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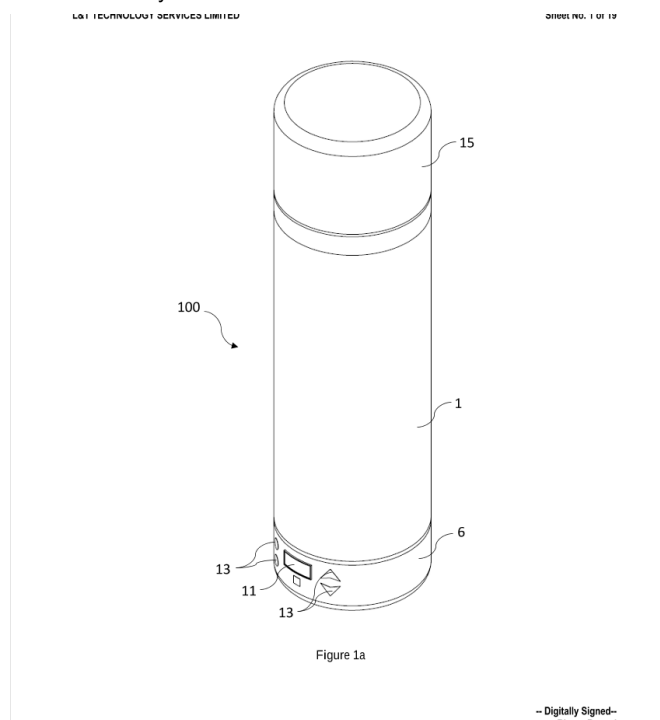
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(54) Title: A CONTAINER FOR DISPENSING A FLUID AND A METHOD OF DISPENSING THEREOF

(57) Abstract: The present disclosure discloses a container (100) for dispensing a fluid and a method (300) of dispensing thereof. The container (100) comprises a body (1), a top portion (2), a bottom portion (6) and a system (200) for dispensing the fluid. The system (200) comprises a first sensor (3) to sense and verify a body portion of the user, a valve (4) to selectively allow flow of the fluid and a second sensor (5) to sense discharge of the fluid. The system (200) actuates the valve (4) to selectively dispense and determine amount of the fluid dispensed, upon verifying the user in the lifted position of the container (100). With such configuration, the container (100) may automatically regulate flow of the fluid from the container (100) and may accurately measure fluid consumed by a user.



FORM 2

THE PATENTS ACT 1970
(39 OF 1970)

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The Patent Rules, 2003

Complete Specification

(See Section 10 and Rule 13)

1. TITLE OF THE INVENTION

**A CONTAINER FOR DISPENSING A FLUID AND A METHOD OF DISPENSING
THEREOF**

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3. PREAMBLE TO THE DESCRIPTION

COMPLETE

The following specification describes the invention and the manner in which it is to be performed

5 **DESCRIPTION**

TECHNICAL FIELD

[0001] Present disclosure, in general, relates to the field of containers with fluid. Particularly, but not exclusively, the present disclosure relates to a system and a method for dispensing the fluid from the container.

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BACKGROUND OF THE DISCLOSURE

[0002] Fluids are essential for daily life, especially for keeping the body hydrated and healthy. Often, people carry containers such as flasks, bottles to hydrate. Especially, in humid weather conditions, where people may dehydrate at a faster rate, fluid containers play a crucial
15 role in avoiding dehydration.

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[0003] Conventionally, containers are used to carry fluid including, but not limited to, water, energy drinks, electrolyte water etc., as a source, where such containers are adapted to contain and dispense fluids through an opening. Transparent containers often indicate level of fluid in
20 the container to a user. On the other hand, containers made of non-transparent material may include digital representation of the amount of water contained in the bottle and consumed therefrom, sensed by a sensing system with a plurality of sensors across the container.

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[0004] Existing containers may be limited to sensing water consumption by the user. However,
25 such systems may not accurately detect actual water or fluid consumption by the user, where the fluid flown out from the container due to spillage, removal of lid may be considered as fluid consumed by the user. Further, such systems may detect fluid level variation as fluid consumed by the user, when fluid from the container may be shared between multiple users, which may not be accurate.

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[0005] The present disclosure is directed to overcome one or more limitations stated above or any other limitations associated with the conventional mechanisms.

SUMMARY OF THE DISCLOSURE

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[0006] One or more shortcomings of the prior art are overcome by a method and a system as claimed and additional advantages are provided through the method and the system as claimed in the present disclosure. Additional features and advantages are realized through the

5 techniques of the present disclosure. Other embodiments and aspects of the disclosure are described in detail herein and are considered a part of the claimed disclosure.

[0007] In one non-limiting embodiment of the present disclosure a container is disclosed. The container comprises a body, a top portion, a bottom portion and a system for dispensing a fluid
10 from the body of the container. The top portion is connectable to the body at a first end and is defined with at least one aperture at a second end opposite to the first end connected to the body. The bottom portion is connectable to the second end of the body and opposite to the top portion. The system comprises a first sensor, a valve, a second sensor, and a control unit. The first sensor is disposed at the top portion of the container. The first sensor is configured to sense
15 at least a body portion of a user. The valve is defined proximal to the at least one aperture in the top portion of the container. The valve is configured to selectively allow flow of the fluid in the container through the at least one aperture. The second sensor is disposed proximal to the valve and is configured to sense a discharge of the fluid through the at least one aperture. The control unit is communicatively coupled to the first sensor, the valve and the second sensor.
20 The control unit is configured to receive and verify sensed body portion of the user from the first sensor. The control unit actuates the valve to selectively dispense the fluid in the container through the at least one aperture, upon verifying the user in the lifted position of the container. The control unit, then, determines amount of the fluid being dispensed through the at least one aperture based on the discharge of the fluid sensed by the second sensor.

25 [0008] In an embodiment, the first sensor is selected from at least one of a camera, a tongue print sensor, a scanner, and the second sensor includes a flow sensor.

[0009] In an embodiment, the body portion of the user includes a tongue print.

30 [0010] In an embodiment, the container comprises a level sensor disposed on the body of the container, the level sensor being communicatively coupled to the control unit and configured to sense level of the fluid in the container.

35 [0011] In an embodiment, the container comprises a tilt sensor disposed on the body of the container and communicatively coupled to the control unit, wherein the tilt sensor is configured to sense an angular position of the container relative to a surface.

5 [0012] In an embodiment, the container comprises at least one switch disposed at the bottom portion of the container and communicatively coupled to the control unit, wherein the at least one switch is configured to sense a displacement of the container away from the surface.

10 [0013] In an embodiment, the control unit is configured to detect the lifted position of the container based on angular position from the tilt sensor and displacement sensed by the at least one switch.

15 [0014] In an embodiment, the control unit is configured to detect a stationary position of the container based on the angular position from the tilt sensor and the displacement of the container sensed by the at least one switch and configured to actuate the valve to restrict flow of the fluid from the container.

20 [0015] In an embodiment, the bottom portion includes an indication unit, communicatively coupled to the control unit to receive and indicate amount of fluid dispensed from the at least one aperture.

25 [0016] In another non-limiting embodiment, a method for dispensing a fluid from a container is disclosed. The method includes the steps comprising of receiving and verifying, by a control unit, a sensed portion of a user from a first sensor disposed at a top portion of the container and communicatively coupled to the control unit. The control unit actuates a valve defined proximal to at least one aperture in the top portion of the container and communicatively coupled to the control unit, to dispense the fluid in the container through the at least one aperture. The control unit determines amount of the fluid being dispensed through the at least one aperture based on the discharge of the fluid sensed by a second sensor disposed proximal to the valve and
30 communicatively coupled to the control unit.

35 [0017] In an embodiment, the method comprises receiving, by the control unit, an angular position from a tilt sensor disposed on the body of the container and lifting of the container sensed by at least one switch disposed at a bottom portion of the container. The control unit, then, determines a lifted position of the container for consumption of the fluid in the container based on the angular position from the tilt sensor and lifting of the container sensed by the at least one switch.

40 [0018] The foregoing summary is illustrative only and is not intended to be in any way limiting. In addition to the illustrative aspects, embodiments, and features described above, further

5 aspects, embodiments, and features will become apparent by reference to the drawings and the following detailed description.

BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWINGS

10 [0019] The novel features and characteristic of the disclosure are set forth in the appended claims. The disclosure itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying figures. One or more embodiments are now described, by way of example only, with reference
15 to the accompanying figures wherein like reference numerals represent like elements and in which:

[0020] Figure 1a is an isometric view of a container, in accordance with an embodiment of the present disclosure.

20 [0021] Figure 1b is a front view of the container, in accordance with an embodiment of the present disclosure.

[0022] Figure 1c is an isometric view of the container depicting a top portion, in accordance
25 with an embodiment of the present disclosure.

[0023] Figure 1d is a front view of the container depicting the top portion, in accordance with an embodiment of the present disclosure.

30 [0024] Figure 1e is an exploded view of the container, in accordance with an embodiment of the present disclosure.

[0025] Figure 1f is sectional view of the container, in accordance with an embodiment of the present disclosure.

35 [0026] Figure 1g is a perspective view of a body of the container, in accordance with an embodiment of the present disclosure.

[0027] Figure 1h is a sectional view of the body, in accordance with an embodiment of the
40 present disclosure.

5 [0028] Figure 2 is a block diagram illustrating a system for dispensing the fluid from the container, in accordance with an embodiment of the present disclosure.

[0029] Figure 3a is a perspective view of the top portion of the container, in accordance with an embodiment of the present disclosure.

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[0030] Figure 3b is a side view of the top portion of the container, in accordance with an embodiment of the present disclosure.

[0031] Figure 3c is an exploded view of the top portion of the container, in accordance with an embodiment of the present disclosure.

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[0032] Figure 3d is a sectional view of the top portion of the container, in accordance with an embodiment of the present disclosure.

[0033] Figure 3e is an exploded sectional side view of the top portion of the container, in accordance with an embodiment of the present disclosure.

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[0034] Figure 4a is a front view of a bottom portion of the container, in accordance with an embodiment of the present disclosure.

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[0035] Figure 4b is a sectional view of the bottom portion of the container, in accordance with an embodiment of the present disclosure.

[0036] Figure 4c is a perspective view of the bottom portion of the container, in accordance with an embodiment of the present disclosure.

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[0037] Figure 4d is an exploded view of the bottom portion of the container, in accordance with an embodiment of the present disclosure.

[0038] Figure 4e is an isometric view of a bottom portion of the container, in accordance with an embodiment of the present disclosure.

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[0039] Figure 5a is a perspective view of the container depicted at a lifted position for consumption of a fluid, in accordance with an embodiment of the present disclosure.

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[0040] Figure 5b is a sectional view of the container depicted at the lifted position, in accordance with an embodiment of the present disclosure.

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[0041] Figure 5c is a perspective view of the container depicted at the lifted position, in accordance with an embodiment of the present disclosure.

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[0042] Figure 6 is a perspective view of the container depicted at a lifted position for consumption of a fluid, in accordance with an embodiment of the present disclosure.

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[0043] The figures depict embodiments of the disclosure for purposes of illustration only. One skilled in the art will readily recognize from the following description that alternative embodiments of the system and method illustrated herein may be employed without departing from the principles of the disclosure described herein.

DETAILED DESCRIPTION

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[0044] While the embodiments in the disclosure are subject to various modifications and alternative forms, specific embodiment thereof has been shown by way of example in the figures and will be described below. It should be understood, however that it is not intended to limit the disclosure to the particular forms disclosed, but on the contrary, the disclosure is to cover all modifications, equivalents, and alternative falling within the scope of the disclosure.

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[0045] The terms “comprises”, “comprising”, or any other variations thereof used in the disclosure, are intended to cover a non-exclusive inclusion, such that a device, assembly, mechanism, system, method that comprises a list of components does not include only those components but may include other components not expressly listed or inherent to such system, or assembly, or device. In other words, one or more elements in a system preceded by “comprises... a” does not, without more constraints, preclude the existence of other elements or additional elements in the system or method.

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[0046] Embodiments of the present disclosure discloses a container. The container comprises a body, a top portion, a bottom portion and a system for dispensing a fluid from the body of the container. The top portion is connectable to the body at a first end and is defined with at least one aperture at a second end opposite to the first end connected to the body. The bottom portion is connectable to the second end of the body and opposite to the top portion. The system comprises a first sensor, a valve, a second sensor, and a control unit. The first sensor is disposed at the top portion of the container. The first sensor is configured to sense at least a body portion of a user. The valve is defined proximal to the at least one aperture in the top portion of the

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5 container. The valve is configured to selectively allow flow of the fluid in the container through
the at least one aperture. The second sensor is disposed proximal to the valve and is configured
to sense a discharge of the fluid through the at least one aperture. The control unit is
communicatively coupled to the first sensor, the valve and the second sensor. The control unit
is configured to receive and verify sensed body portion of the user from the first sensor. The
10 control unit actuates the valve to selectively dispense the fluid in the container through the at
least one aperture, upon verifying the user in the lifted position. The control unit, then,
determines amount of the fluid being dispensed through the at least one aperture based on the
discharge of the fluid sensed by the second sensor. With such configuration, the container may
automatically regulate flow of a fluid from the container and may accurately measure fluid
15 consumed by a user by authentication. Further, with such system, inaccuracy involved in
estimation of fluid consumed from the container by the user may be minimized or eliminated.
The container may eliminate errors in estimation of fluid consumed due to refilling, emptying
and spillage of the fluid from the container.

20 [0047] The disclosure as described in the following paragraphs with reference to Figures 1a to
6. In the figures, the same element or elements which have same functions are indicated by the
same reference signs. It is to be noted that, the fluid is not illustrated in the figures for the
purpose of simplicity. One skilled in the art would appreciate that the system and the assembly
as disclosed in the present disclosure may be used in any container including but not limiting to
25 water bottles, flasks, and the like. The system and the method of the present disclosure may
also be implemented in containers dispensing a fluid for consumption to the user without
deviating from the principles of the present disclosure.

[0048] Figures 1a and 1b refer to a container (100) for containing and dispensing a fluid to a
30 user. The container (100) may include a top portion (2), a cover (15), a body (1) and a bottom
portion (6). The container (100) may be at least one being selected from a group consisting of
water bottles, flasks, sippers, and any container capable of containing and dispensing a fluid.
Further, the body (1) may be defined with an internal cavity configured to contain a fluid. For
sake of illustration, shape of the container (100) is depicted as cylindrical shape. However,
35 other shapes such as spherical, oval, cuboidal shapes and the like may also be implemented and
the same should not be considered a limitation.

[0049] Referring now to Figures 1c to 1f, the top portion (2) may be defined with a first end
(2b) and a second end (2c), where the first end (2b) may be connected to one end of the body

5 (1). The top portion (2) may be defined with at least one aperture (2a) at a second end (2c) opposite to the first end (2b) to dispense the fluid in the body (1) to the user through the at least one aperture (2a). The at least one aperture (2a) may fluidly connect the first end (2b) and the second end (2c) of the top portion (2) i.e., the fluid is capable of flowing from the first end (2b) to the second end (2c) through the at least one aperture (2a). For sake of illustration, the top
10 portion (2) is depicted with a tapered profile to define the at least one aperture (2a) for receiving and guiding the fluid from the body (1) to the user. However, the top portion (2) may be defined with other sections such as a tubular section, a bent section etc., and may be defined with a dispensing section such as a spout to dispense the fluid and the same shall not be considered a limitation. In an embodiment, the tapered profile of the top portion (2) may be converging from
15 the first end (2b) towards the second end (2c).

[0050] In an embodiment, the top portion (2) and the bottom portion (6) may be either integrally defined extending from the body (1) or may be separately attachable to the body (1). For example, the body (1) may receive the top portion (2) and the bottom portion (6) by
20 different mechanisms including, but not limited to, snug fitting, screw threads and the like. In an embodiment, the top portion (2) may be detachably connected to the body (1) to allow refilling of the fluid and cleaning of the body (1) and the like. Further, the top portion (2) may be fluidly coupled to the body (1) of the container (100) where, the top portion (2) may be defined with at least one conduit (16) defined between the first end (2b) and the second end
25 (2c) to guide the fluid from the body (1) through the at least one aperture (2a). In an embodiment, the at least one conduit (16) may be extending along length of the top portion (2) for dispensing the fluid to the user. In an embodiment, the top portion (2) may be defined with a constriction plate (18) proximal to the first end (2b) defined along circumference of the top portion (2) to restrict the fluid within the body (1) of the container (100) as can be seen in
30 Figure 1f.

[0051] Referring again to Figures 1a to 1f, the bottom portion (6) of the container (100) may be connectable to an other end of the body (1) opposite to the one end connected to the top portion (2). The container (100) may be defined with a plurality of buttons (13) and an
35 indication unit (11). In an embodiment, the plurality of buttons (13) and the indication unit (11) may be defined in at least one of the cover (15), the body (1) and the bottom portion (6). For sake of illustration, the plurality of buttons (13) and the indication unit (11) are depicted at the bottom portion (6) of the container (100) for easy access to the user and the same shall not be

5 considered a limitation. The bottom portion (6) may be extending from the body (1) and may be defined with a profile similar to that of the body (1). In the illustrative embodiment, the bottom portion (6) is depicted with a cylindrical profile and the same shall not be considered a limitation. The container (100) may include a level sensor (8) [shown in Figure 1f] disposed on a portion of the body (1) of the container (100) and may be communicatively coupled to the
10 control unit (7).

[0052] Referring now to Figures 1g and 1h, the level sensor (8) may sense level of the fluid in the body (1) of the container (100). In an embodiment, the level sensor (8) may be selected from at least one of an optical level sensor (8), a capacitive level sensor (8), an ultrasonic level
15 sensor (8) and the like. In the illustrative embodiment, the level sensor (8) is depicted as a capacitive level sensor (8) extending along length of the body (1) to sense the level of fluid in the body (1) as best seen in Figure 4b.

[0053] Referring now to Figure 2, the container (100) includes a system (200) for dispensing
20 the fluid. The system (200) may include a first sensor (3), a valve (4), a second sensor (5) and a control unit (7). The first sensor (3) may be disposed at the top portion (2) of the container (100). The first sensor (3) may be positioned on a face of the top portion (2), where at least a portion of the first sensor (3) may be exposed to surroundings. In an embodiment, the first sensor (3) may be configured to sense at least a body portion of the user. In the illustrative
25 embodiment, the first sensor (3) is depicted to be positioned proximal to the at least one aperture (2a) to sense at least a section of the body portion of the user as can be seen in Figure 1c. However, such positioning and location of the first sensor (3) shall not be considered a limitation. In an embodiment, the first sensor (3) may also be provided on the body (1) and proximal to the top portion (2), where such positioning may assist in interface between the
30 container (100) and the user. In an embodiment, the body portion sensed by the first sensor (3) includes a tongue print, which may act as an interface of the user for accessing the fluid in the container (100). In the illustrative embodiment, the body portion of the user is depicted as a tongue print for easy sensing while the user may be consuming the fluid from the container (100) in a lifted position of the container (100) as more of the same is explained in description
35 of Figure 5b. The first sensor (3) may be selected from at least one of a camera, a tongue print sensor, a scanner configured to sense the body portion of the user.

[0054] Referring now to Figures 3a to 3e, the top portion (2) may accommodate the valve (4) proximal to the at least one aperture (2a). At least a portion of the valve (4) may be extending

5 into the at least one conduit (16) defined in the top portion (2) as best seen in Figure 3d. The valve (4) may be configured to selectively allow flow of the fluid from the body (1) to the at least one aperture (2a). In an embodiment, the valve (4) may selectively block and unblock the at least one conduit (16) to allow and restrict flow of the fluid from the body (1) to the at least one aperture (2a). The valve (4) may be positioned in the top portion (2) proximal to either the
10 first end (2b) or the second end (2c) of the top portion (2). The valve (4) may include a linear actuated valve comprising a plunger which selectively displaces to block and unblock the at least one conduit (16). In an embodiment, the valve (4) may be selected from at least one of a solenoid valve, a rotary valve, piezoelectric valve, an electromagnetic valve, etc. The top portion (2) may include a second sensor (5) disposed proximal to the valve (4).

15 [0055] In an embodiment, the second sensor (5) may extend into a portion of the at least one conduit (16) of the top portion (2) as best seen in Figure 3d. The second sensor (5) may be configured to sense a discharge of the fluid through the at least one aperture (2a). In an embodiment, the second sensor (5) includes a flow sensor. In the illustrative embodiment, the
20 second sensor (5) is depicted as a hall-effect based flow sensor and the same shall not be considered a limitation. The second sensor (5) may be configured to sense discharging of the fluid from the body (1) upon unblocking of the at least one conduit (16) by the valve (4). In an embodiment, the second sensor (5) may be defined with a plurality of vanes (5a) connected to a rotor, where at least a portion of the plurality of vanes (5a) may be in contact with the fluid,
25 while the fluid may be flowing through the at least one conduit (16). The plurality of vanes (5a) may rotate the rotor to generate a plurality of pulses corresponding to the discharge of the fluid through the at least one conduit (16).

[0056] Referring now to Figures 4a to 4e, the bottom portion (6) may include at least one switch
30 (10), the control unit (7), and a power supply unit positioned in a portion of the bottom portion (6). In an embodiment, the bottom portion (6) may include a circuit board (17) to accommodate the control unit (7). The container (100) may include a tilt sensor (9) disposed on at least one of the bottom portion (6) and the body (1) and communicatively coupled to the control unit (7). The tilt sensor (9) may sense an angular position of the container (100) relative to a surface. In
35 an embodiment, the surface may include a ground surface or a surface of an object on which the container (100) may be placed. In an embodiment, the tilt sensor (9) may be selected from at least one of an accelerometer, a gyroscope and the like. In the illustrative embodiment, the

5 tilt sensor (9) is depicted as a gyroscope positioned on the circuit board (17) as can be seen in Figures 5b and 5d.

[0057] The container (100) may include at least one switch (10) disposed at the bottom portion (6) and communicatively coupled to the control unit (7). The at least one switch (10) may sense
10 a displacement of the container (100) away from the surface. The at least one switch (10) may include at least one of a proximity switch, an infrared switch, a microswitch and the like configured to sense the displacement of the container (100) away from the sensor. In the illustrative embodiment, the at least one switch (10) is positioned on a face of the bottom portion (6) which contacts the surface when the container (100) may be in a stationary position
15 on the surface as best seen in Figure 4c. The at least one switch (10) may sense displacement of the container (100) from the surface when the container (100) may be lifted and/or tilted from the surface. The power supply unit may include at least one of a battery (12), a capacitor and the like and may be configured to supply power to the first sensor (3), the valve (4), the second sensor (5), the control unit (7), the tilt sensor (9), the at least one switch (10), and the
20 indication unit (11).

[0058] In an embodiment, the control unit (7) may receive a plurality of signals from at least one of the first sensor (3), the second sensor (5), the tilt sensor (9), and the at least one switch (10). The control unit (7) may receive at least one of the angular position of the container (100)
25 from the tilt sensor (9) and displacement from the at least one switch (10) to determine the lifted position of the container (100). In an embodiment, the control unit (7) may determine a change in angular position of the container (100) based on the angular position received from the tilt sensor (9) to determine lifting and placing of the container (100) relative to the surface. In the illustrative embodiment, the control unit (7) determines the lifted position of the
30 container (100) based on at least two of the angular position, the change in angular position of the container (100) and the displacement of the container (100). The first sensor (3) may, then, sense and verify the body portion of the user upon determining the lifted position and/or a tilted position of the container (100) by the control unit (7). The control unit (7) may receive and verify the sensed body portion of the user from the first sensor (3) at the lifted position of the
35 container (100) as can be seen in Figure 5a. In an embodiment, the body portion of the user may be scanned by the first sensor (3) and stored in a memory unit for verification of the user by the body portion. In an embodiment, the control unit (7) may determine the lifted position of the container (100) after receiving the displacement, the angular position and upon verifying

5 the body portion of the user. Further, the control unit (7) may transmit at least one signal to the valve (4) to actuate the valve (4) and unblock the at least one conduit (16) to allow flow of the fluid from the body (1) to the at least one aperture (2a) upon determining the lifted position of the container (100). The second sensor (5) may sense discharge of the fluid flowing in the at least one conduit (16) upon unblocking of the at least one conduit (16).

10 [0059] Referring now to Figures 5a to 5c, the user may tilt the container (100) to consume the fluid in the body (1) of the container (100). The user may tilt the container (100) to the lifted position where the at least one aperture (2a) may be proximal to the tongue (14a) of the user as can be seen in Figure 5a and the top portion (2) may be proximal to the mouth (14) of the user
15 as can be seen in Figure 5b. The first sensor (3) may be proximal to the tongue (14a) of the user to sense the body portion of the user at the lifted position of the container (100) thereby ensuring the lifted position of the container (100) for dispensing the fluid from the container (100), for example, when the top portion (2) of the container (100) is proximal to the mouth (14) of the user as depicted in Figure 5b. The user may consume the fluid dispensed from the
20 at least one aperture (2a) at the lifted position.

[0060] The second sensor (5) may transmit a signal indicating the plurality of pulses corresponding to discharge sensed to the control unit (7). The control unit (7) may then receive the signal corresponding to the discharge and may determine amount of the fluid being
25 dispensed through the at least one aperture (2a) based on the discharge from the second sensor (5). In an embodiment, the control unit (7) may be configured to detect a change in angular position of the container (100) when the user may tilt the container (100) from the lifted position to the stationary position to place the container (100) on the surface. The control unit (7) may determine the change in angular position in a reverse direction when the user may tilt
30 the container (100) from the lifted position to the stationary position to place the container (100) on the surface. The control unit (7) may transmit a signal to the valve (4) to block the at least one conduit (16) to restrict flow of the fluid from the body (1) upon determining the change in angular position in the reverse direction, for example, when the user may tilt the container (100) away from the mouth (14) of the user upon consuming the fluid. For instance,
35 change of angular position while the container (100) is tilted to the lifted position may be in an anti-clockwise direction and the change of the angular position while the container (100) is placed in the stationary position may be in a clockwise direction and the same shall not be considered a limitation. The second sensor (5) may sense the discharge of the fluid between

5 unblocking and blocking of the at least one conduit (16) to determine the amount of fluid being dispensed through the at least one aperture (2a) to measure the amount of fluid consumed by the user at the lifted position. The container (100) may accurately determine the amount of fluid consumed by the user since the second sensor (5) may sense the discharge of the fluid when the first sensor (3) may be proximal to the body portion i.e., a tongue (14a) of the user
10 and the container (100) may be proximal to mouth (14) of the user as can be seen Figure 5c. Further, the system (200) may eliminate determining erroneous flow of the fluid such as spillage, emptying of the container (100) and the like to accurately determine the amount of fluid consumed by the user.

15 [0061] The control unit (7) may receive at least one signal corresponding to level of the fluid contained in the body (1) from the level sensor (8). The control unit (7) may indicate the level of the fluid in the body (1) through the indication unit (11). In an embodiment, the control unit (7) may receive at least one input signal corresponding to at least one of daily consumption goal, interval of a consumption reminder, refill indication level and the like from the user
20 through the plurality of buttons (13) in the bottom portion (6). The control unit (7) may provide a plurality of indications including a reminder, a fluid level indication, a refill reminder and the like through the indication unit (11). In an embodiment, the indication unit (11) may include at least one of a display, a speaker and the like to transmit the plurality of indications to the user. The control unit (7) may indicate the amount of fluid consumed by the user through the
25 indication unit (11). In an embodiment, the control unit (7) may determine the stationary position to indicate the amount of fluid consumed by the user and the same shall not be considered a limitation.

[0062] In an embodiment, the control unit (7) may be comprised of a processing unit. The
30 processing unit may comprise at least one data processor for executing program components for executing user- or system-generated requests. The processing unit may be a specialized processing unit such as integrated system (bus) controllers, memory management control units, floating point units, graphics processing units, digital signal processing units, etc. The processing unit may include a microprocessor, such as AMD Athlon, Duron or Opteron,
35 ARM's application, embedded or secure processors, IBM PowerPC, Intel's Core, Itanium, Xeon, Celeron or other line of processors, etc. The processing unit may be implemented using a mainframe, distributed processor, multi-core, parallel, grid, or other architectures. Some

5 embodiments may utilize embedded technologies like application-specific integrated circuits (ASICs), digital signal processors (DSPs), Field Programmable Gate Arrays (FPGAs), etc.

[0063] The control unit (7) may be disposed in communication with one or more memory devices (e.g., RAM, ROM etc.) via a storage interface. The storage interface may connect to
10 memory devices including, without limitation, memory drives, removable disc drives, etc., employing connection protocols such as serial advanced technology attachment (SATA), integrated drive electronics (IDE), IEEE-1394, universal serial bus (USB), fiber channel, small computing system (200) interface (SCSI), etc. The memory drives may further include a drum,
15 magnetic disc drive, magneto-optical drive, optical drive, redundant array of independent discs (RAID), solid-state memory devices, solid-state drives, etc.

[0064] Referring now to Figure 6 which is an exemplary embodiment of the present disclosure illustrating a method (300) of dispensing a fluid from a container (100).

20 [0065] The method may describe in the general context of processor executable instructions in the control unit (7). Generally, the executable instructions may include routines, programs, objects, components, data structures, procedures, modules, and functions, which perform particular functions or implement particular abstract data types.

25 [0066] The order in which the method is described is not intended to be construed as a limitation, and any number of the described method blocks may be combined in any order to implement the method. Additionally, individual blocks may be deleted from the methods without departing from the scope of the subject matter described herein. Furthermore, the method can be implemented in any suitable hardware, software, firmware, or combination
30 thereof.

[0067] At block 301, the control unit (7) may receive and verify the sensed body portion of the user from the first sensor (3). The first sensor (3) is disposed at the top portion (2) of the container (100) to sense the body portion of user. The first sensor (3) may sense the body
35 portion of the user at the lifted position of the container (100), thereby ensuring the lifted position of the container (100) for dispensing the fluid from the container (100), for example, when the top portion (2) of the container (100) is proximal to the mouth (14) of the user. The control unit (7) may receive a plurality of signals from at least one of the second sensor (5), the tilt sensor (9), the at least one switch (10). The control unit (7) may receive at least one of the

5 angular position of the container (100) from the tilt sensor (9) and the displacement from the
at least one switch (10) to determine a lifted position of the container (100). In an embodiment,
the control unit (7) may determine a change in angular position of the container (100) based on
the angular position received from the tilt sensor (9) to determine lifting and placing of the
container (100) from the surface. In the illustrative embodiment, the control unit (7) determines
10 the lifted position of the container (100) based on at least two of the angular position, the change
in angular position of the container (100) and the displacement of the container (100). In an
embodiment, the control unit (7) may determine the lifted position of the container (100) after
receiving the displacement, the angular position and upon verifying the body portion of the
user.

15 [0068] At block 302, the control unit (7) may transmit at least one signal to the valve (4) to
actuate the valve (4) and unblock the at least one conduit (16) to allow flow of the fluid from
the body (1) to the at least one aperture (2a) at the lifted position of the container (100). The
second sensor (5) may sense the discharge of the fluid flowing in the at least one conduit (16)
20 upon unblocking of the at least one conduit (16). The user may consume the fluid dispensed
from the at least one aperture (2a) at the lifted position. The second sensor (5) may transmit a
signal corresponding to the discharge sensed to the control unit (7).

[0069] At block 303, the control unit (7) may then receive the signal corresponding to the
25 discharge and may determine amount of the fluid being dispensed through the at least one
aperture (2a) based on the discharge from the second sensor (5). In an embodiment, the control
unit (7) may be configured to detect a change in angular position of the container (100) when
the user may tilt the container (100) from the lifted position to a stationary position to place the
container (100) on the surface. The control unit (7) may determine the change in angular
30 position in a reverse direction when the user may tilt the container (100) from the lifted position
to the stationary position to lift the container (100) from the surface.

[0070] At block 304, the control unit (7) may transmit a signal to actuate the valve (4) to block
the at least one conduit (16) and restrict flow of the fluid from the body (1) upon determining
35 the change in angular position in the reverse direction, for example, when the user may tilt the
container (100) away from the mouth (14) of the user upon consuming the fluid. For example,
the change of angular position while the container (100) is lifted to the lifted position may be
in an anti-clockwise direction and the change of the angular position while the container (100)
is placed in the stationary position from the lifted position may be in a clock-wise direction and

5 the same shall not be considered a limitation. The second sensor (5) may sense the discharge
of the fluid between unblocking and blocking of the at least one conduit (16) to determine the
amount of fluid being dispensed through the at least one aperture (2a) to measure the amount
of fluid consumed by the user at the lifted position. The system (200) may accurately determine
10 the amount of fluid consumed by the user since the second sensor (5) may sense the discharge
of the fluid when the first sensor (3) may be proximal to the body portion i.e., a tongue (14a)
of the user and the container (100) may be proximal to mouth (14) of the user as can be seen
Figure 5c. Further, the system (200) may eliminate determining erroneous flow of the fluid
such as spillage, emptying of the container (100) and the like to accurately determine the
amount of fluid consumed by the user.

15 [0071] In an embodiment, the control unit (7) may correlate the discharge of the fluid from the
second sensor (5) and the level of the fluid in the body (1) from the level sensor (8) upon
displacing the container (100) from the lifted position to the stationary position by the user to
accurately determine and indicate the amount of the fluid consumed by the user.

20 [0072] In an embodiment, the plurality of indications may include at least one of sound alerts,
digital indications including blinking of the display, displaying text and numbers on the display
and interactively produce audio indications corresponding to the fluid level, fluid consumption
and reminders for consumption of fluid and the like.

25 [0073] In an embodiment, the memory unit may store multiple tongue prints of different users
to allow consumption of the fluid by multiple users.

[0074] In an embodiment, the container (100) may be operated by the user through the plurality
30 of buttons (13), where the container (100) may operate independent of portable devices such
as, but not limited to, smartphones, smart watches, voice-controlled devices, other IoT devices
and the like.

[0075] In an embodiment, the top portion (2) may be accompanied by at least one light source
35 for accurate sensing of the body portion of the user.

EQUIVALENTS

[0076] With respect to the use of substantially any plural and/or singular terms herein, those
40 having skill in the art can translate from the plural to the singular and/or from the singular to

5 the plural as is appropriate to the context and/or application. The various singular/plural permutations may be expressly set forth herein for sake of clarity.

[0077] It will be understood by those within the art that, in general, terms used herein, and especially in the appended claims (e.g., bodies of the appended claims) are generally intended
10 as “open” terms (e.g., the term “including” should be interpreted as “including but not limited to,” the term “having” should be interpreted as “having at least,” the term “includes” should be interpreted as “includes but is not limited to,” etc.). It will be further understood by those within the art that if a specific number of an introduced claim recitation is intended, such an intent will be explicitly recited in the claim, and in the absence of such recitation no such intent
15 is present. For example, as an aid to understanding, the following appended claims may contain usage of the introductory phrases “at least one” and “one or more” to introduce claim recitations. However, the use of such phrases should not be construed to imply that the introduction of a claim recitation by the indefinite articles “a” or “an” limits any particular claim containing such introduced claim recitation to inventions containing only one such
20 recitation, even when the same claim includes the introductory phrases “one or more” or “at least one” and indefinite articles such as “a” or “an” (e.g., “a” and/or “an” should typically be interpreted to mean “at least one” or “one or more”); the same holds true for the use of definite articles used to introduce claim recitations. In addition, even if a specific number of an introduced claim recitation *is* explicitly recited, those skilled in the art will recognize that such
25 recitation should typically be interpreted to mean *at least* the recited number (e.g., the bare recitation of “two recitations,” without other modifiers, typically means *at least* two recitations, or *two or more* recitations). Furthermore, in those instances where a convention analogous to “at least one of A, B, and C, etc.” is used, in general such a construction is intended in the sense one having skill in the art would understand the convention (e.g., “a system (200) having at
30 least one of A, B, and C” would include but not be limited to systems that have A alone, B alone, C alone, A and B together, A and C together, B and C together, and/or A, B, and C together, etc.). In those instances where a convention analogous to “at least one of A, B, or C, etc.” is used, in general such a construction is intended in the sense one having skill in the art would understand the convention (e.g., “a system (200) having at least one of A, B, or C” would
35 include but not be limited to systems that have A alone, B alone, C alone, A and B together, A and C together, B and C together, and/or A, B, and C together, etc.). It will be further understood by those within the art that virtually any disjunctive word and/or phrase presenting two or more alternative terms, whether in the description, claims, or drawings, should be

5 understood to contemplate the possibilities of including one of the terms, either of the terms, or both terms. For example, the phrase “A or B” will be understood to include the possibilities of “A” or “B” or “A and B.”

[0078] In addition, where features or aspects of the disclosure are described in terms of
10 Markush groups, those skilled in the art will recognize that the disclosure is also thereby described in terms of any individual member or subgroup of members of the Markush group.

[0079] While various aspects and embodiments have been disclosed herein, other aspects and
15 embodiments will be apparent to those skilled in the art. The various aspects and embodiments disclosed herein are for purposes of illustration and are not intended to be limiting, with the true scope and spirit being indicated by the following claims.

Referral Numeral:

Component	Referral numeral
Container	100
System	200
Method	300
Body	1
Top portion	2
At least one aperture	2a
First end	2b
Second end	2c
First sensor	3
Valve	4
Second sensor	5
Plurality of vanes	5a
Bottom portion	6
Control unit	7
Level sensor	8
Tilt sensor	9
At least one switch	10
Indication unit	11
battery	12

Plurality of buttons	13
Mouth	14
Tongue	14a
Cover	15
At least one conduit	16
Circuit board	17
Constriction plate	18

5

WE CLAIM:

1. A container (100), comprising:
 - a body (1);
 - a top portion (2) connectable to the body (1) at a first end (2b) and defined with at least one aperture (2a) at a second end (2c) opposite to the first end (2b) connected to the body (1); and
 - a bottom portion (6) connectable to the second end (2c) of the body (1) and opposite to the top portion (2); and
 - a system (200) for dispensing a fluid from the body (1) of the container (100), the system (200) comprising:
 - a first sensor (3) disposed at the top portion (2) of the container (100), the first sensor (3) being configured to sense at least a body portion of a user;
 - a valve (4) defined proximal to the at least one aperture (2a) in the top portion (2) of the container (100), the valve (4) configured to selectively allow flow of the fluid in the container (100) through the at least one aperture (2a);
 - a second sensor (5) disposed proximal to the valve (4), the second sensor (5) configured to sense a discharge of the fluid through the at least one aperture (2a);
 - a control unit (7) communicatively coupled to the first sensor (3), the valve (4) and the second sensor (5), wherein the control unit (7) is configured to:
 - receive and verify sensed body portion of the user from the first sensor (3);
 - actuate the valve (4) to selectively dispense the fluid in the container (100) through the at least one aperture (2a), upon verifying the user in the lifted position of the container (100); and
 - determine amount of the fluid being dispensed through the at least one aperture (2a) based on the discharge of the fluid sensed by the second sensor (5).
2. The container (100) as claimed in claim 1, wherein the first sensor (3) is selected from at least one of a camera, a tongue print sensor, a scanner, and the second sensor (5) includes a flow sensor.
3. The container (100) as claimed in claim 1, wherein the body portion of the user includes a tongue print.

4. The container (100) as claimed in claim 1, comprising a level sensor (8) disposed on the body (1) of the container (100), the level sensor (8) being communicatively coupled to the control unit (7) and configured to sense level of the fluid in the container (100).
5. The container (100) as claimed in claim 1, comprising a tilt sensor (9) disposed on the body (1) of the container (100) and communicatively coupled to the control unit (7), wherein the tilt sensor (9) is configured to sense an angular position of the container (100) relative to a surface.
6. The container (100) as claimed in claim 1, comprising at least one switch (10) disposed at the bottom portion (6) of the container (100) and communicatively coupled to the control unit (7), wherein the at least one switch (10) is configured to sense a displacement of the container (100) away from the surface.
7. The container (100) as claimed in claim 6, wherein the control unit (7) is configured to detect the lifted position of the container (100) based on angular position from the tilt sensor (9) and displacement sensed by the at least one switch (10).
8. The container (100) as claimed in claim 6, wherein the control unit (7) is configured to detect a stationary position of the container (100) based on the angular position from the tilt sensor (9) and the displacement of the container (100) sensed by the at least one switch (10) and configured to actuate the valve (4) to restrict flow of the fluid from the container (100).
9. The container (100) as claimed in claim 1, the bottom portion (6) includes an indication unit (11), communicatively coupled to the control unit (7) to receive and indicate amount of fluid dispensed from the at least one aperture (2a).
10. A method (300) for dispensing a fluid from a container (100), the method (300) comprising:
receiving and verifying, by a control unit (7), a sensed portion of a user from a first sensor (3) disposed at a top portion (2) of the container (100) and communicatively coupled to the control unit (7);
actuating, by the control unit (7), a valve (4) defined proximal to at least one aperture (2a) in the top portion (2) of the container (100) and communicatively coupled to the control

unit (7), to dispense the fluid in the container (100) through the at least one aperture (2a);
and
determining, by the control unit (7), amount of the fluid being dispensed through the at least one aperture (2a) based on the discharge of the fluid sensed by a second sensor (5) disposed proximal to the valve (4) and communicatively coupled to the control unit (7).

11. The method (300) as claimed in claim 10, comprises:
receiving, by the control unit (7), an angular position from a tilt sensor (9) disposed on the body (1) of the container (100) and lifting of the container (100) sensed by at least one switch (10) disposed at a bottom portion (6) of the container (100);
determining, by the control unit (7), a lifted position of the container (100) for consumption of the fluid in the container (100) based on the angular position from the tilt sensor (9) and lifting of the container (100) sensed by the at least one switch (10).

Dated this 21st day of March 2023

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ABSTRACT

“A CONTAINER FOR DISPENSING A FLUID AND A METHOD OF DISPENSING THEREOF”

The present disclosure discloses a container (100) for dispensing a fluid and a method (300) of dispensing thereof. The container (100) comprises a body (1), a top portion (2), a bottom portion (6) and a system (200) for dispensing the fluid. The system (200) comprises a first sensor (3) to sense and verify a body portion of the user, a valve (4) to selectively allow flow of the fluid and a second sensor (5) to sense discharge of the fluid. The system (200) actuates the valve (4) to selectively dispense and determine amount of the fluid dispensed, upon verifying the user in the lifted position of the container (100). With such configuration, the container (100) may automatically regulate flow of the fluid from the container (100) and may accurately measure fluid consumed by a user.

[Figure 1a is a representative figure.]

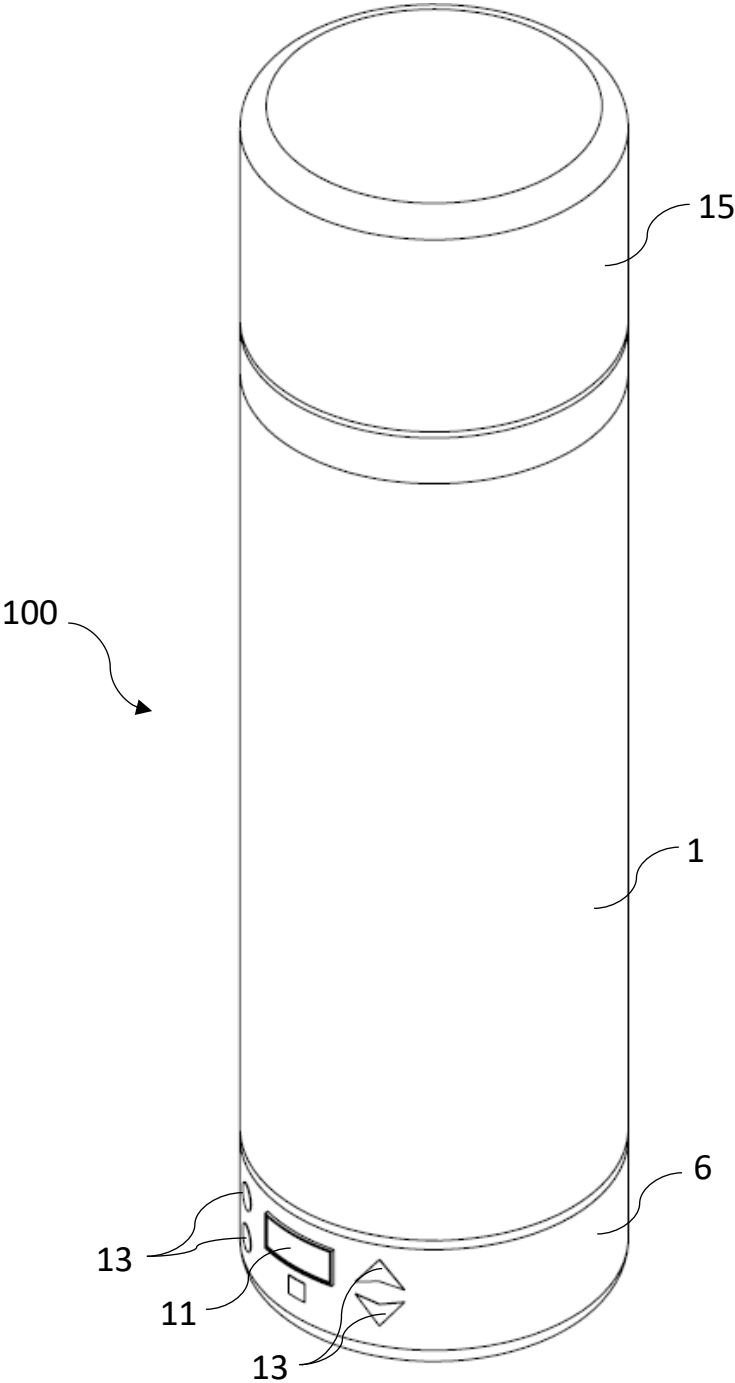


Figure 1a

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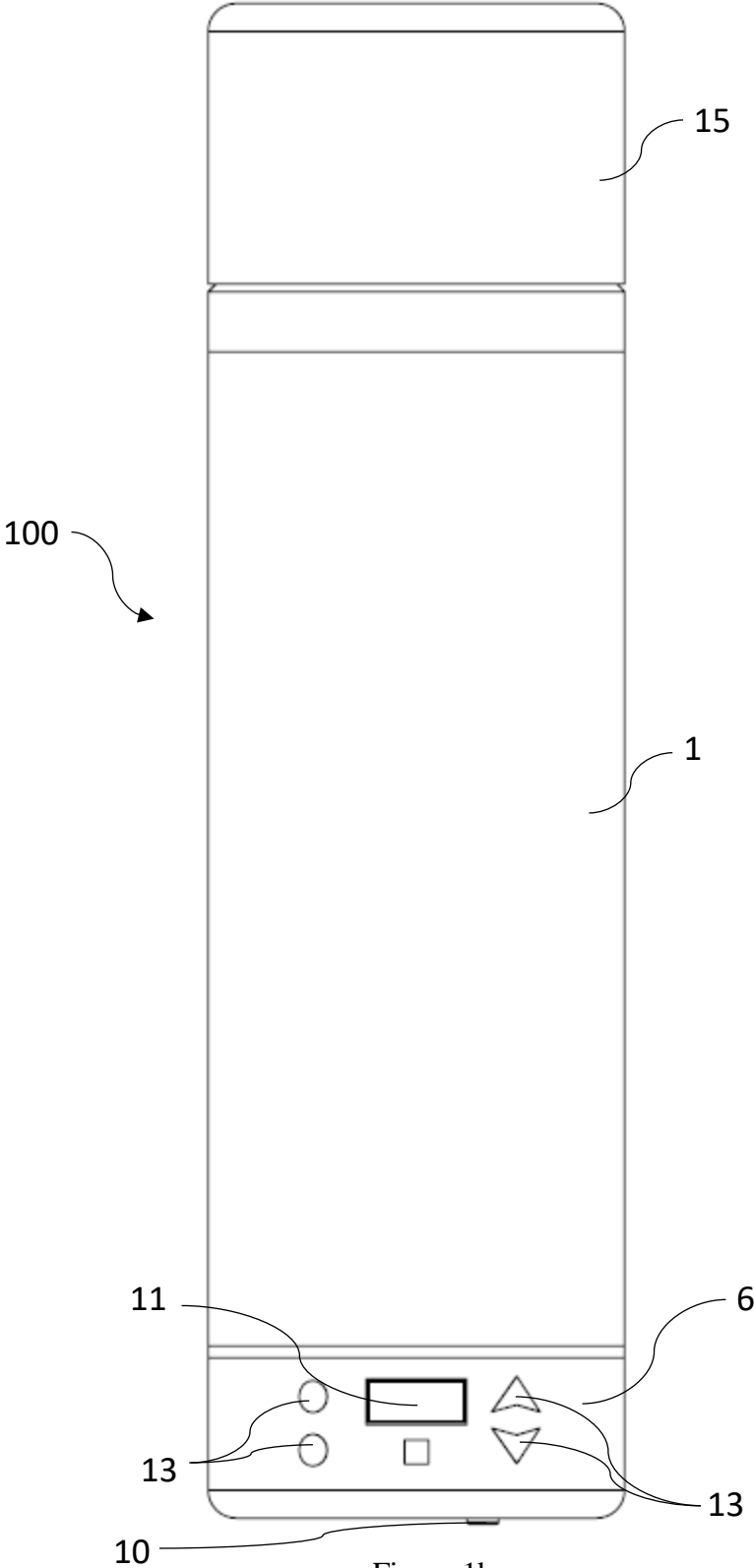


Figure 1b

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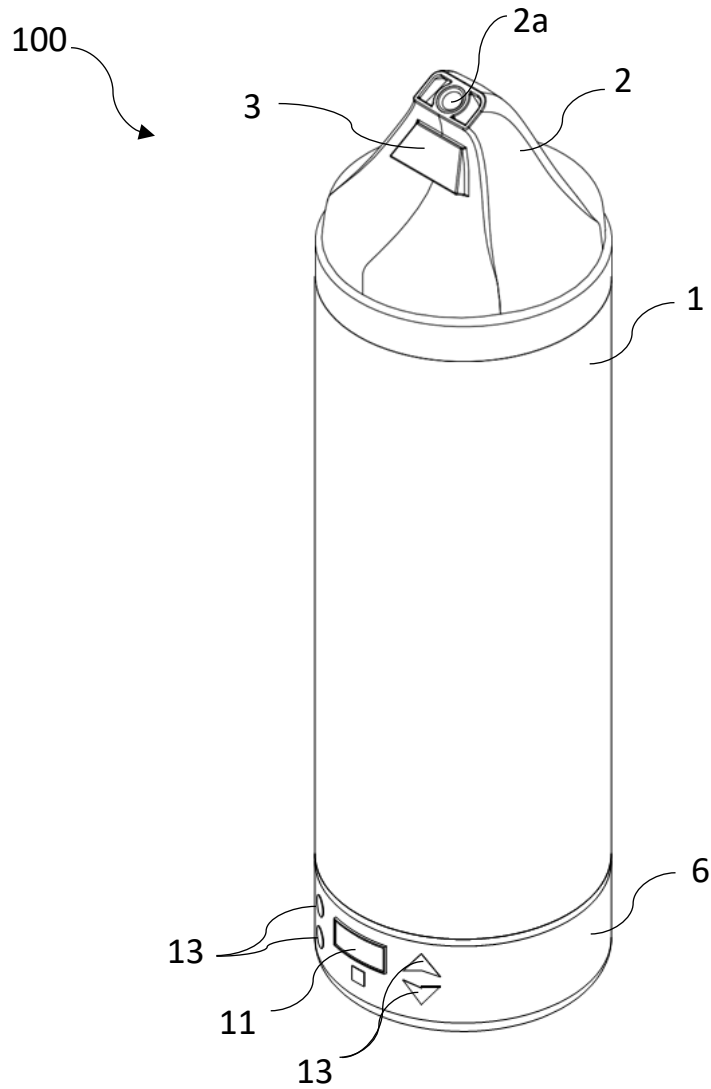


Figure 1c

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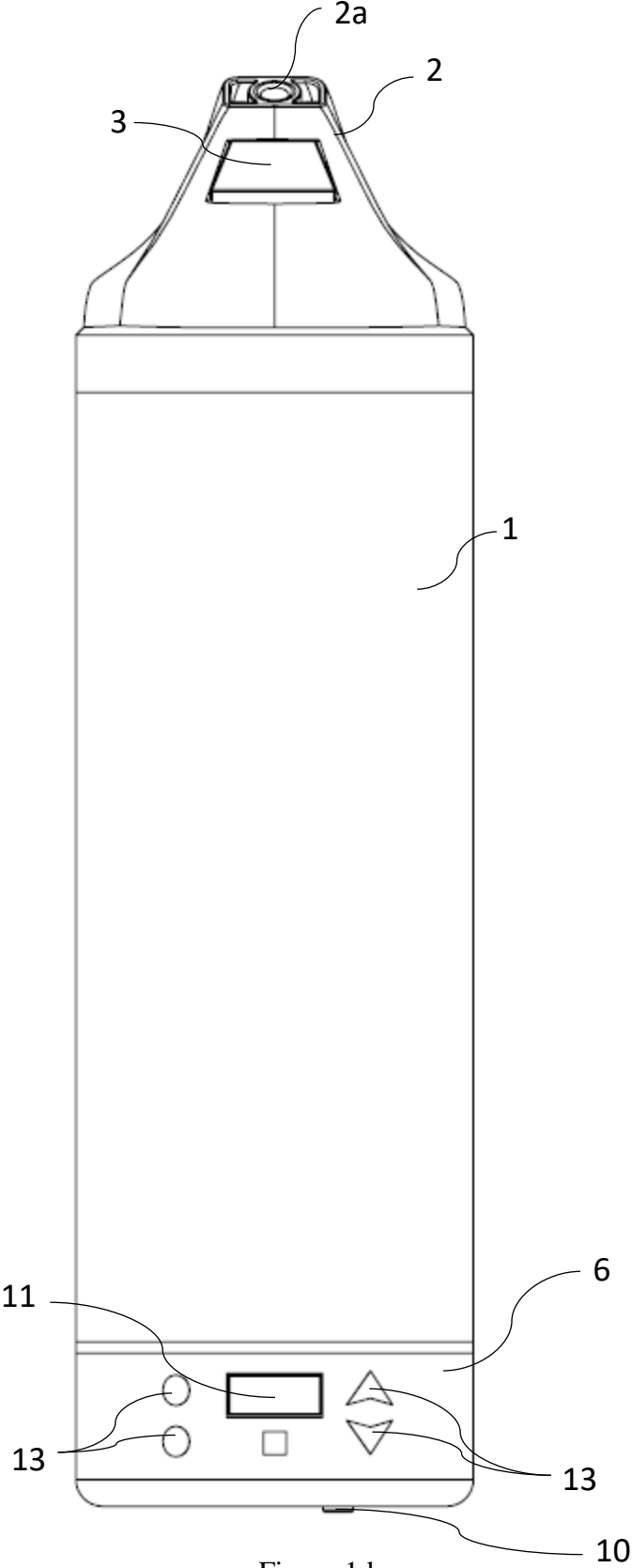


Figure 1d

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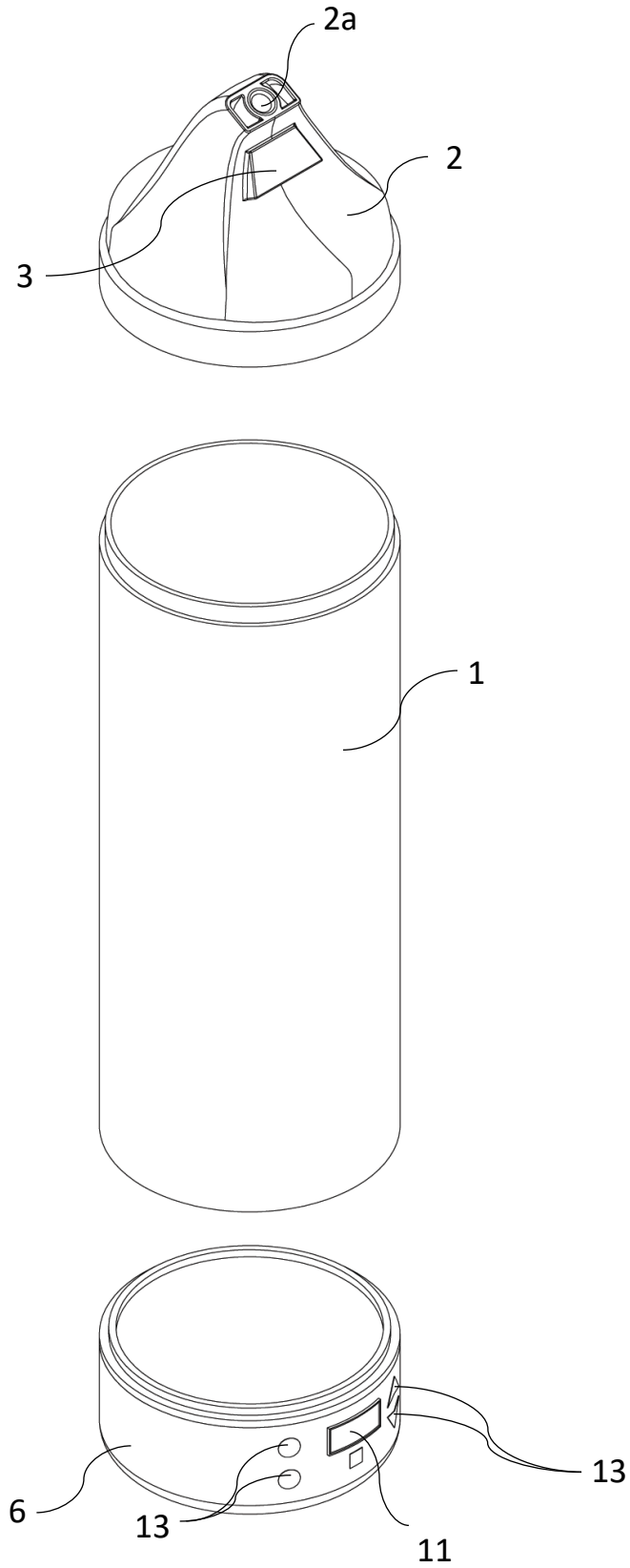


Figure 1e

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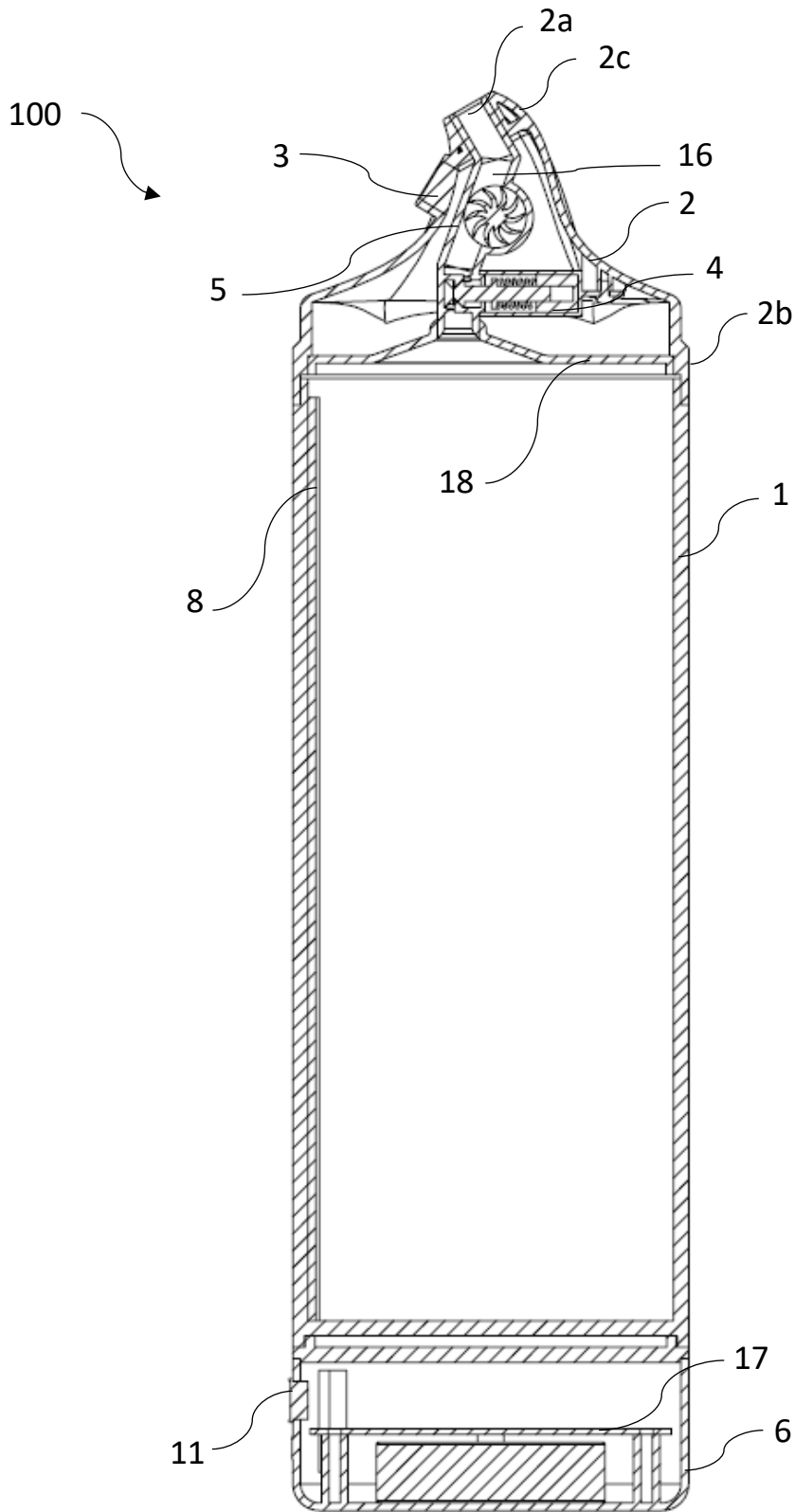


Figure 1f

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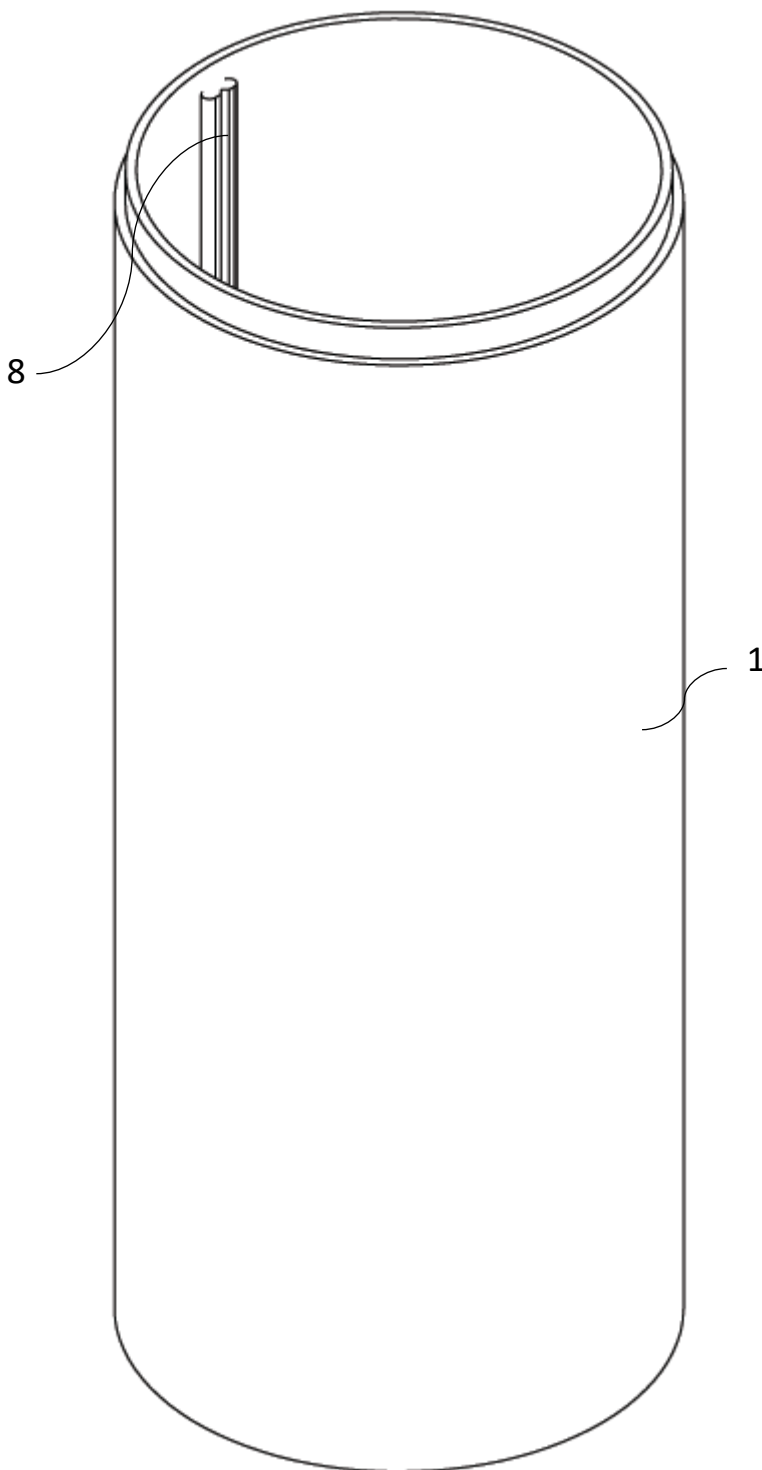


Figure 1g

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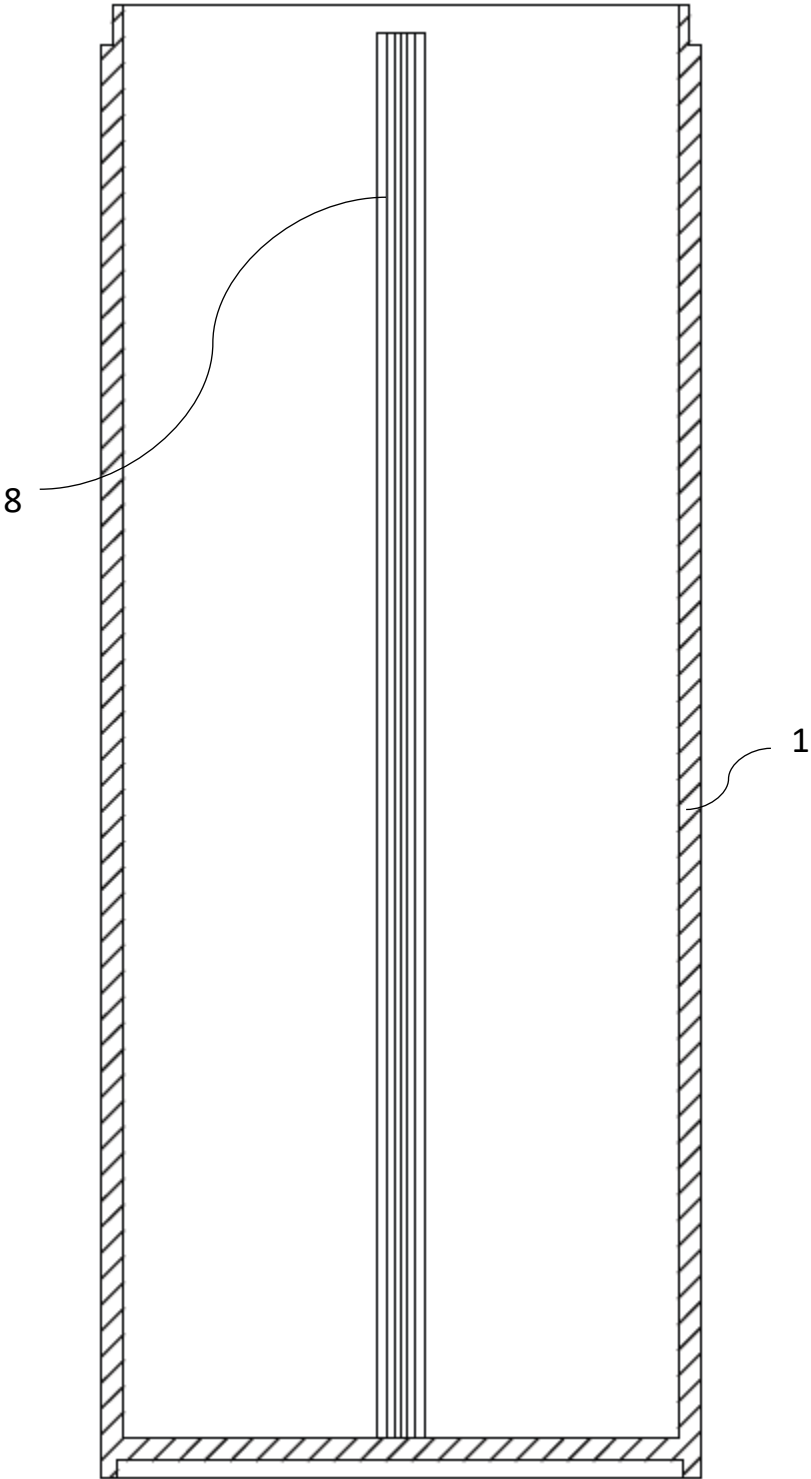


Figure 1h

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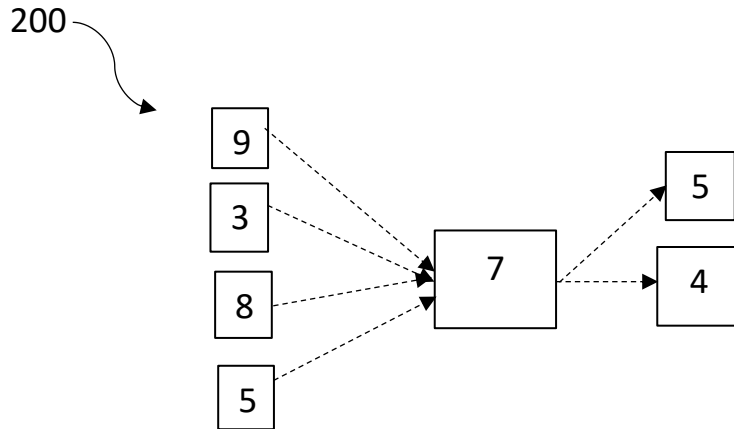


Figure 2

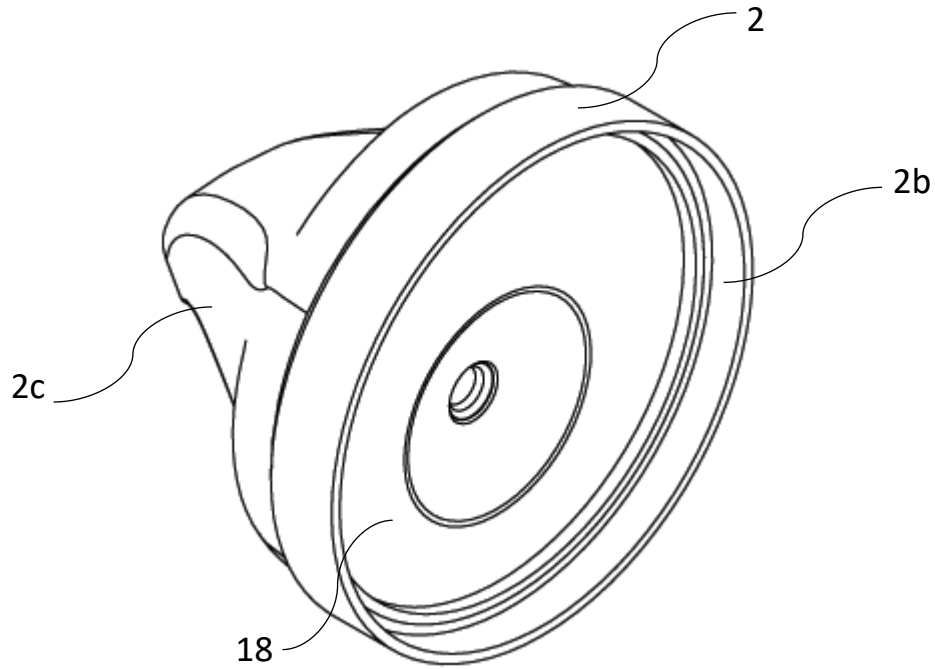


Figure 3a

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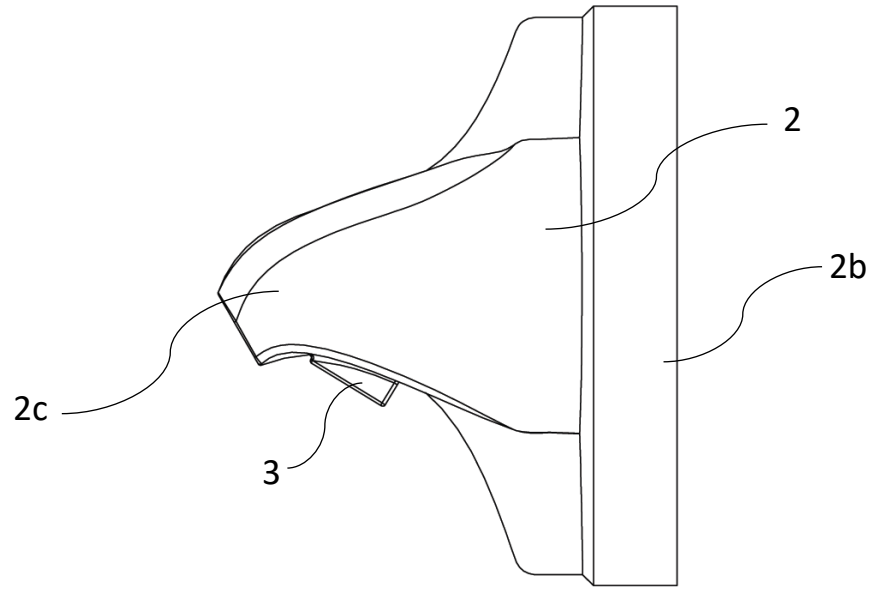


Figure 3b

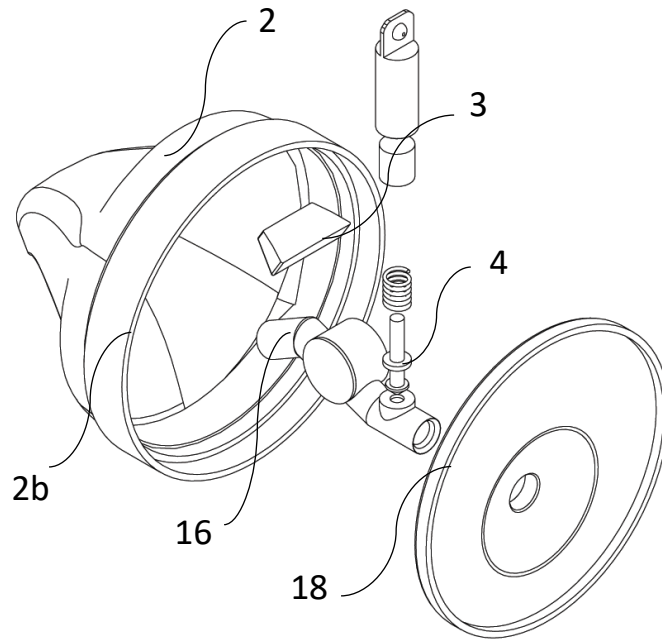


Figure 3c

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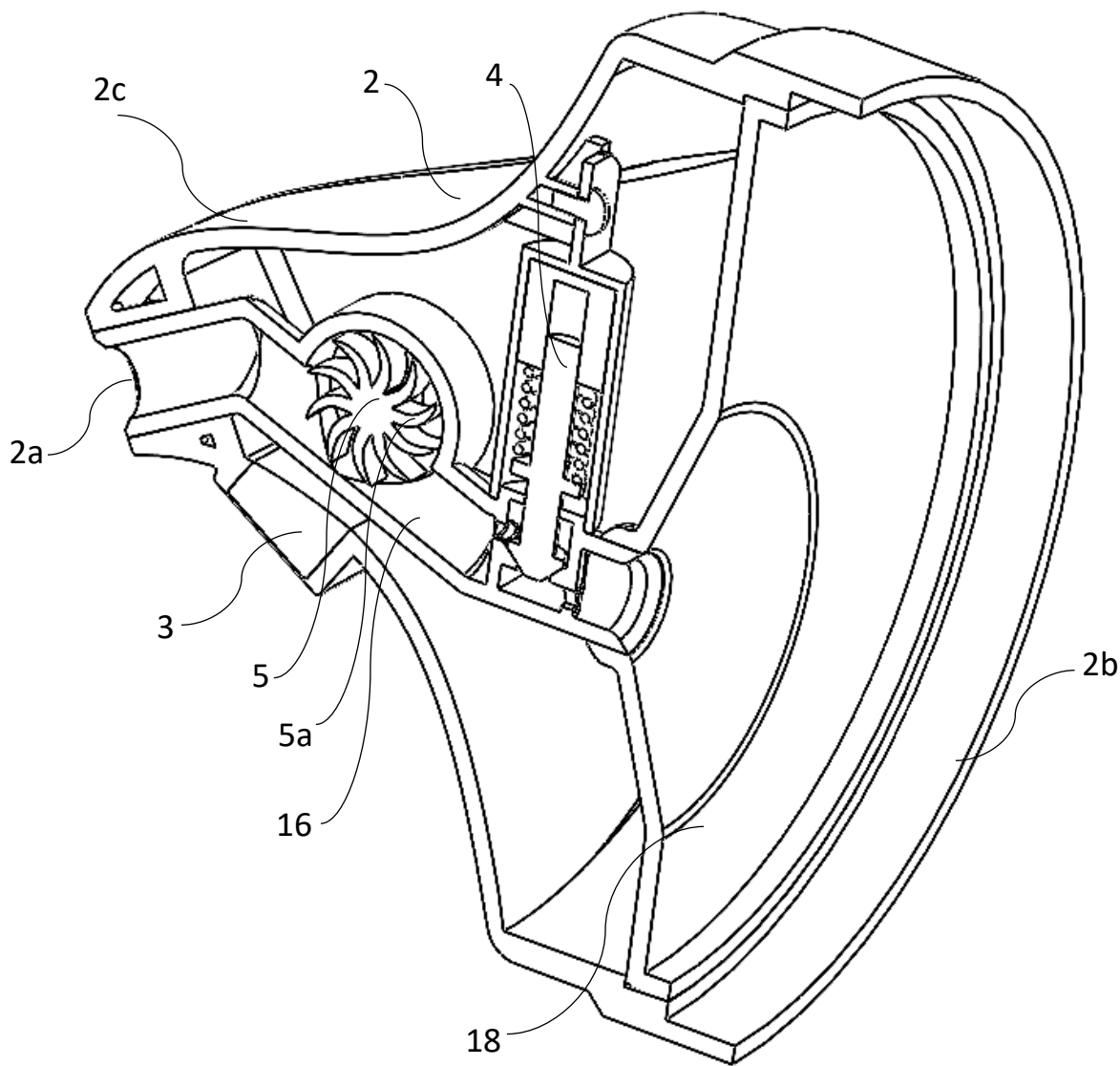


Figure 3d

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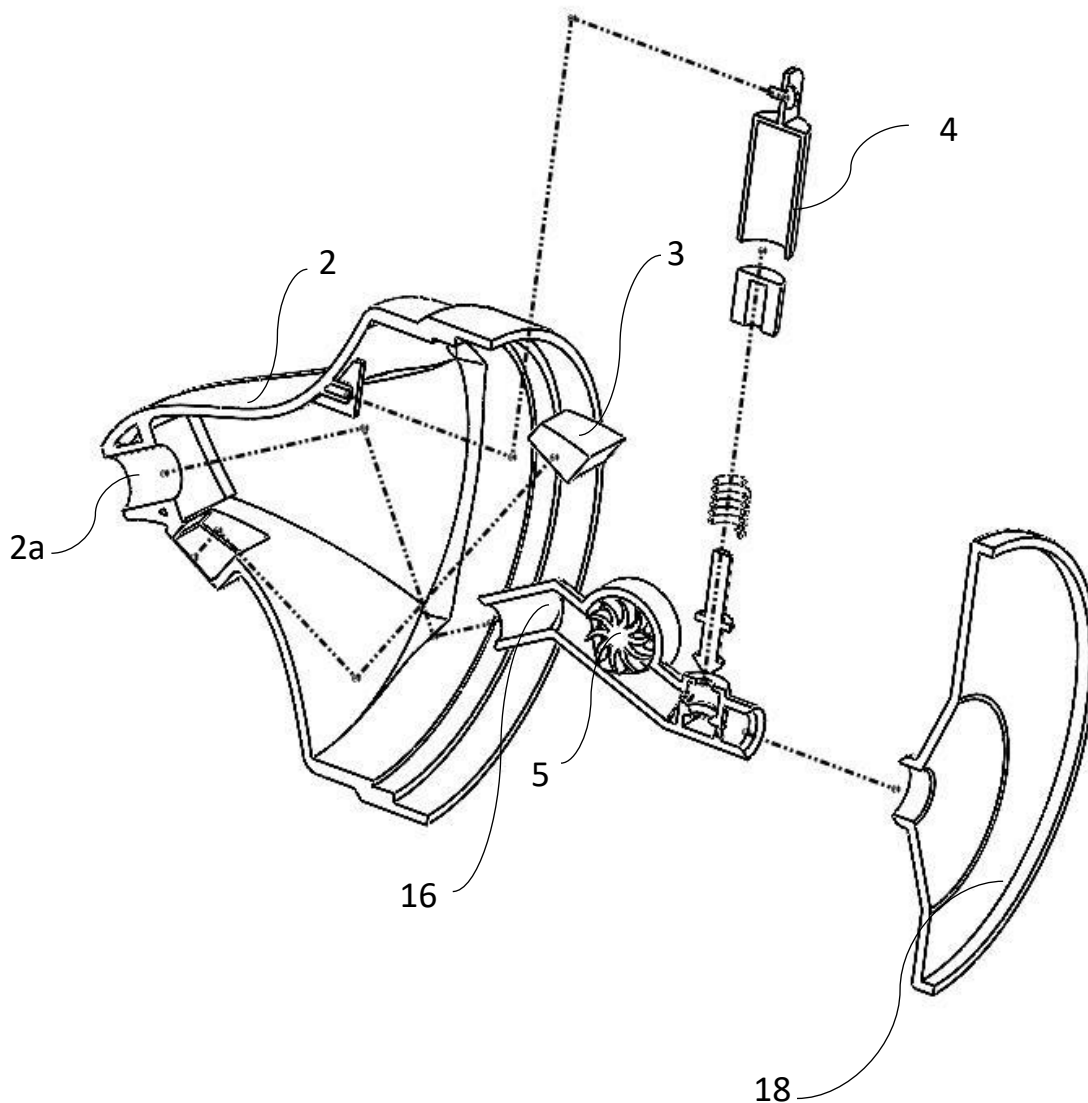


Figure 3e

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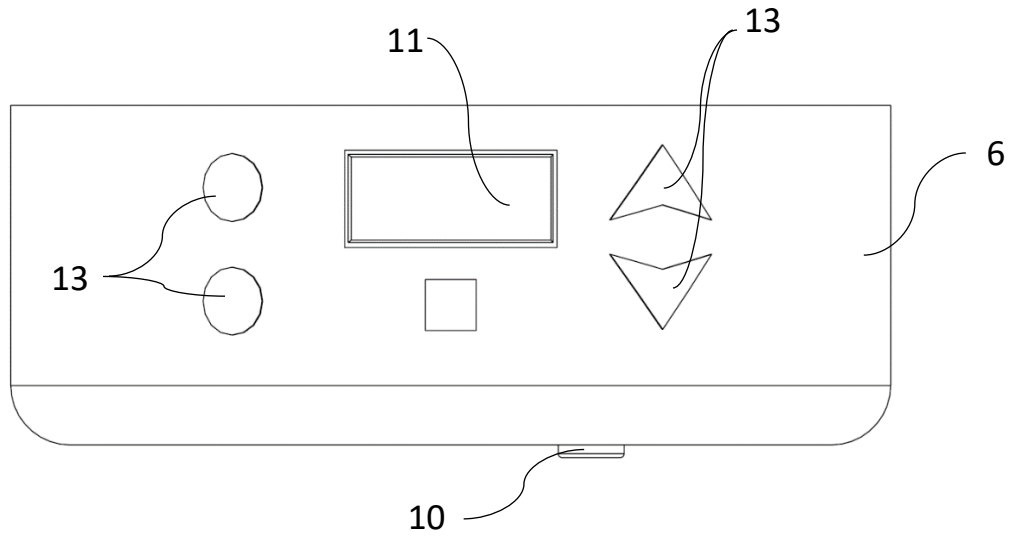


Figure 4a

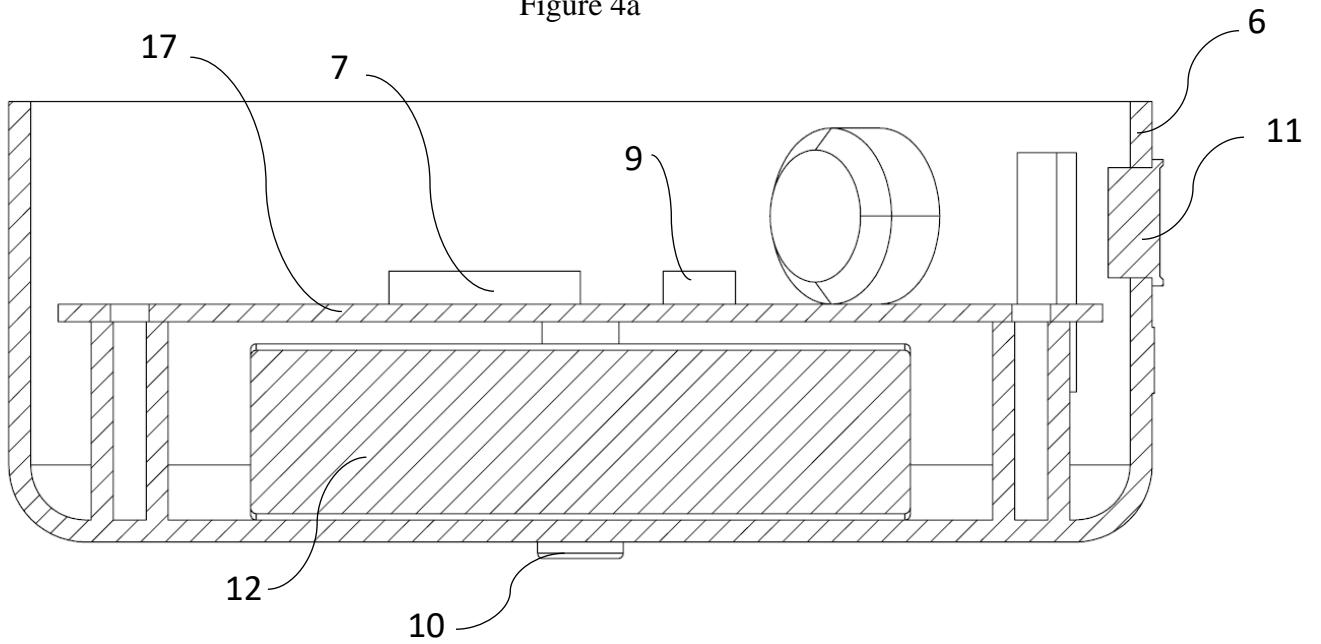


Figure 4b

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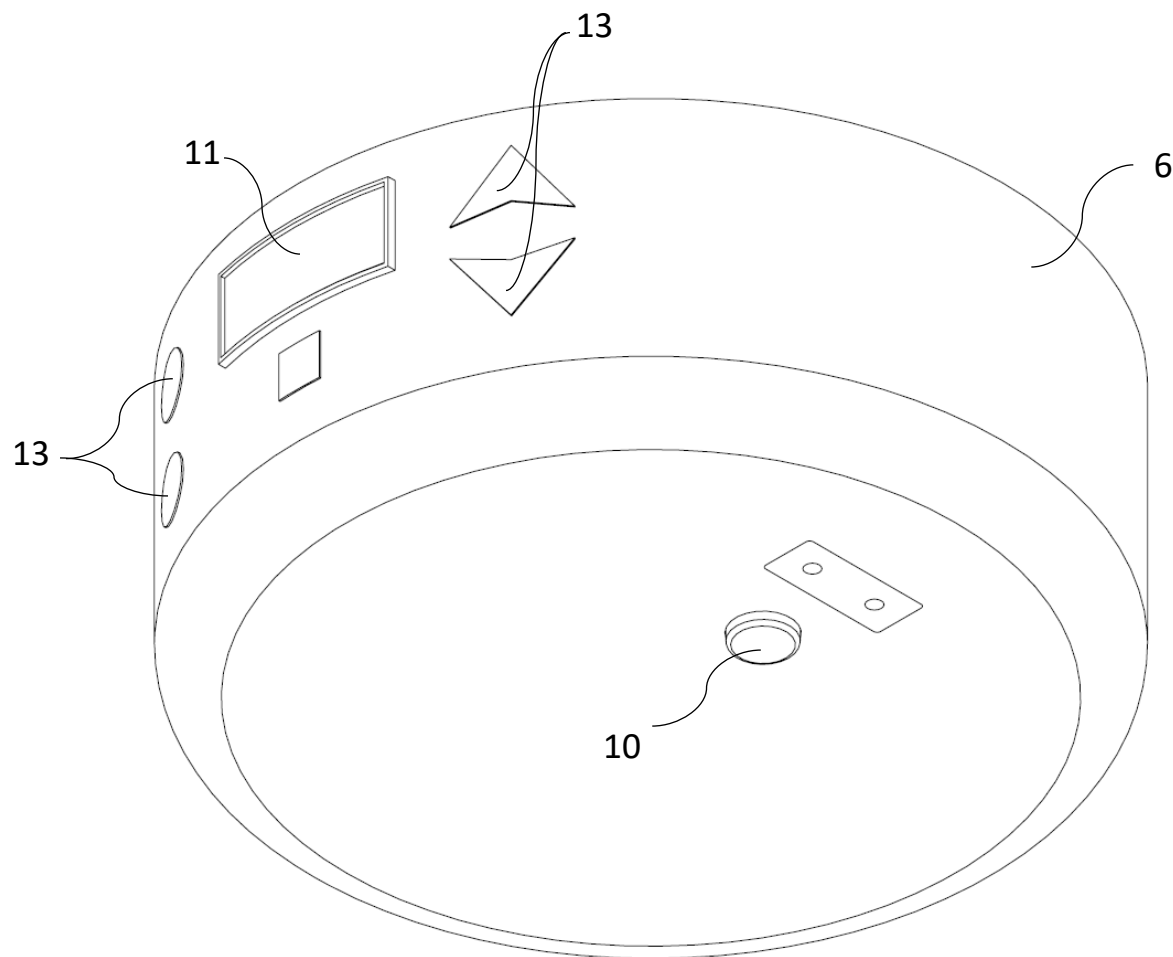


Figure 4c

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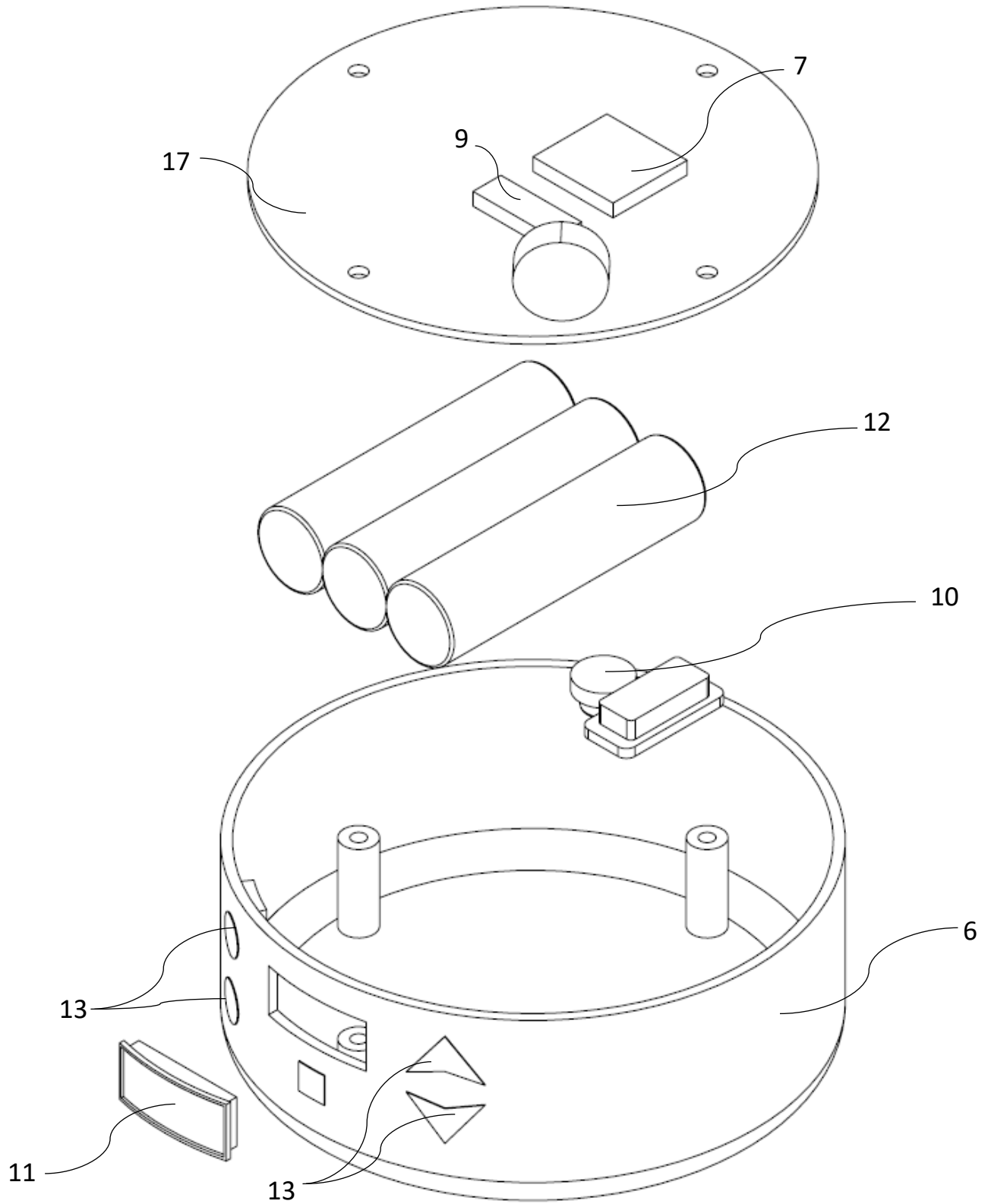


Figure 4d

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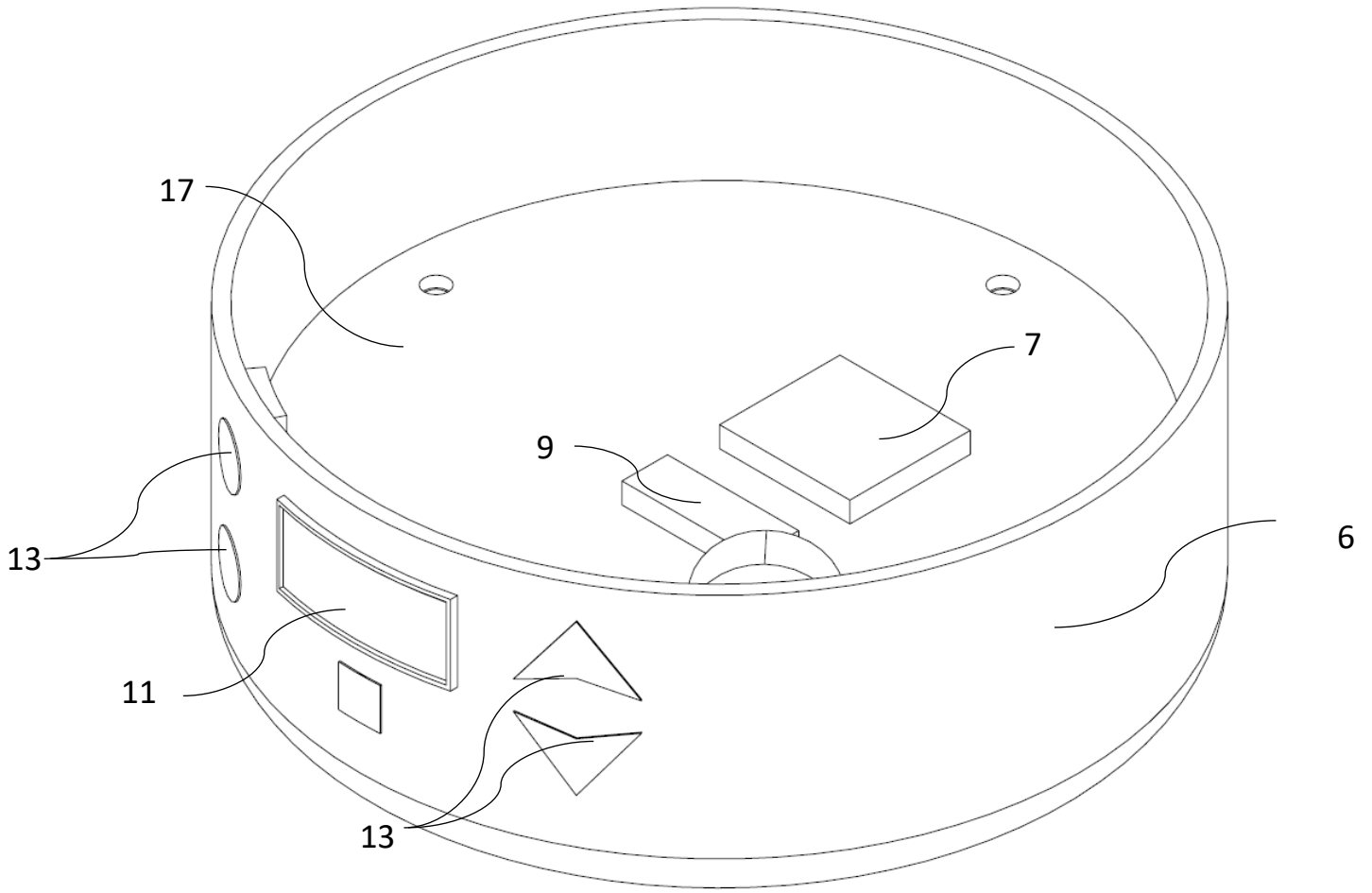


Figure 4e

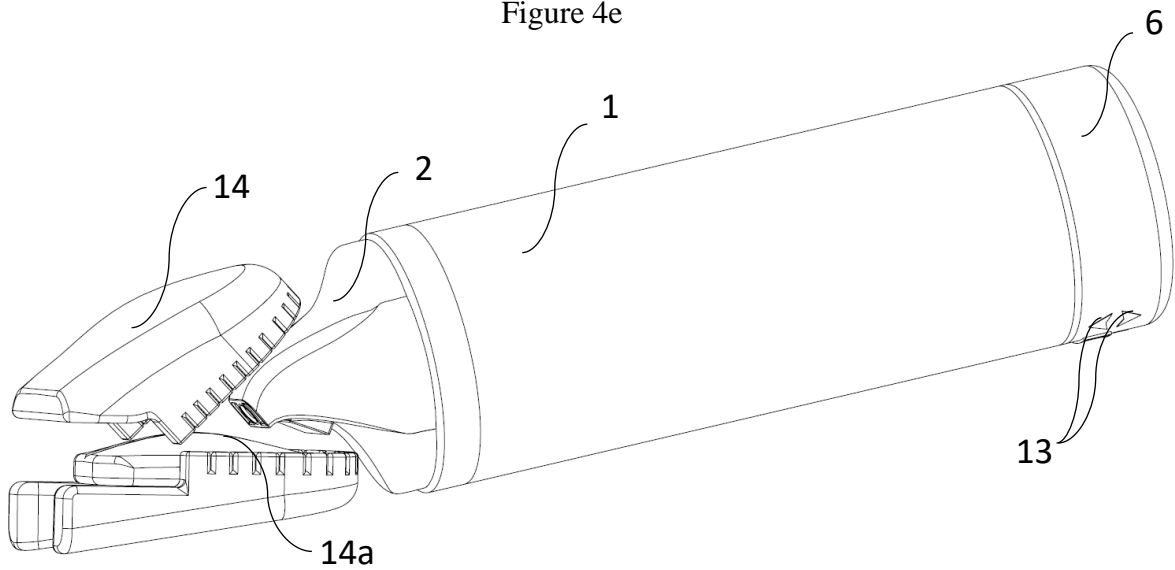


Figure 5a

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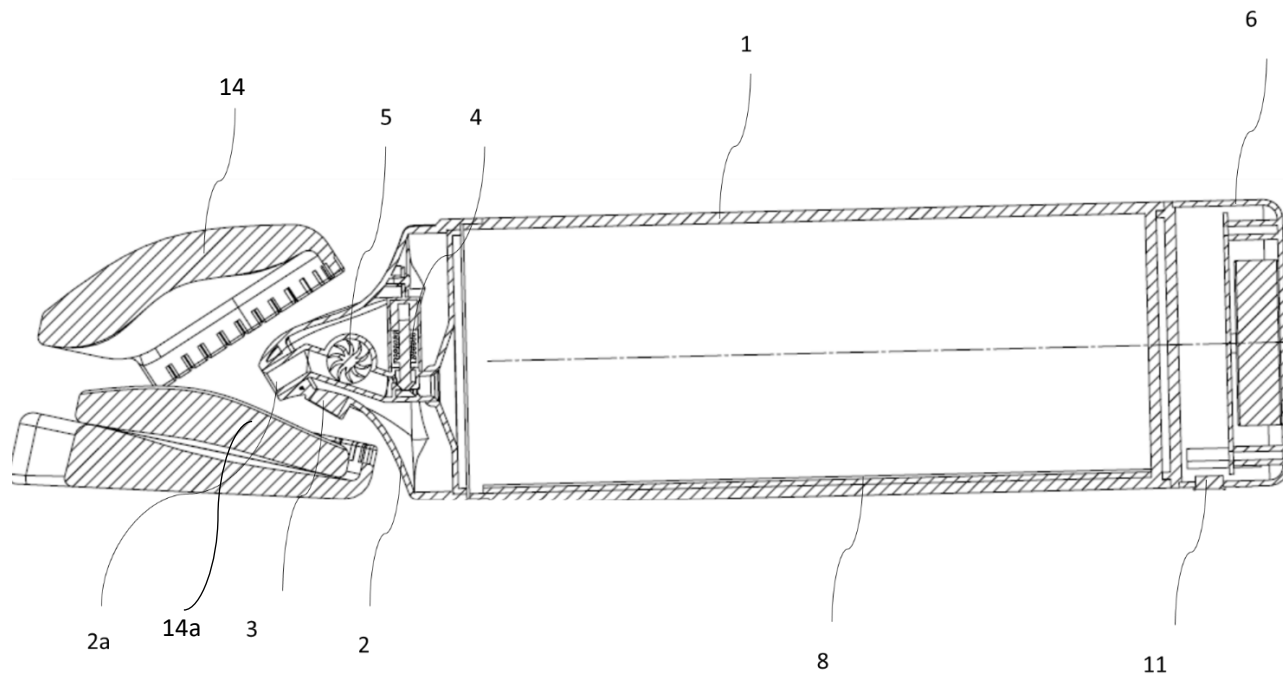


Figure 5b

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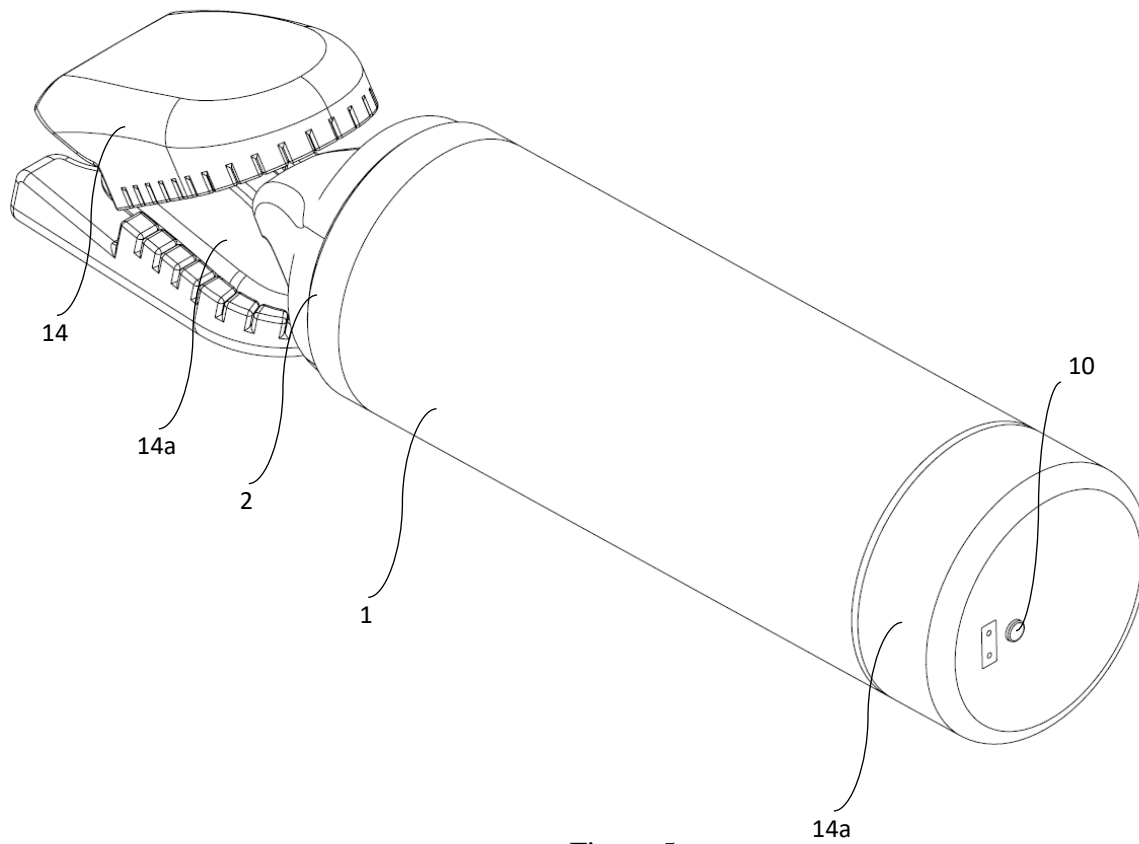


Figure 5c

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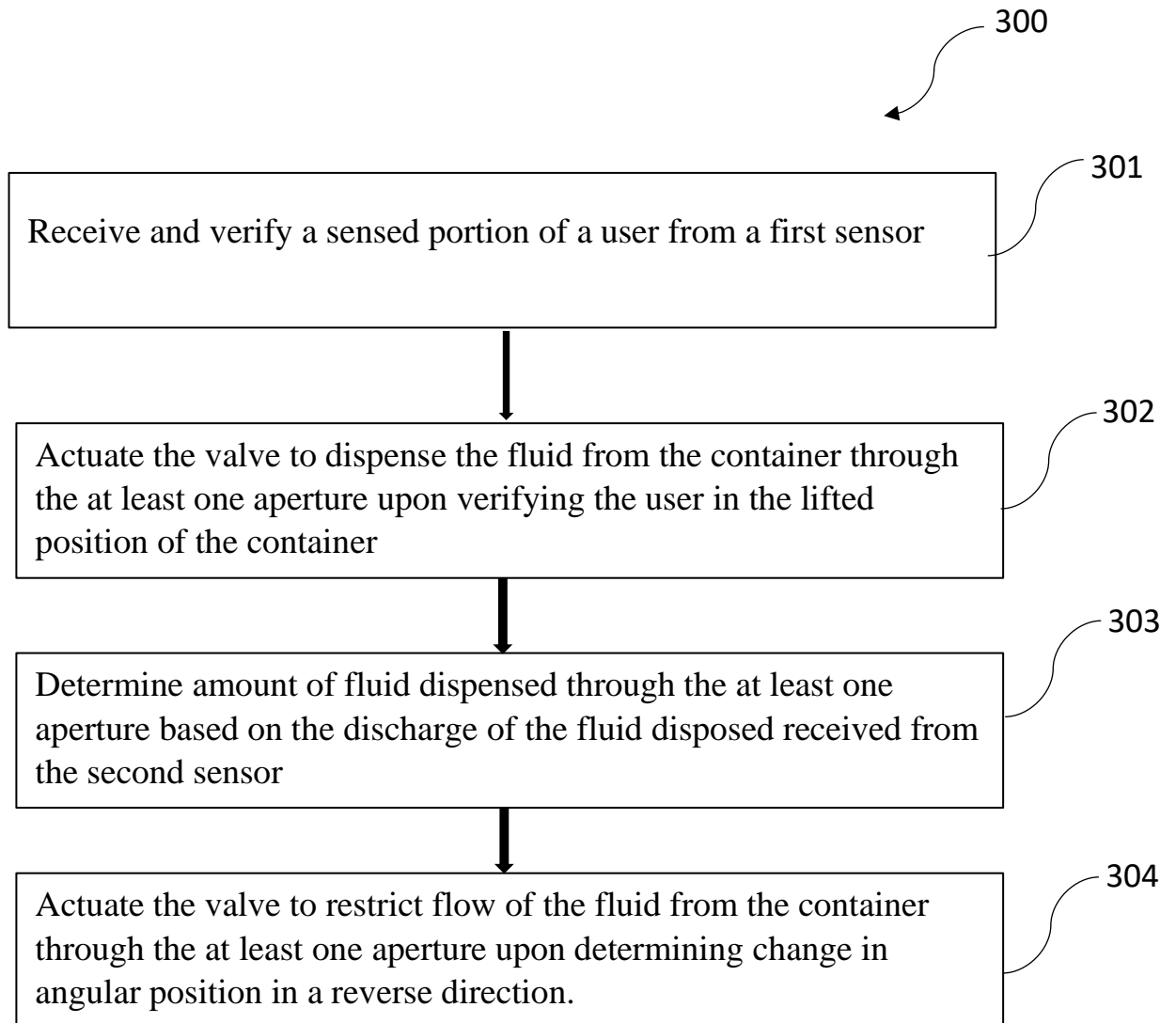


Figure 6