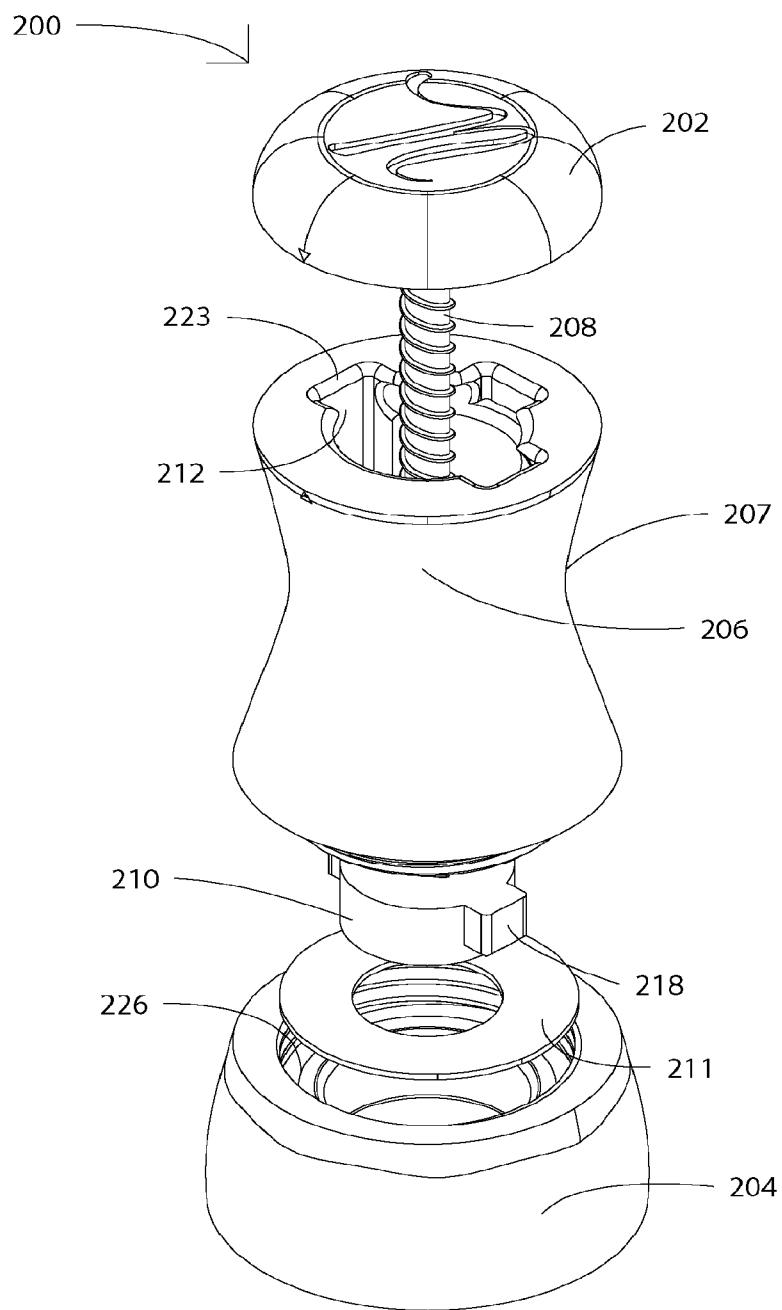


FIG. 14

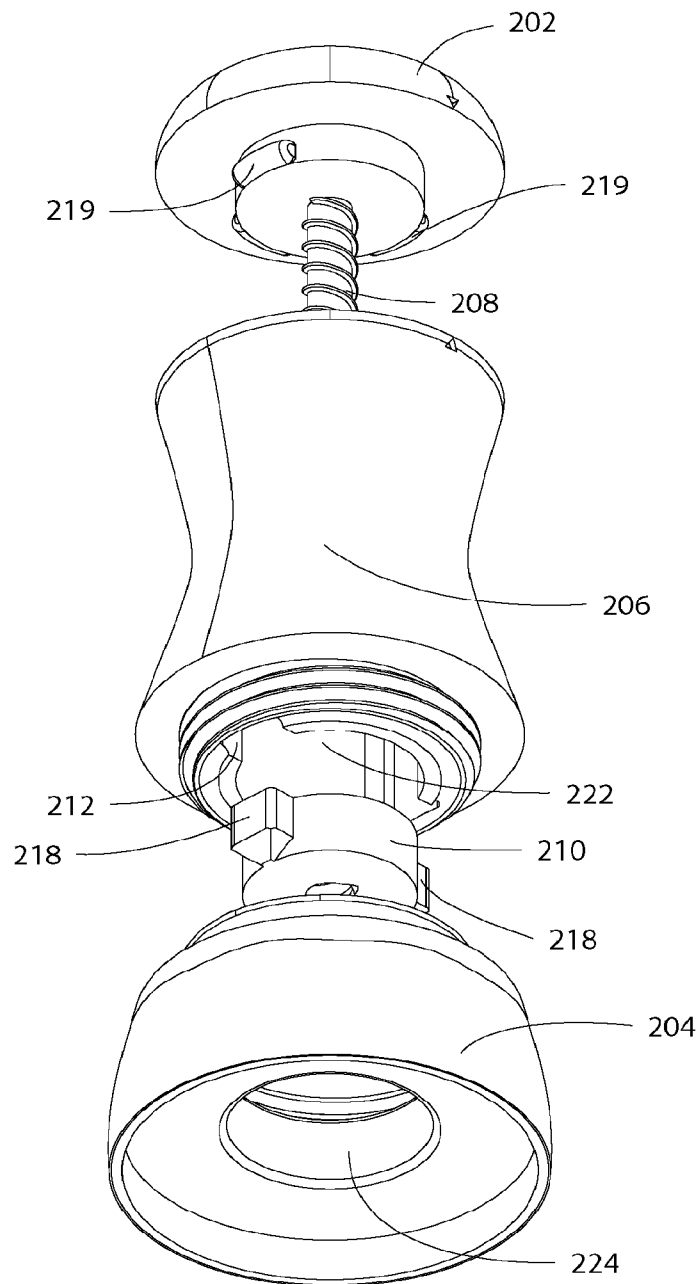


FIG. 15

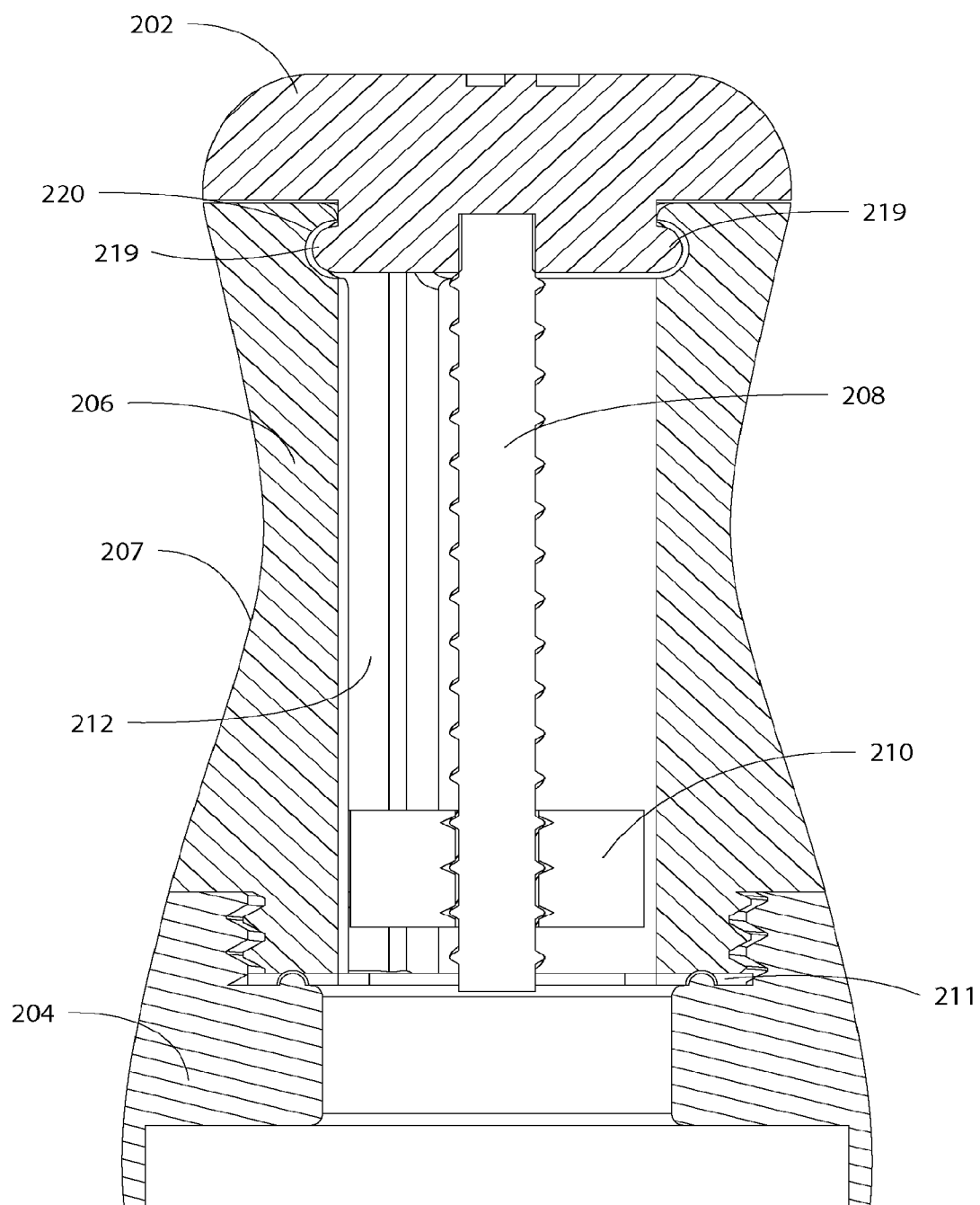


FIG. 16

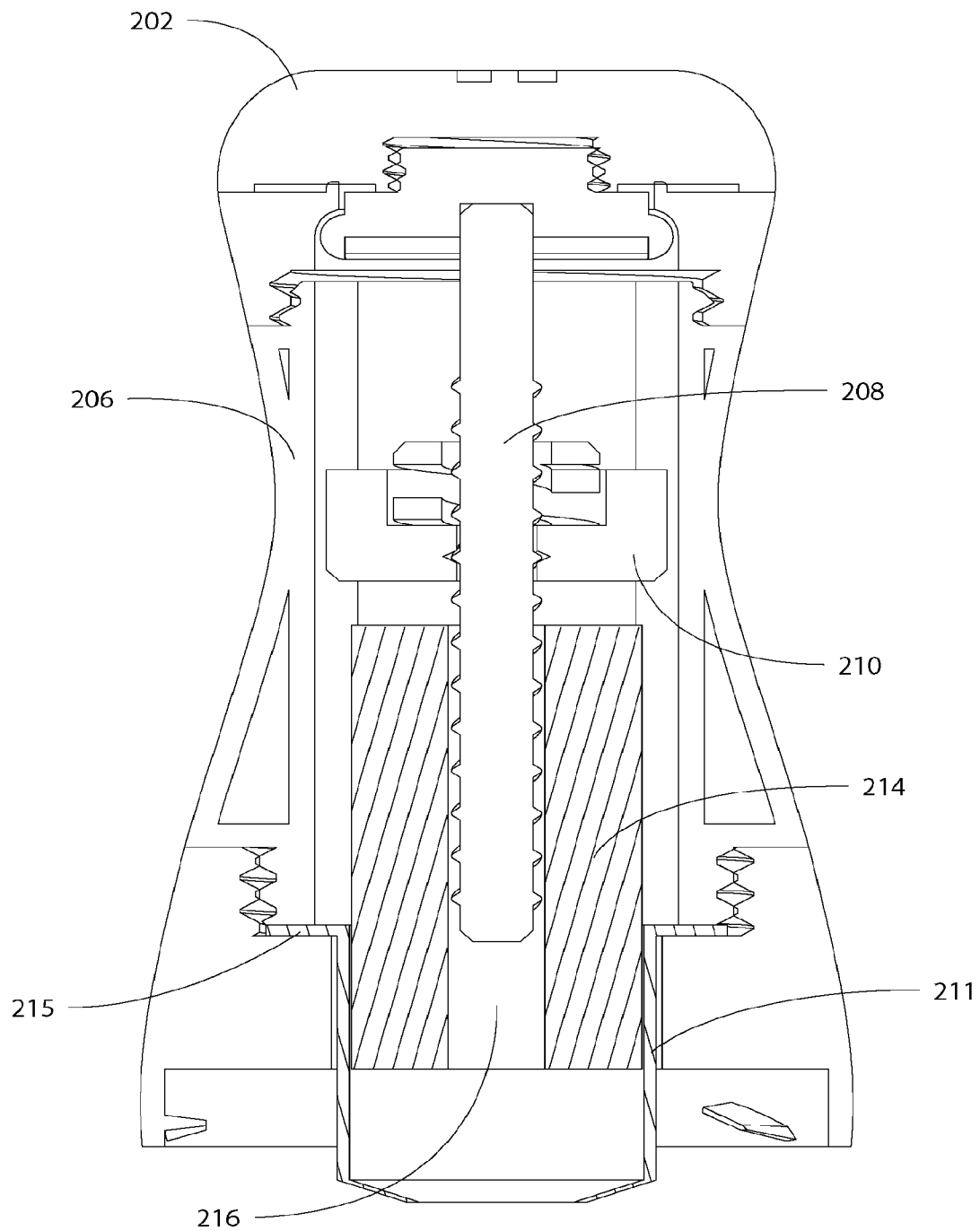


FIG. 17

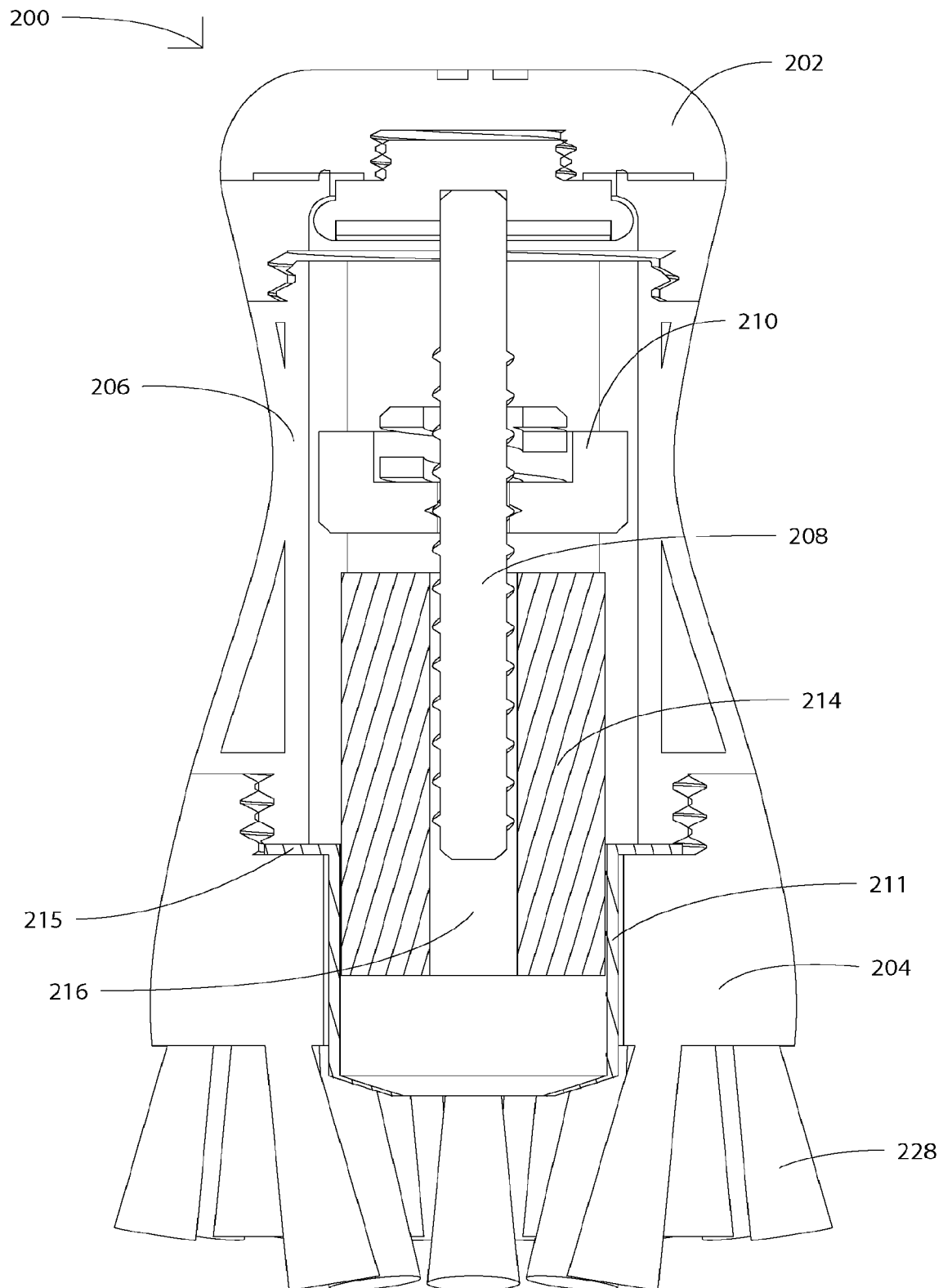


FIG. 18

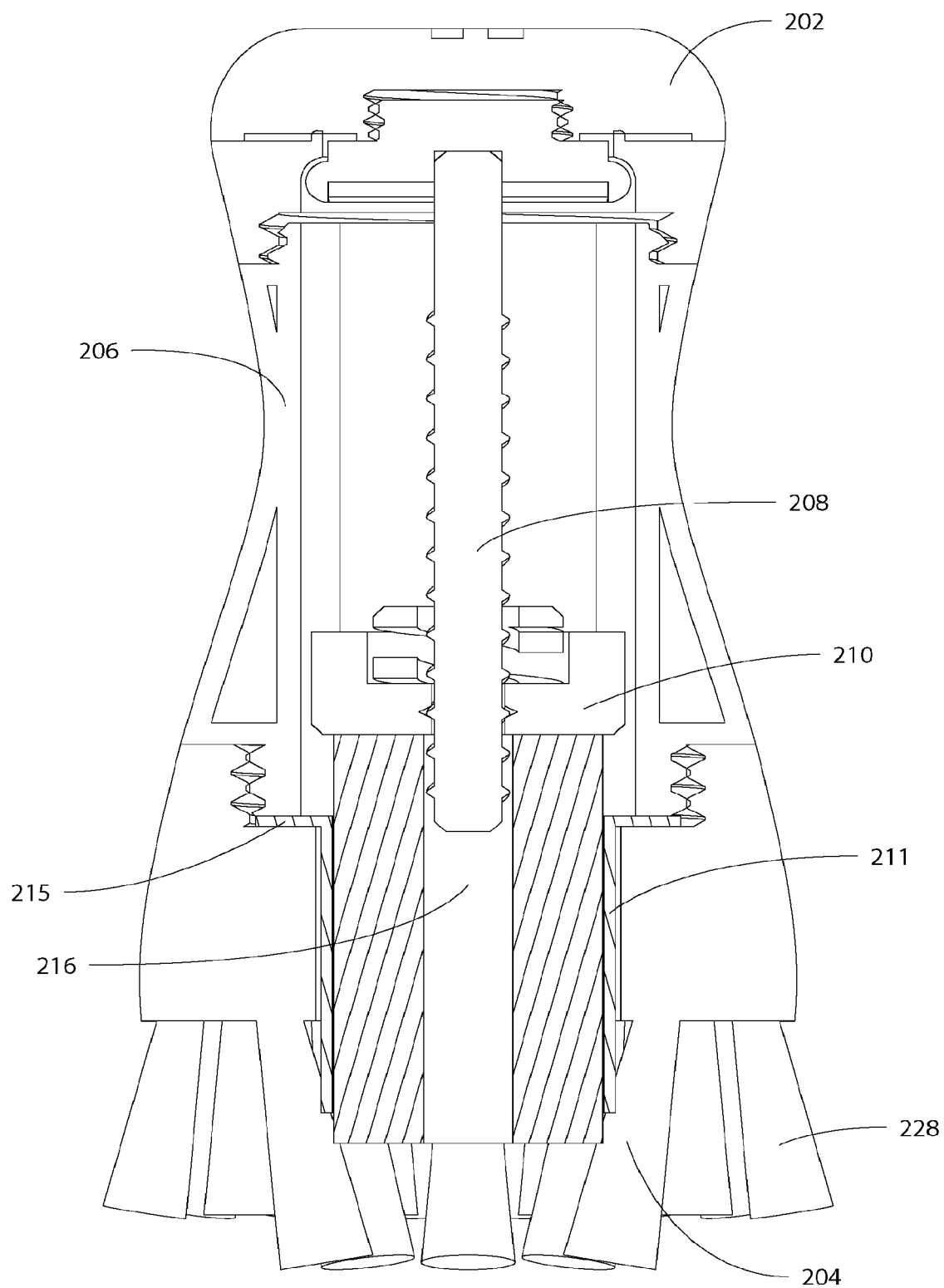


FIG. 19

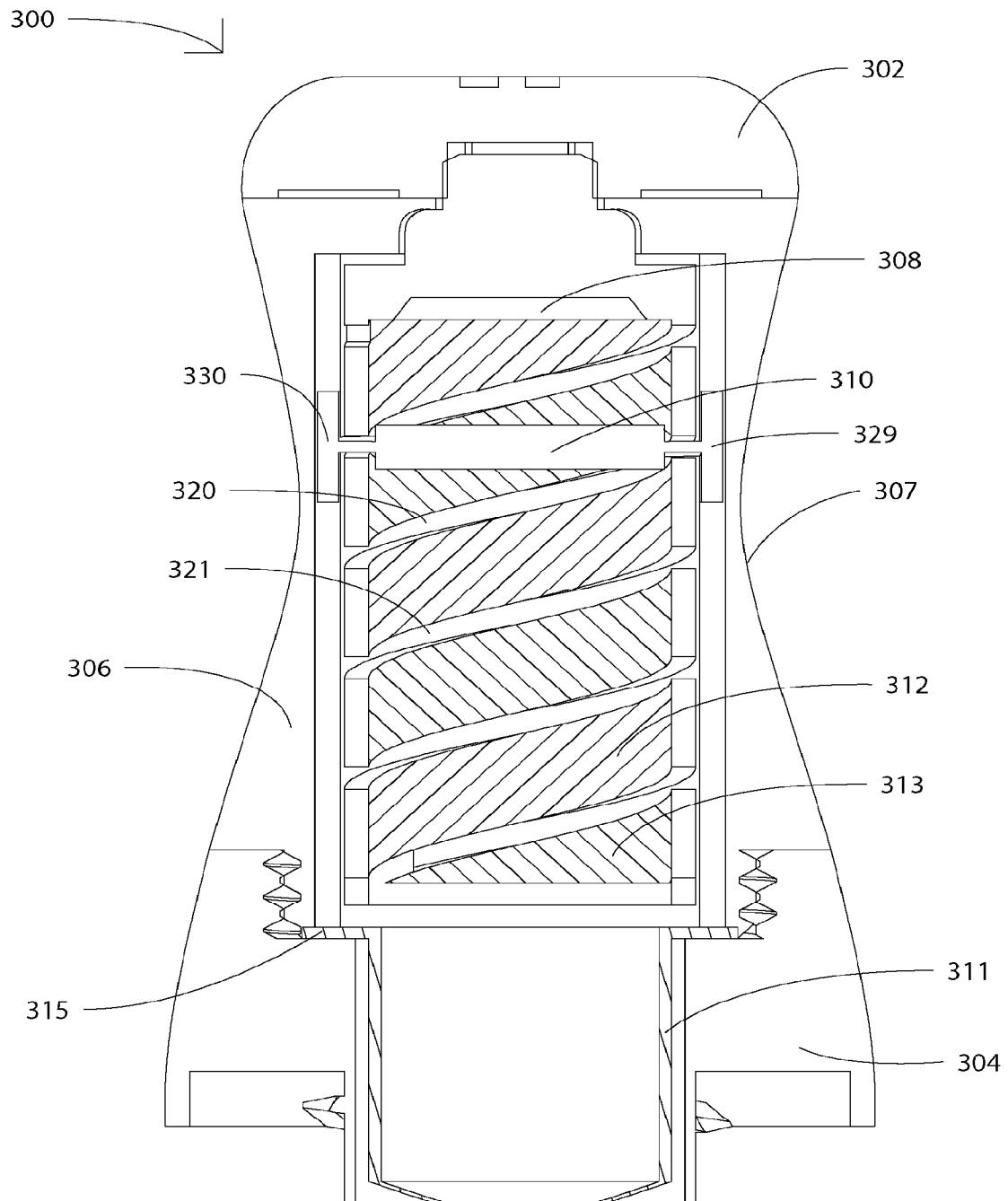


FIG. 20

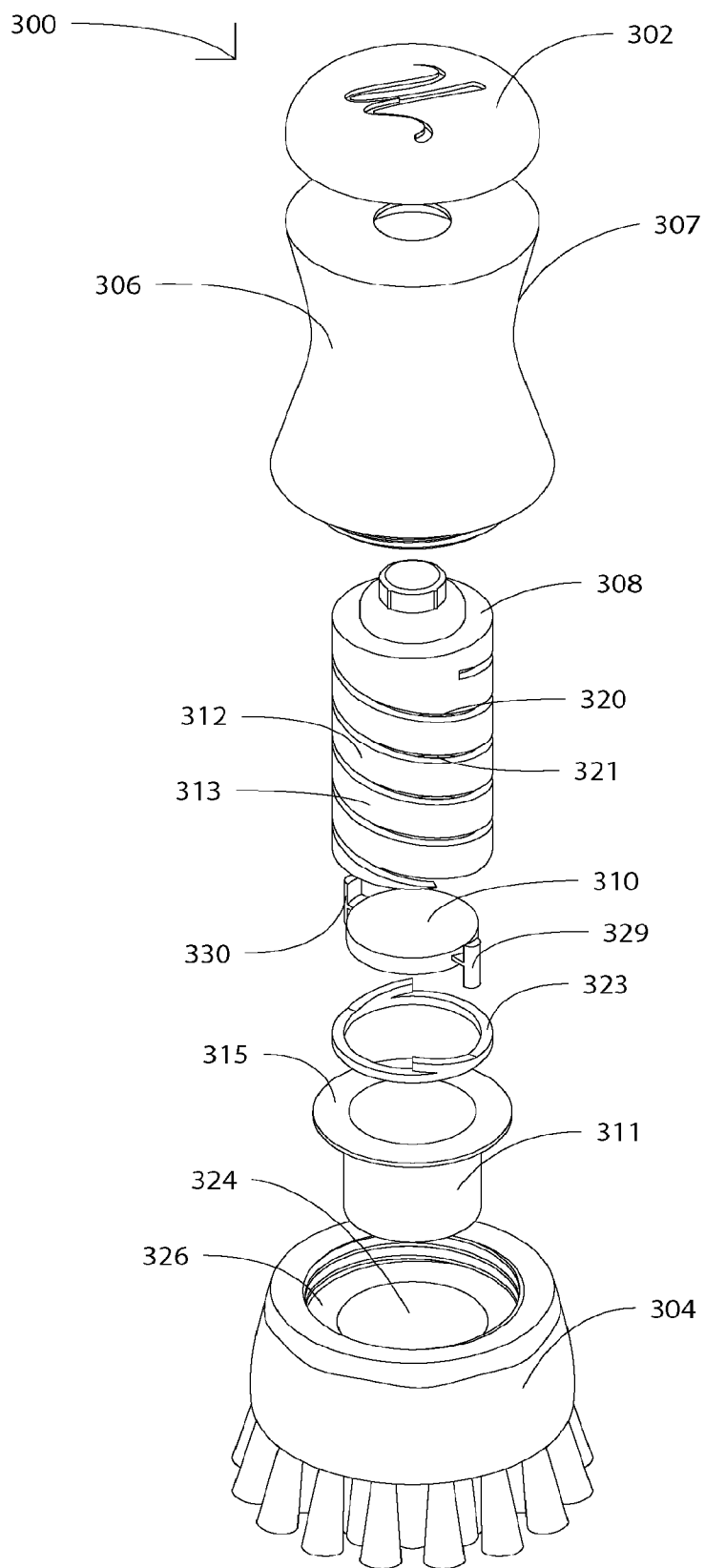


FIG. 21

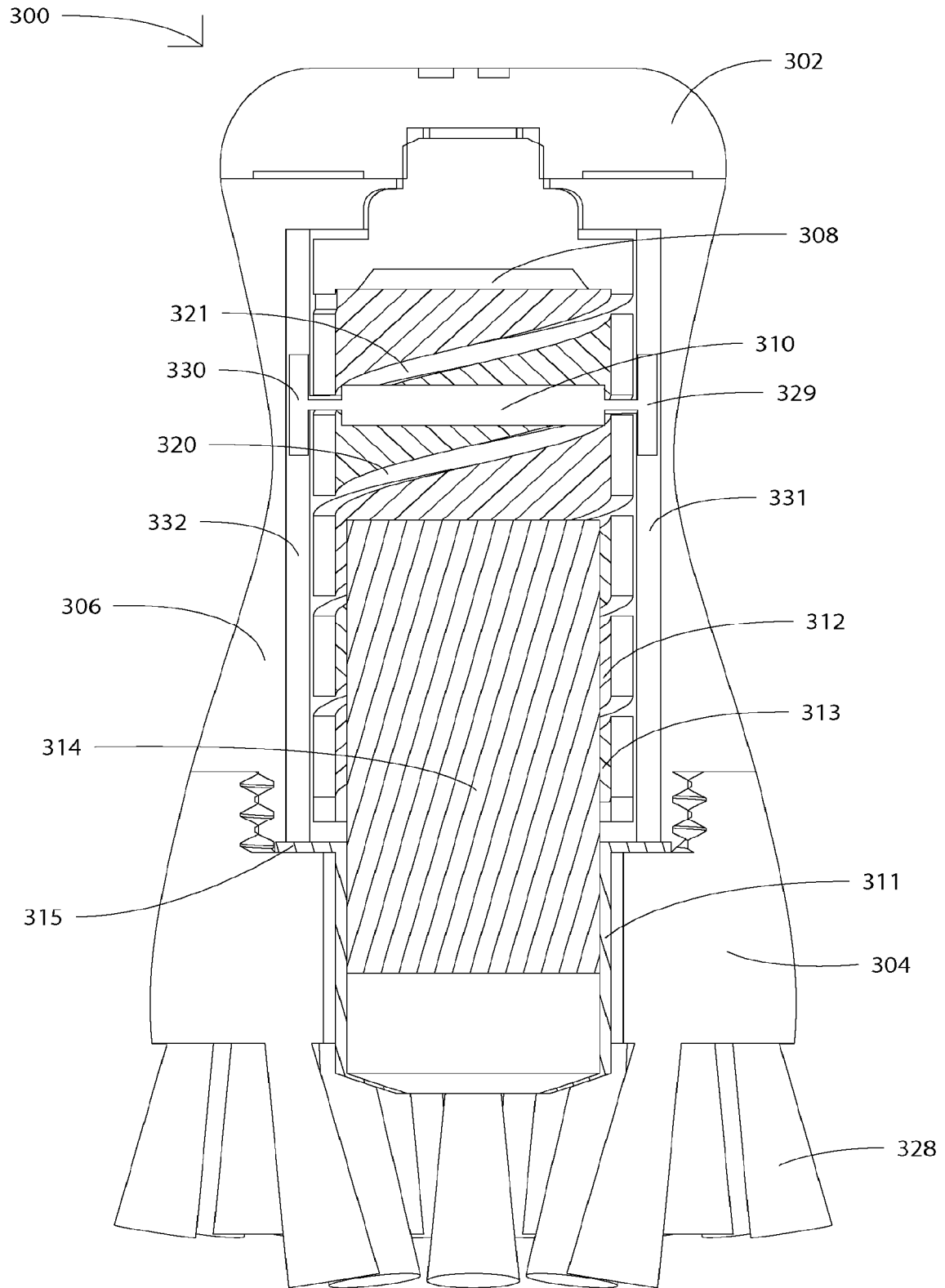


FIG. 22

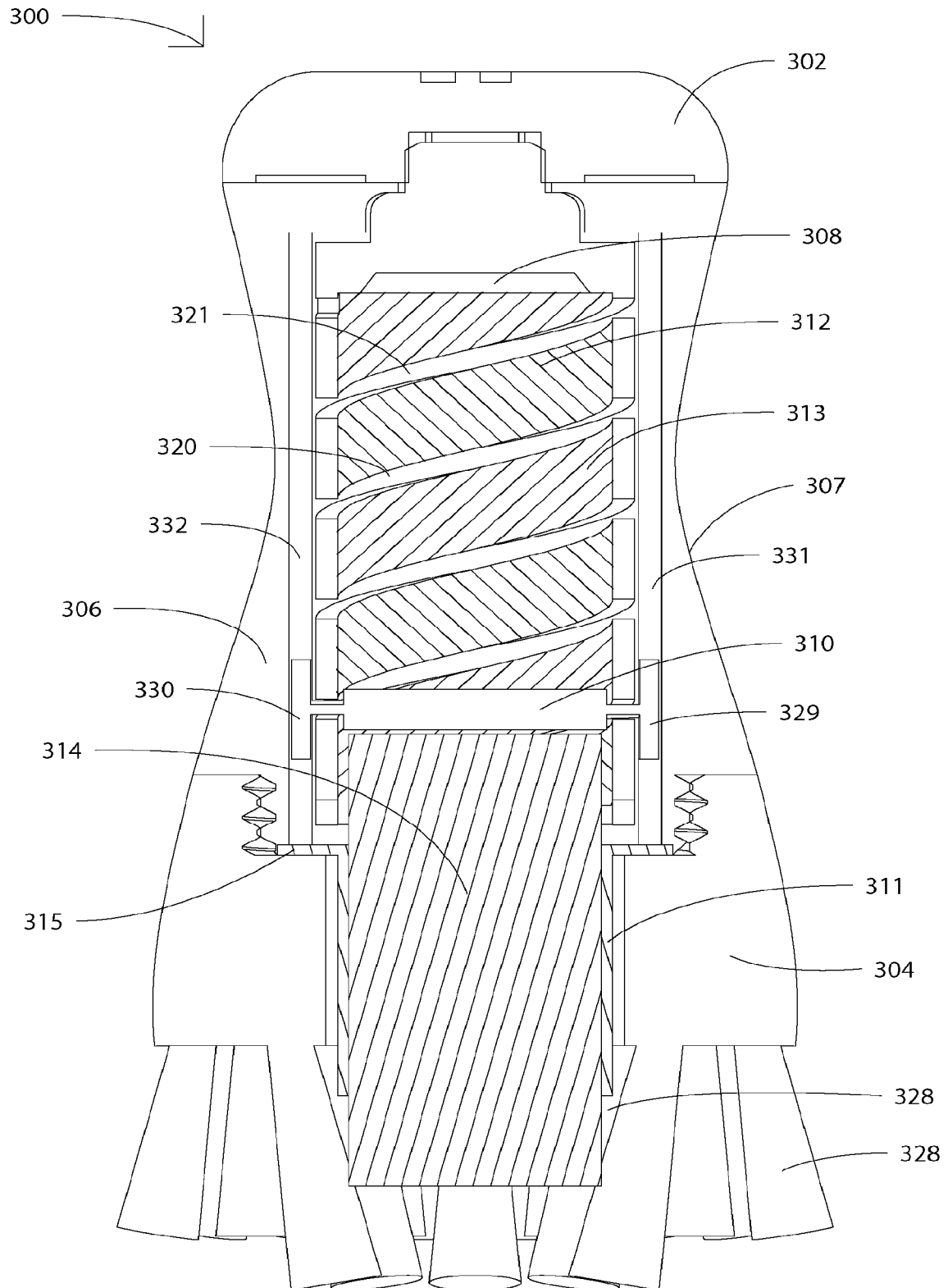


FIG. 23

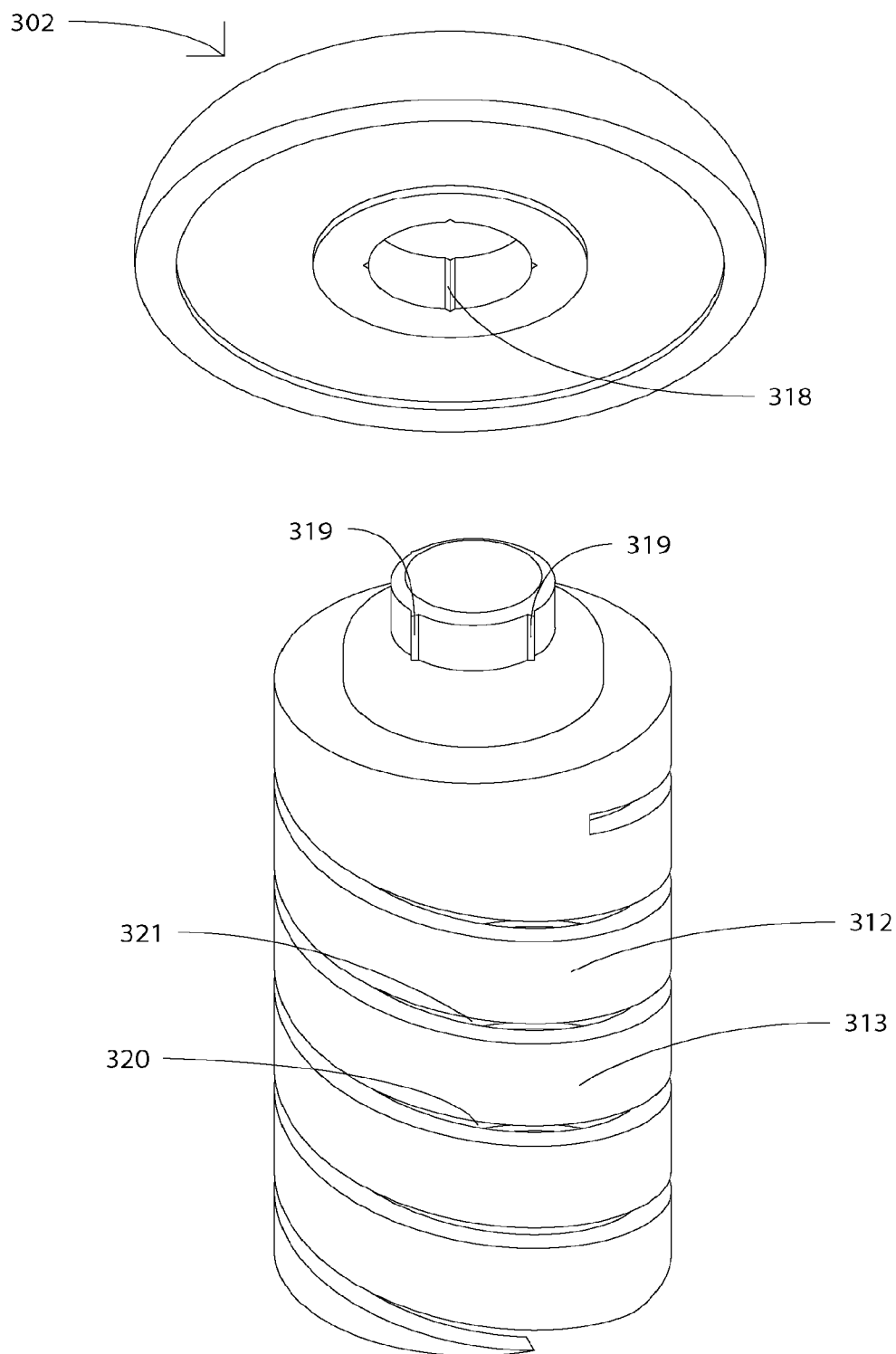


FIG. 24

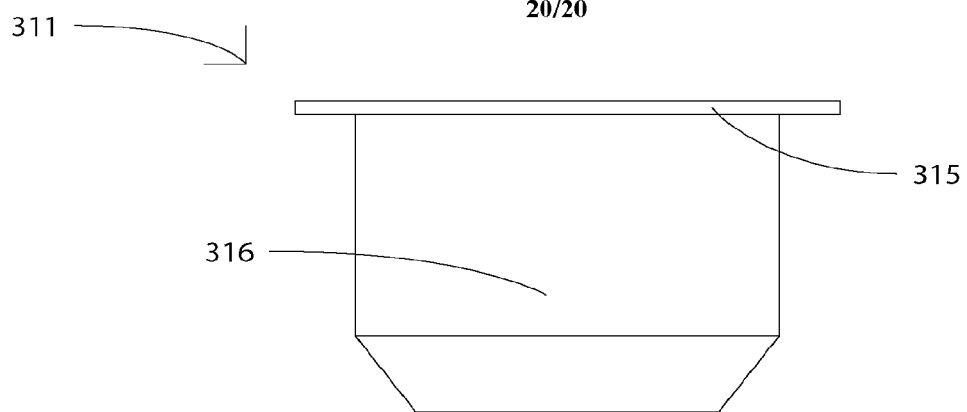


FIG. 25A

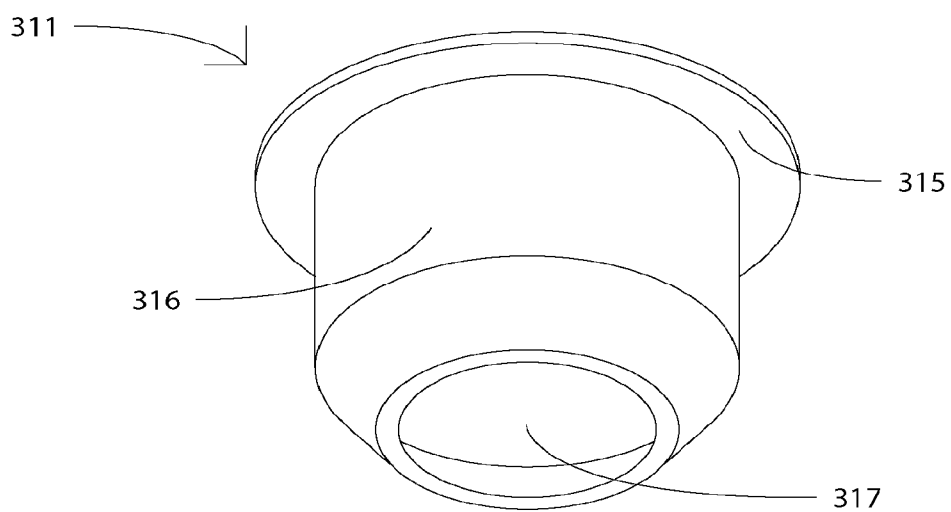


FIG. 25B

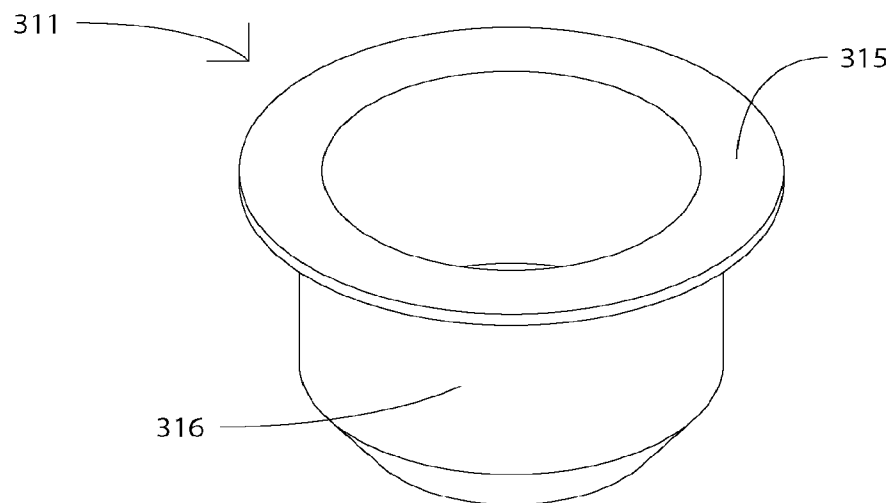


FIG. 25C

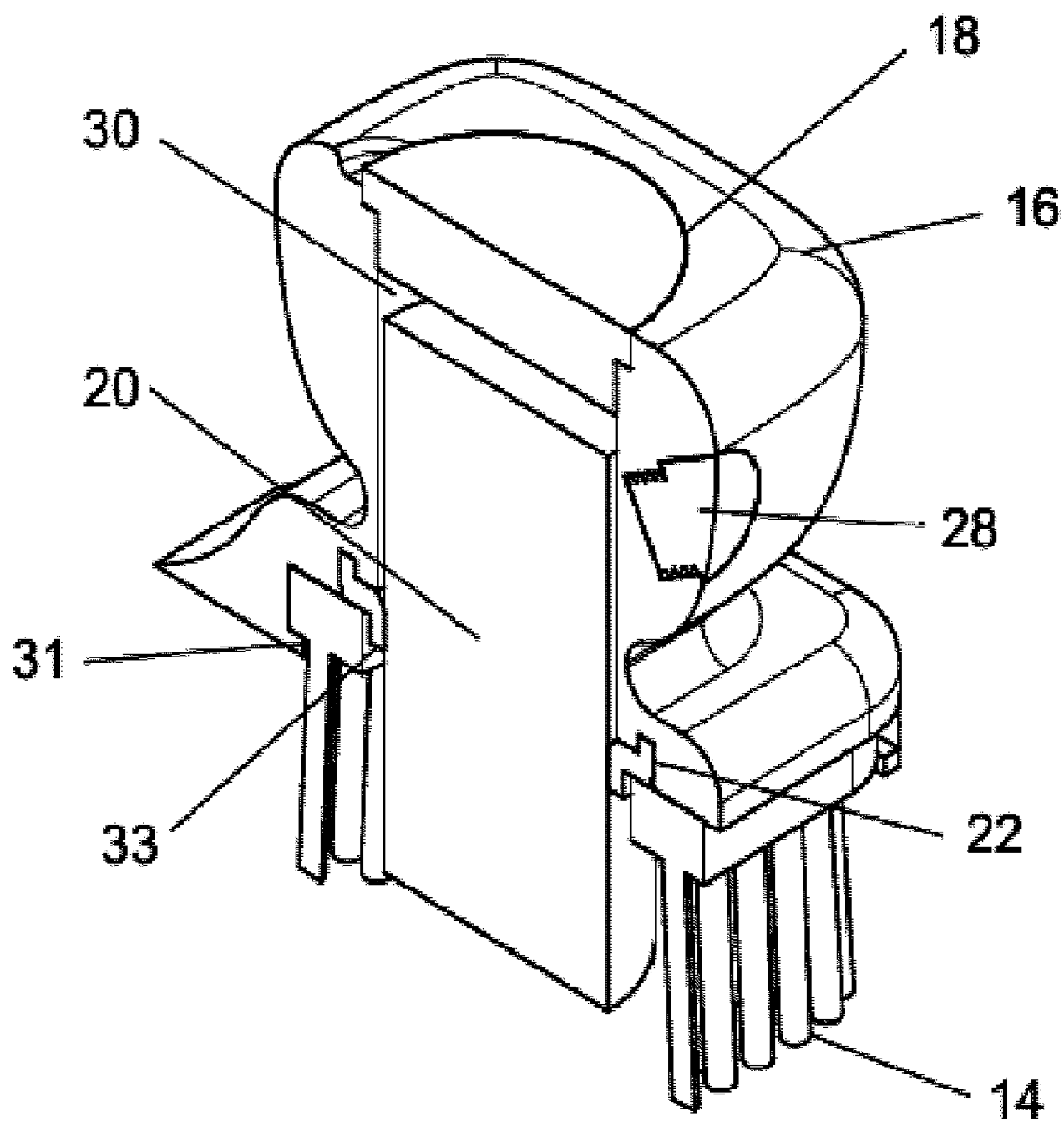


Fig. 6