

A PENDULUM CAP FOR USE WITH CONTAINERS

FIELD OF INVENTION

5 The present invention relates generally to the field of containers, and more specifically, to containers with specialized removable caps that allow dispensing of a fluid or a particulate matter stored therein.

BACKGROUND

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Various bottle cap structures have been proposed for use with bottles and cans and other receptacles, with the cap structure having an opening member that is adapted to open manually by a user. Some other existing bottle cap structures is capable of closing and opening automatically with help of one way valves provided with the bottle cap structure.

15 The valves allow the user to pour the fluid or particulate matter stored in the bottles when the bottle is kept in a tilted or bottom up position and to close when the bottle is returned to the upright position.

20 US patent US 2581897 A discloses a valve assembly having a valve head which moves under the influence of gravity to open and close a receptacle. When the valve is maintained in the upright position the valve head maintains a seal with the valve seat due to the weight of the valve head and upon tipping of the valve the head becomes unseated and the contents of the container may be poured. Although this structure is automatic in that the user does not

have to activate the valve separately, it has some inherent drawbacks in that the valve must always be maintained in the upright position for sealing and in that the valve relies on the weight on the valve head for providing a seal. Furthermore, any build up of pressure within the receptacle will reduce the force maintaining the seal and may result in leakage of contents from the receptacle.

US patent application US 20140008398 A1 discloses a dosing device for dispensing liquid from a container in which the flow through flow openings to an outlet tube is blocked after controlled delay by an obturator moveable within a control chamber mounted in a container neck behind the outlet tube. Movement of the obturator is governed by restricted flow through control openings at the rear of the control chamber. Restoration of the obturator to the back of the control chamber facilitates repeated dosing. An elastomeric element of resiliently deformable material promotes a seal to achieve a cleanly defined dose. In one proposal the elastomeric element coats the surface of the obturator and/or the outlet tube to cut off the flow. Another proposal provides a one-way elastomeric valve element for blocking the flow openings to enable rapid recovery after a dosing operation.

US patent US 7093738 B1 titled "Doser for portable liquids and fluent materials" discloses a narrow neck dosage device for dispensing a predetermined quantity of product. An insert is installed in a narrow neck of a container with a bottom disk protruding into the body of the container and a top device within the neck of the container. The bottom disk initially hangs within the container body, while the top device rests on a divider that separates the neck from the container body. The top device can be upward angled blades, angled blades or a

circular disc. A shaft connects the top devices and the bottom disk. The shaft also can have multiple configurations, such as spiral, flat helix, or random kinks. The shaft spins, rocks or oscillates and passes through a hole in the center of the divider. The divider has pre-sized holes that allow product to pass through. When the container is tipped into a dispensing position, fluid pressure moves the insert up the neck of the container until the bottom disk reaches the divider and seals the neck off from the body of the container. The container is returned to an upright position after dispensing and the weight of the insert spins, rocks or oscillates the insert downward into the starting position.

10 The above cited prior arts disclose closure means or dosing devices that can be attached to bottle openings. However, the above prior arts do not disclose and automatically opening or closing means associated with the closure means. Moreover, the above disclosed closure means or dosing devices require the users to manually operate the closure means to deliver the contents of the container.

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SUMMARY

The present invention is a pendulum cap for use with containers, which includes a lower cap portion having a top opening for delivery of the fluid or particulate matter stored in the container. The lower cap portion of the pendulum cap has a circular bottom edge portion and is provided with internal threads for closing a bottleneck opening of the container. The top opening is a funnel shaped portion extending out from the lower cap portion of the pendulum cap. The funnel shaped portion of the top opening has a top opening for delivery of the fluid or particulate matter stored in the container. A top circular edge of the lower cap

portion is provided with threads on an exterior portion to attach with a top cover portion. The pendulum cap further includes a pendulum swing cap portion having a first swing cap and a second swing cap. The lower cap portion of the pendulum cap is further attached with a pair of pivot points. The first swing cap and the second swing cap of the pendulum swing cap portion is attached to the pivot points using an attaching means for allowing the free movement of the first swing cap and the second swing cap about the pivot points.

The first swing cap and the second swing cap of the pendulum swing cap portion have a shape which covers the top opening of the lower cap portion when the container is placed in an upright position. When a user tilts the container and faces the top opening of the lower cap portion downwards, the first swing cap and the second swing cap swings away from the normal position and opens the top opening of the lower cap portion. This allows delivery of the fluid or particulate matter stored in the container through the top opening of the lower cap portion. When the user tilts the container to an upright position, the first swing cap and the second swing cap automatically moves closer about the pivot points to close the top opening of the lower cap portion. A top cover portion attachable to the top edge of the lower cap portion secures the first swing cap and the second swing cap in a locked position. This allows the user to carry the container without the fear of spilling the fluid or particulate matter stored in the container.

Other objects and advantages of the embodiments herein will become readily apparent from the following detailed description taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTIONS OF THE DRAWINGS

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FIG. 1 illustrates a disassembled view of a pendulum cap for use with a container, according to a preferred embodiment of the present invention;

FIG. 2 illustrates a position of the container so as to open the pendulum cap to dispense the contents stored in the container, according to a preferred embodiment of the present invention; and

FIG. 3 illustrates an assembled view of the pendulum cap for use with the container, according to a preferred embodiment of the present invention.

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DETAILED DESCRIPTION

In the following detailed description, a reference is made to the accompanying drawings that form a part hereof, and in which the specific embodiments that may be practiced is shown by way of illustration. These embodiments are described in sufficient detail to enable those skilled in the art to practice the embodiments and it is to be understood that the logical and other changes may be made without departing from the scope of the embodiments. The following detailed description is therefore not to be taken in a limiting sense.

FIG. 1 illustrates a disassembled view of a pendulum cap (100) for use with a container (106), according to a preferred embodiment of the present invention. The present pendulum cap (100) for use with containers includes a lower cap portion (102) having a top opening (104) for delivery of the fluid or particulate matter stored in the container (106). In an embodiment of the present invention, the lower cap portion (102) of the pendulum cap (100) has a circular bottom portion and is provided with internal threads for closing a bottleneck opening of the container (106). According to alternate embodiment, the lower cap portion (102) of the pendulum cap (100) has any other means of clip-on or other attachment means to seal the bottleneck opening of the container (106). The container (106) may contain fluid such as water, ketchup, or any beverage, or particular matter such as powder, grounded spices, etc. The container (106) may also be a pepper/salt/spice grinder such that as the salt is grounded it can be dispensed through the pendulum cap (100).

In a preferred embodiment, the top opening (104) is a funnel shaped portion extending out from the lower cap portion (102) of the pendulum cap (100). The funnel shaped portion of the top opening (104) has a top opening for delivery of the fluid or particulate matter stored in the container (106). A top circular edge of the lower cap portion (102) is further provided with threads on an exterior portion to attach with a top cover portion (118). The pendulum cap (100) further includes a pendulum swing cap portion (110) having a first swing cap (112) and a second swing cap (114). The lower cap portion (102) of the pendulum cap (100) is further attached with a pair of pivot (116) points. The first swing cap (112) and the second swing cap (114) of the pendulum swing cap portion (110) is attached to the pivot (116)

points using at least one attaching means such as a screw or a locking pin or any other mechanical attachment means capable of allowing the free movement of the first swing cap (112) and the second swing cap (114) about the pivot (116) points.

5 **FIG. 2** illustrates a position of the container (106) so as to open the pendulum cap (100) to dispense the contents stored in the container (106). The first swing cap (112) and the second swing cap (114) of the pendulum swing cap portion (110) have a shape which covers the top opening (104) of the lower cap portion (102) of the pendulum cap (100). The first swing cap (112) and the second swing cap (114) covers the top opening (104) of the lower cap portion
10 (102) when the container (106) is placed in an upright position. When a user tilts the container (106) and faces the top opening (104) of the lower cap portion (102) downwards, the first swing cap (112) and the second swing cap (114) swings away from the normal position and opens the top opening (104) of the lower cap portion (102). This allows delivery of the fluid or particulate matter stored in the container (106) through the top
15 opening (104) of the lower cap portion (102), when the container (106) is held in an inverted position. When the user tilts the container (106) to an upright position, the first swing cap (112) and the second swing cap (114) automatically moves closer about the pivot (116) points to close the top opening (104) of the lower cap portion (102). In some embodiment, as shown in **FIG. 2**, the top cover portion (118) for attaching to the top edge of the lower
20 cap portion (102) allows the first swing cap (112) and the second swing cap (114) of the pendulum swing cap portion (110) to spread apart, opening the top opening (104) of the lower cap portion (102) to dispense the contents of the container (106).

The top cover portion (118) can be attached to the lower cap portion (102) using the threads provided on the top edge of the lower cap portion (102). The top cover portion (118) has a central opening which allows the top surfaces of the first swing cap (112) and the second swing cap (114), which closes the top opening (104) of the lower cap portion (102), to project outwards. When the user closes the lower cap portion (102) using the top cover portion (118), the position of the first swing cap (112) and the second swing cap (114), which closes the top opening (104) of the lower cap portion (102), get also locked. This ensures proper watertight sealing of the top opening (104) of the lower cap portion (102) and thereby preventing flow of liquid through the top opening (104) when the container (106) is positioned at any orientation.

The pendulum cap (100) for use with the container (106), according to a preferred embodiment of the present invention, can be made from any material such as, but not limited to, plastic materials. The first swing cap (112) and the second swing cap (114) of the pendulum swing cap portion (110) have a counterweight portion attached to the ends. The counterweight portion attached to each of the first swing cap (112) and the second swing cap (114) is capable of being attached to the pivot (116) points provided on top of the lower cap portion (102) so that a swinging motion is achieved due to the gravity effect on the counterweight when the lower cap portion (102) is tilted downwards. When the container (106) is in an upright position, such as when placed on a table or any flat surface, the counterweight portion attached to each of the first swing cap (112) and the second swing cap (114) enables the first swing cap (112) and the second swing cap (114) to come closer and to cover the top opening (104) of the lower cap portion (102). When a user tilts the container

(106), or holds it in an inverted position, the counterweight portion attached to each of the first swing cap (112) and the second swing cap (114) at the pivot (116) points, moves downwards due to gravity, which in turn spreads the first swing cap (112) and the second swing cap (114) apart while opening up the top opening (104) of the lower cap portion (102). This allows the fluid or particulate matter stored in the container (106) to dispense through the top opening (104) of the lower cap portion (102).

FIG. 3 illustrates an assembled view of the pendulum cap (100) for use with the container (106), according to a preferred embodiment of the present invention. The present pendulum cap (100) for use with the container (106) provides an easy and effortless way of controlling the fluid or particulate matter flow through the top opening (104) of the lower cap portion (102) attached to the bottleneck opening of the container (106). According to alternate embodiment, the present pendulum cap (100) can be attached different kinds of containers (106) of different shapes and sizes for automatically controlling the delivery of the fluid or particulate matter stored therein. The pendulum swing cap portion (110) having the first swing cap (112) and the second swing cap (114) attached to the lower cap portion (102) at the pivot (116) points is locked in place when the user closes the top cover portion (118) for attaching to the top edge of the lower cap portion (102). The user can easily carry the container (106) with the pendulum cap (100), closed tightly using the top cover portion (118), without spilling the fluid or particulate matter stored in the container (106). In some other embodiment, the pendulum swing cap portion (110) having the first swing cap (112) and the second swing cap (114), the lower cap portion (102) and the top cover portion (118)

can be made of materials such as, but not limited to, plastic, steel, aluminum or any other durable materials.

The foregoing description of the specific embodiments will so fully reveal the general nature
5 of the embodiments herein that others can, by applying current knowledge, readily modify
and/or adapt for various applications such specific embodiments without departing from the
generic concept, and, therefore, such adaptations and modifications should and are intended
to be comprehended within the meaning and range of equivalents of the disclosed
embodiments. It is to be understood that the phraseology or terminology employed herein is
10 for the purpose of description and not of limitation. Therefore, while the embodiments
herein have been described in terms of preferred embodiments, those skilled in the art will
recognize that the embodiments herein can be practiced with modification within the scope
of the appended claims.

15 Although the embodiments herein are described with various specific embodiments, it will
be obvious for a person skilled in the art to practice the invention with modifications.
However, all such modifications are deemed to be within the scope of the claims.

CLAIMS

1. A pendulum cap (100) for use with containers (106) comprising:
 - a lower cap portion (102) having a top opening (104) for delivery of the fluid or particulate
5 matter stored in the container (106);
 - a pendulum swing cap portion (110) having a first swing cap (112) and a second swing cap (114);
 - a pivot (116) attached to a top edge of the lower cap portion (102) for attaching the first swing cap (112) and a second swing cap (114),
10 wherein the pivot (116) enables the swinging movement of the first swing cap (112) and a second swing cap (114);
 - wherein an inverted orientation of the pendulum swing cap portion (110) swings open the first swing cap (112) and the second swing cap (114) to enable delivery of the fluid or particulate matter stored in the container (106) through the top opening (104).
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2. The pendulum cap (100) of claim 1, further comprises a top cover portion (118) for attaching to a top edge of the lower cap portion (102).
3. The pendulum cap (100) of claim 1 wherein the lower cap portion (102) has a circular bottom
20 portion (108) having internal threads for closing a bottleneck opening of the container (106).

4. The pendulum cap (100) of claim 1 wherein the lower cap portion (102) has a funnel shape top having the top opening (104) at an end, wherein the first swing cap (112) and the second swing cap (114) is attached to the pivot (116) and securely close the top opening (104) when the container (106) is kept in an upright position.

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5. The pendulum cap (100) of claim 1 wherein the pendulum swing cap portion (110) further includes a counterweight attached to each end of the first swing cap (112) and the second swing cap (114).

10 6. The pendulum cap (100) of claim 4 wherein the counterweight attached to each end of the first swing cap (112) and the second swing cap (114) at the pivot (116) points enables seesaw movement of the first swing cap (112) and the second swing cap (114) about the pivot (116) point, wherein tilting of the container (106) enables movement of the first swing cap (112) and the second swing cap (114) from a closed position to an open position to close and open
15 the top opening (104).

7. The pendulum cap (100) of claim 1 wherein an upright position of the container (106) keeps the first swing cap (112) and the second swing cap (114) together to close the top opening (104) to prevent fluid or particulate matter dispensing.

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8. The pendulum cap (100) of claim 1 wherein tilting of the container (106) from an upright position to a bottom up position opens up the top opening (104) by swinging the first swing cap (112) and the second swing cap (114) apart, wherein the tilting of the container (106) from the bottom up position to the upright position draws the first swing cap (112) and the second swing cap (114) together to close the top opening (104).
9. The pendulum cap (100) of claim 1 wherein the top cover portion (118) has internal threads for removably attaching to the top edge of the lower cap portion (102).
10. The pendulum cap (100) of claim 1 wherein the top cover portion (118) tightly secures the closed position of the first swing cap (112) and the second swing cap (114) to prevent fluid or particulate matter flow through the top opening (104).

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ABSTRACT

A pendulum cap (100) for use with containers includes a lower cap portion (102) having a top
5 opening (104) for delivery of the fluid or particulate matter stored in the container (106), a
pendulum swing cap portion (110) having a first swing cap (112) and a second swing cap (114),
a pivot (116) attached to a top edge of the lower cap portion (102) for attaching the first swing
cap (112) and a second swing cap (114) and a top cover portion (118) for attaching to the top
edge of the lower cap portion (102). The pivot (116) enables the swinging movement of the first
10 swing cap (112) and a second swing cap (114) away from a top opening (104) closed position.
An inverted orientation of the pendulum swing cap portion (110) swings open the first swing cap
(112) and the second swing cap (114) to enable automatic opening of the top opening (104) for
delivery of the fluid or particulate matter stored in the container (106).

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Most illustrative figure: **FIG. 1**

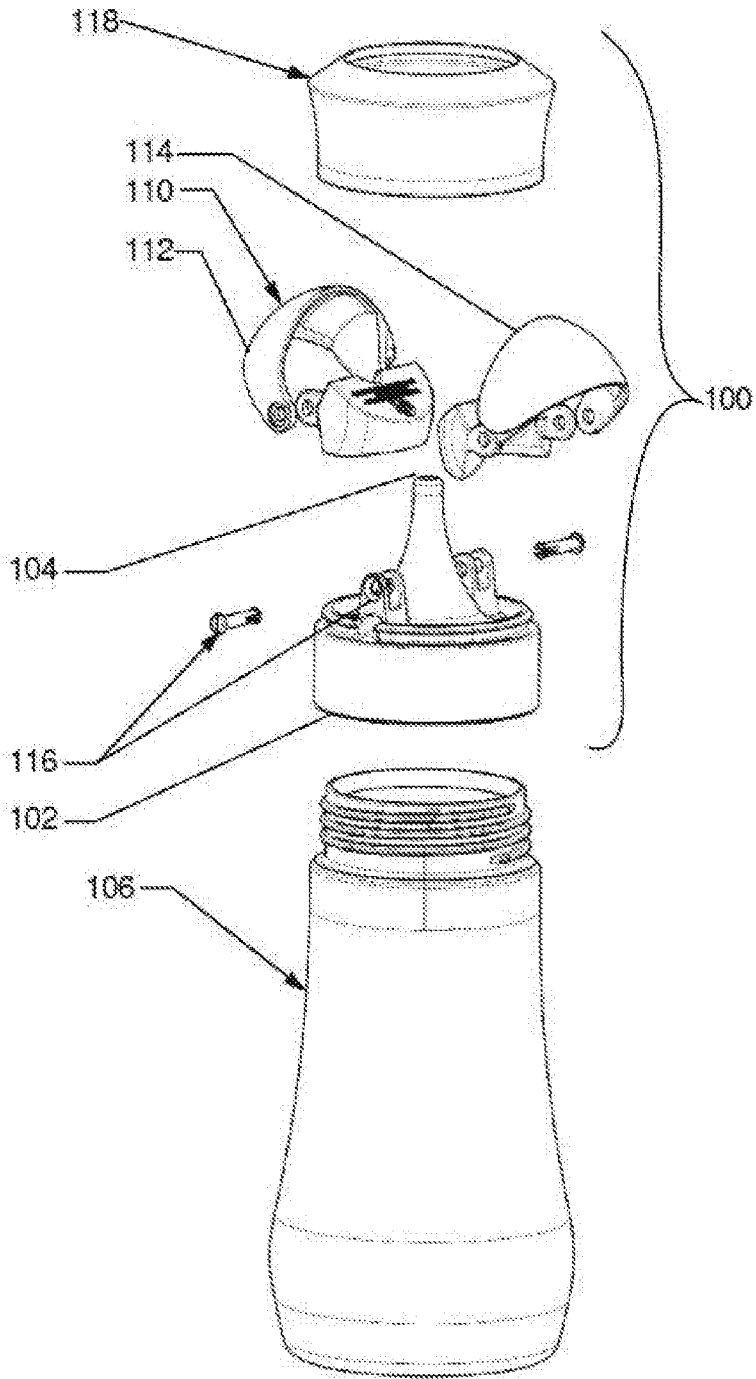


FIG 1

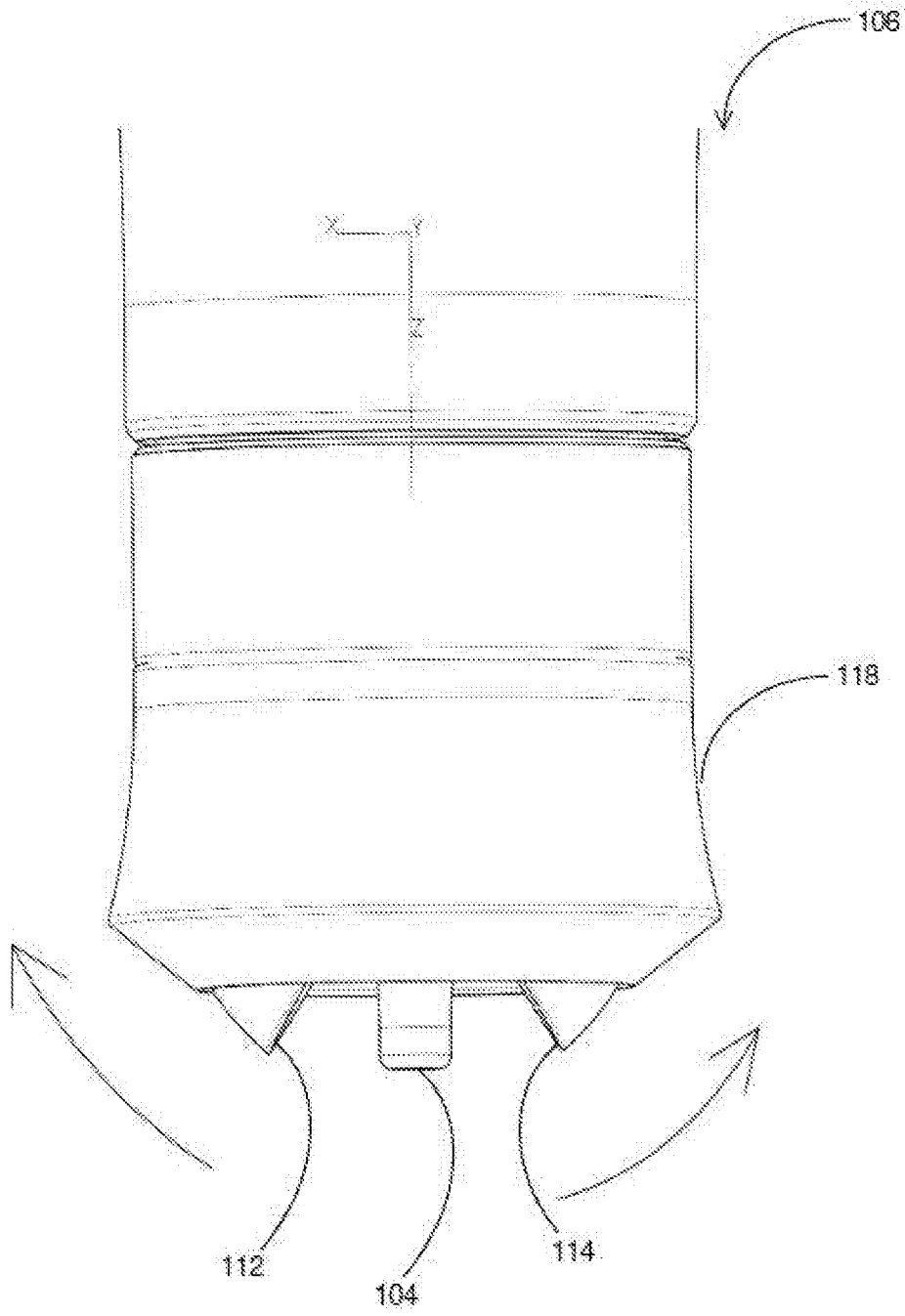


FIG. 2

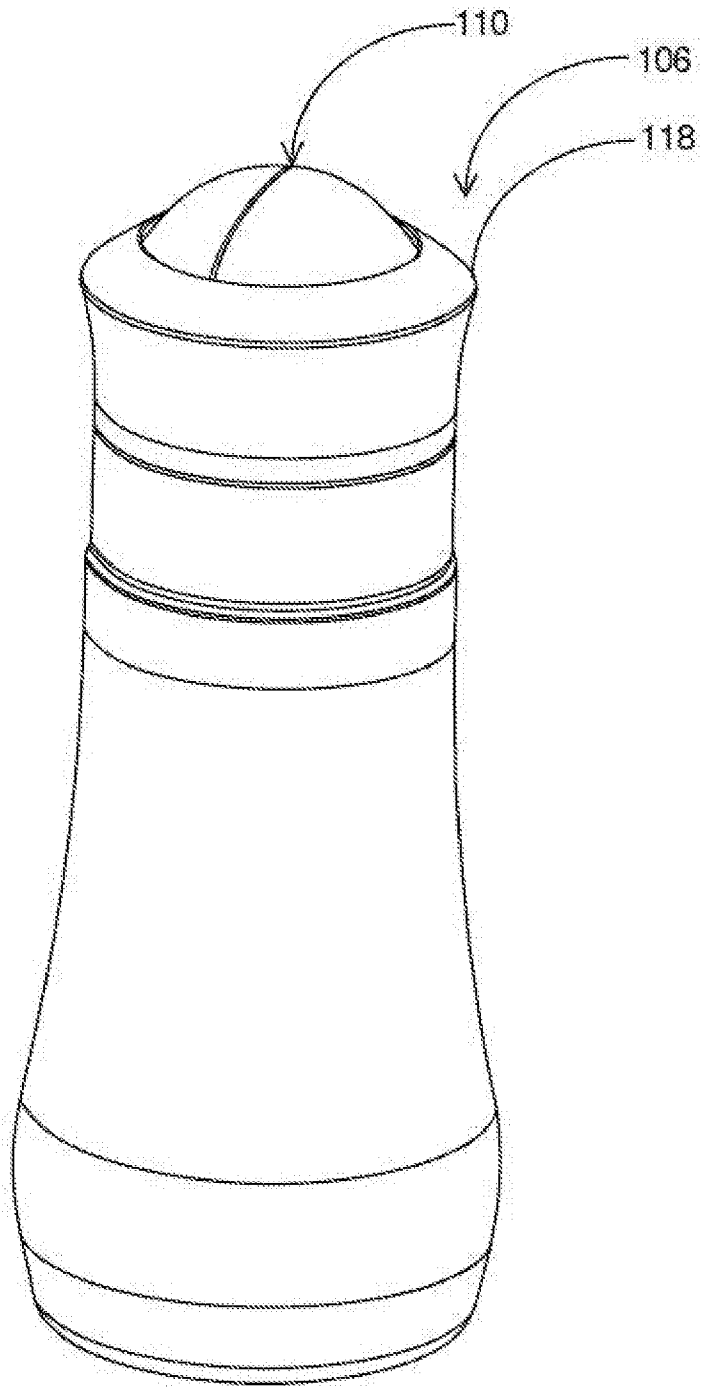


FIG. 3