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(54) **ELECTRONIC ATOMIZATION DEVICE**

(57) An electronic atomization device (100), comprising: a liquid storage cavity (112), which is used for storing liquid matrix; an atomization assembly, which is in fluid communication with the liquid storage cavity (112) for drawing the liquid matrix from the liquid storage cavity (112) and atomizing same to generate aerosol; a support (60), which is used for supporting the atomization assembly, wherein the atomization assembly is at least partially accommodated in the support (60) and arranged adjacent to the liquid storage cavity (112); and an airflow sensor (15), which is used for sensing changes in an airflow through the interior of the electronic atomization device (100), the airflow sensor (15) being accommodated or held in the support (60) and arranged facing away from the liquid storage cavity (112). The atomization assembly and the airflow sensor (15) being accommodated and mounted in the support (60) helps eliminate the impact of the airflow sensor (15) on the detachment operations of the other components, such as a battery cell (70).

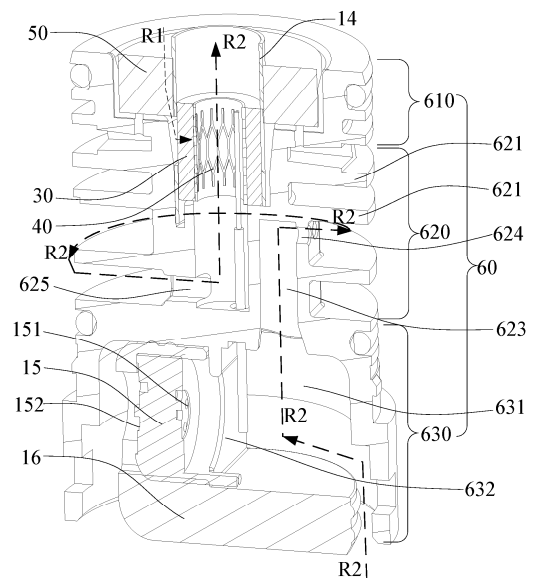


FIG. 9

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Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to a prior application with Chinese Patent Application No. 202311333075.7, filed with China National Intellectual Property Administration on October 13, 2023 and entitled "ELECTRONIC ATOMIZATION DEVICE", which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] Embodiments of this application relate to the field of electronic atomization technologies, and in particular, to an electronic atomization device.

BACKGROUND

[0003] During use of tobacco products (for example, cigarettes and cigars), tobacco is burnt to generate tobacco smoke. An attempt has been made to replace these tobacco-burning products by producing products that release compounds without burning.

[0004] An example of such a product is a heating device, which releases compounds by heating rather than burning materials. For example, the materials may be tobacco or other non-tobacco products, where the non-tobacco products may or may not include nicotine. In another example, aerosol providing products exist, for example, the so-called electronic atomization devices. The devices usually include liquid. The liquid is heated and atomized, so as to generate an inhalable aerosol. In a known electronic atomization device, an airflow sensor is mounted at a portion of a distal end close to an air inlet to sense an air flow. For the known electronic atomization device, arrangement of the airflow sensor is disadvantageous for disassembling or taking out a battery core from the distal end.

SUMMARY

[0005] An embodiment of this application provides an electronic atomization device, including:

- a liquid storage cavity, configured to store a liquid substrate;
- an atomization assembly, in fluid communication with the liquid storage cavity, and configured to absorb the liquid substrate from the liquid storage cavity and atomize the liquid substrate to generate an aerosol;
- a support, configured to support the atomization assembly, where at least part of the atomization assembly is accommodated inside the support and is arranged adjacent to the liquid storage cavity; and
- an airflow sensor, configured to sense a change in air flowing through an interior of the electronic atomiza-

tion device, where the airflow sensor is accommodated or held in the support and is arranged facing away from the liquid storage cavity.

[0006] In some embodiments, the airflow sensor is arranged to deviate from a longitudinal central axis of the electronic atomization device.

[0007] In some embodiments, an axis of the airflow sensor is arranged to be substantially perpendicular to a longitudinal direction of the electronic atomization device; or
the axis of the airflow sensor is arranged substantially parallel to the longitudinal direction of the electronic atomization device.

[0008] In some embodiments, the electronic atomization device includes:

a battery core, configured to provide electric power, where

the airflow sensor is electrically connected to the atomization assembly; and the airflow sensor is further configured to guide a current between the battery core and the atomization assembly when air flows through the electronic atomization device.

[0009] In some embodiments, the support includes a first end close to the liquid storage cavity along a longitudinal direction and a second end facing away from the first end.

[0010] The first end is provided with a first opening configured to allow accommodating of the atomization assembly in the support, and the second end is provided with a second opening configured to allow accommodating of the airflow sensor in the support.

[0011] In some embodiments, the support defines a second accommodating cavity and a third accommodating cavity that are spaced apart from each other in the longitudinal direction. The second accommodating cavity is close to the first end and configured to accommodate the atomization assembly, and the third accommodating cavity is close to the second end and configured to accommodate the airflow sensor.

[0012] In some embodiments, the interior of the electronic atomization device defines an airflow channel that provides an airflow path, and a portion of the airflow channel passes through the support to bring the third accommodating cavity into communication with the second accommodating cavity.

[0013] In some embodiments, the electronic atomization device further includes:

a first liquid guide element, in fluid communication with the liquid storage cavity to absorb the liquid substrate.

[0014] The atomization assembly includes:

a second liquid guide element, including an outer side surface and an inner side surface that are opposite to each other, where the outer side surface is arranged to indirectly absorb, from the first liquid

guide element, the liquid substrate sourced from the liquid storage cavity; and
 a heating element, coupled to the second liquid guide element and adjacent to the inner side surface, and configured to heat at least part of the liquid substrate in the second liquid guide element to generate an aerosol.

[0015] In some embodiments, the support includes a first support portion, a second support portion, and a third support portion that are arranged along a longitudinal direction.

[0016] The first support portion at least partially surrounds or accommodates the first liquid guide element.

[0017] The second support portion at least partially surrounds or accommodates the second liquid guide element.

[0018] The third support portion at least partially surrounds or accommodates the airflow sensor.

[0019] In some embodiments, a first accommodating cavity is defined in the first support portion; the first accommodating cavity includes a first section and a second section that are arranged in sequence; a cross-sectional area of the first section increases along a direction facing away from the second support portion, and the cross-sectional area of the second section is substantially constant.

[0020] The first liquid guide element is arranged in the second section, and avoids the first section. In some embodiments, the electronic atomization device further includes:

an airflow channel, defining an airflow path passing through the electronic atomization device, where a portion of the airflow channel is provided to extend around the support along a circumferential direction of the support.

[0021] In some embodiments, the electronic atomization device further includes:

an elastic conductive element, arranged between the battery core and the airflow sensor, to provide an electrical connection therebetween.

[0022] In some embodiments, the battery core abuts against the conductive element to form the electrical connection and at least partially compresses the conductive element.

[0023] In some embodiments, the conductive element is in a meandering and bent shape.

[0024] In some embodiments, the electronic atomization device further includes:

a housing, having a proximal end and a distal end that are opposite to each other along a longitudinal direction; and

an end cap, at least partially closing the distal end of the housing and detachably connected to the housing, where the end cap is constructed to be detachable from the housing to open the distal end of the housing, to allow the battery core to be taken out from

the distal end of the housing, and
 when the battery core is taken out from the distal end of the housing, the battery core is separated from the conductive element to break the electrical connection.

[0025] In some embodiments, the electronic atomization device further includes:

a holding element, configured to hold or fasten the conductive element, and at least partially provide support for the airflow sensor accommodated in the support.

[0026] In some embodiments, the electronic atomization device further includes:

a ventilation channel, at least partially defined on the support, to provide a flow path for air to enter the liquid storage cavity.

[0027] Another embodiment of this application provides an electronic atomization device, including:

a liquid storage cavity, configured to store a liquid substrate;

a heating element, configured to heat the liquid substrate to generate an aerosol;

a battery core, configured to supply power to the heating element;

an airflow sensor, configured to sense a change in air flowing through an interior of the electronic atomization device, where along a longitudinal direction of the electronic atomization device, the airflow sensor is arranged between the heating element and the battery core; and

an elastic conductive element, arranged between the battery core and the airflow sensor, to provide an electrical connection therebetween.

[0028] The heating element is electrically connected to the airflow sensor, and the airflow sensor is further configured to guide a current between the battery core and the heating element when the air flows through the electronic atomization device.

[0029] Another embodiment of this application provides an electronic atomization device, including:

a liquid storage cavity, configured to store a liquid substrate;

a first liquid guide element, arranged to be perpendicular to a longitudinal direction of the electronic atomization device and in fluid communication with the liquid storage cavity to absorb the liquid substrate;

a tubular element, extending through the first liquid guide element, where an atomization assembly is arranged in the tubular element, and the atomization assembly indirectly absorbs, from the first liquid guide element, the liquid substrate sourced from the liquid storage cavity and atomizes the liquid substrate to generate an aerosol;

a support, including a first accommodating cavity

and a second accommodating cavity that are arranged along the longitudinal direction, where the first accommodating cavity at least partially accommodates the first liquid guide element, and the second accommodating cavity at least partially accommodates the tubular element; and
 a ventilation channel, defined on the support, to provide a flow path for air to enter the liquid storage cavity, where the ventilation channel includes:
 a vent hole, extending through an outer surface of the support to an inner surface of the first accommodating cavity; and
 a vent groove, extending, from an inner side wall of the first accommodating cavity, toward the liquid storage cavity and crossing the first liquid guide element along the longitudinal direction of the electronic atomization device.

[0030] Another embodiment of this application provides an electronic atomization device, including a housing and

a liquid storage cavity, configured to store a liquid substrate, where the housing has a light-transmissive region that surrounds or defines at least a portion of the liquid storage cavity;
 an atomization assembly, in fluid communication with the liquid storage cavity, so as to absorb the liquid substrate from the liquid storage cavity and atomize the liquid substrate to generate an aerosol;
 a light source, configured to emit light; and
 a light-transmissive support, at least partially surrounding or accommodating the atomization assembly and/or the light source, where at least part of the support is located between the light source and the liquid storage cavity, so as to transmit the light emitted by the light source to the light-transmissive region.

[0031] In some embodiments, the light emitted by the light source is visible through the light-transmissive region of the housing.

[0032] In some embodiments, the housing has a proximal end and a distal end that are opposite to each other along a longitudinal direction, and the light-transmissive region and/or the liquid storage cavity is close to the proximal end.

[0033] In some embodiments, the housing includes the proximal end and the distal end that are opposite to each other along the longitudinal direction, and

a transparent first shell, close to or defining the proximal end; and
 a non-transparent second shell, close to or defining the distal end and partially surrounding the first shell.

[0034] The first shell has an exposed portion that is exposed from the second shell near the proximal end,

and the light-transmissive region of the housing is defined by the exposed portion.

[0035] In some embodiments, an inner surface of the second shell is substantially reflective.

[0036] In some embodiments, the electronic atomization device further includes:

an airflow sensor, configured to sense air flowing through the electronic atomization device.

[0037] The light source is integrated into the airflow sensor.

[0038] In some embodiments, the light source is configured to emit light when air flows through the electronic atomization device.

[0039] In some embodiments, the light source is accommodated or held in the support and is arranged facing away from the liquid storage cavity.

[0040] In some embodiments, the light source is arranged to deviate from a longitudinal central axis of the electronic atomization device.

[0041] In some embodiments, the electronic atomization device further includes:

a battery core, configured to provide electric power to the atomization assembly and the light source.

[0042] The light source and/or the support is located between the battery core and the liquid storage cavity.

[0043] In some embodiments, the electronic atomization device further includes:

a battery core, configured to provide electric power to the atomization assembly and the light source; and
 an end cap, at least partially closing the distal end of the housing and detachably connected to the housing, where the end cap is constructed to be detachable from the housing to open the distal end of the housing, to allow the battery core to be taken out from the distal end of the housing.

[0044] In some embodiments, the support includes a first end close to the liquid storage cavity along a longitudinal direction and a second end facing away from the first end.

[0045] The atomization assembly is accommodated in the support from the first end, and the light source is accommodated or held in the support from the second end.

[0046] In some embodiments, the electronic atomization device further includes:

a holding element, at least partially extending into the support from the second end, to provide support for the light source.

[0047] In some embodiments, the electronic atomization device further includes:

a first liquid guide element, arranged to be perpendicular to a longitudinal direction of the electronic atomization device and in fluid communication with the liquid storage cavity to absorb the liquid substrate.

[0048] The atomization assembly includes:

a second liquid guide element, arranged to extend along the longitudinal direction of the electronic atomization device and including an outer side surface and an inner side surface that are opposite to each other, where the outer side surface is arranged to indirectly absorb, from the first liquid guide element, the liquid substrate sourced from the liquid storage cavity; and

a heating element, coupled to the second liquid guide element and adjacent to the inner side surface, and configured to heat at least part of the liquid substrate in the second liquid guide element to generate an aerosol.

[0049] In some embodiments, the support includes a first support portion, a second support portion, and a third support portion that are arranged along a longitudinal direction.

[0050] The first support portion at least partially surrounds or accommodates the first liquid guide element.

[0051] The second support portion at least partially surrounds or accommodates the second liquid guide element.

[0052] The third support portion at least partially surrounds or accommodates the light source.

[0053] In some embodiments, the electronic atomization device further includes:

an airflow channel, defining an airflow path passing through the electronic atomization device, where at least a portion of the airflow channel is provided to extend around the support along a circumferential direction of the support.

[0054] Still another embodiment of the application provides an electronic atomization device, including a proximal end and a distal end that are opposite to each other along a longitudinal direction, and

a liquid storage cavity, arranged close to the proximal end and configured to store a liquid substrate;

an atomization assembly, in fluid communication with the liquid storage cavity, so as to receive the liquid substrate from the liquid storage cavity and atomize the liquid substrate to generate an aerosol; a battery core, configured to supply power to the atomization assembly;

a light source, configured to emit light; and

a support, at least partially located between the battery core and the liquid storage cavity and at least partially surrounding or accommodating the light source, where the support is constructed to be light-transmissive, so as to transmit the light emitted by the light source to the proximal end.

[0055] Still another embodiment of this application provides an electronic atomization device, including a housing and

a liquid storage cavity, configured to store a liquid

substrate, where the housing has a light-transmissive region that surrounds or defines at least a portion of the liquid storage cavity;

an atomization assembly, in fluid communication with the liquid storage cavity, so as to absorb the liquid substrate from the liquid storage cavity and atomize the liquid substrate to generate an aerosol; an airflow sensor, configured to sense air flowing through the electronic atomization device, where the airflow sensor is further integrated with a light source and is configured to emit light when the air flows through the electronic atomization device; and a light-transmissive support, at least partially located between the airflow sensor and the liquid storage cavity, to transmit the light emitted by the airflow sensor to the light-transmissive region.

[0056] According to the electronic atomization device provided in the foregoing embodiments, the atomization assembly and the airflow sensor are accommodated and mounted in the support, helping eliminate the airflow sensor from affecting a disassembling operation on another component, for example, the battery core.

BRIEF DESCRIPTION OF THE DRAWINGS

[0057] One or more embodiments are illustratively described with reference to the figures in the corresponding accompanying drawings, and these illustrative descriptions are not to limit the embodiments. Elements having the same reference numerals in the accompanying drawings are denoted as similar elements, and the figures in the accompanying drawings are not drawn to scale, unless particularly stated otherwise.

FIG. 1 is a schematic structural diagram of an electronic atomization device from a perspective according to an embodiment;

FIG. 2 is a schematic structural diagram of the electronic atomization device in FIG. 1 from another perspective;

FIG. 3 is a schematic cross-sectional view of the electronic atomization device in FIG. 1 from a perspective;

FIG. 4 is a schematic cross-sectional view of the electronic atomization device in FIG. 3 from another perspective;

FIG. 5 is a schematic cross-sectional view of a holding element, a conductive element, and a battery core in FIG. 4 from a perspective after assembly;

FIG. 6 is a schematic diagram of a detachable connection between an end cap and a housing of the electronic atomization device in FIG. 1;

FIG. 7 is a schematic diagram in which a battery core is taken out or replaced after the end cap in FIG. 6 is detached from the housing;

FIG. 8 is a schematic diagram from a perspective after some components of the electronic atomization

device in FIG. 1 are assembled to a support;
FIG. 9 is a schematic cross-sectional diagram from a perspective after some components of the electronic atomization device in FIG. 8 are assembled to a support;

FIG. 10 is a schematic exploded view from a perspective before some components of the electronic atomization device in FIG. 1 are assembled with a support;

FIG. 11 is a schematic exploded view from another perspective before some components in FIG. 10 are assembled with a support;

FIG. 12 is a schematic cross-sectional exploded view from another perspective before some components in FIG. 10 are assembled with a support;

FIG. 13 is a partially enlarged view of the electronic atomization device in FIG. 3;

FIG. 14 is a schematic structural diagram of the support in FIG. 12 from another perspective;

FIG. 15 is a schematic diagram of an airflow sensor having a light source according to an embodiment;
FIG. 16 is a schematic diagram in which light emitted by the airflow sensor in FIG. 15 is transmitted to a first shell;

FIG. 17 is a schematic cross-sectional view of an electronic atomization device from a perspective according to another embodiment;

FIG. 18 is a schematic cross-sectional view of the electronic atomization device in FIG. 17 from another perspective;

FIG. 19 is a schematic cross-sectional view from another perspective after some components of the electronic atomization device in FIG. 17 are assembled to a support;

FIG. 20 is a schematic cross-sectional exploded view from another perspective before some components in FIG. 19 are assembled to a support; and
FIG. 21 is a schematic diagram in which light emitted by the airflow sensor in FIG. 17 is transmitted to a first shell.

Reference numerals:

[0058]

100. Electronic atomization device; 10. Housing; 11. First shell; 12. Second shell; 14. Tubular element; 15. Airflow sensor; 16. Sealing element; 17. Conductive element; 18. Holding element; 19. Connecting element; 110. Proximal end; 111. Aerosol output tube; 112. Liquid storage cavity; 113. Air outlet; 120. Distal end; 141. Through hole; 151. First sensing surface; 152. Second sensing surface; 161. First sealing portion; 162. Second sealing portion; 171. First electrical contact portion; 172. Second electrical contact portion; 173. Recess; 181. First holding space; 182. Protrusion; 183. Separation wall; 191. Engagement groove; 1810. Upper end; 1820. Lower end; 1911.

First portion; 1912. Second portion; 20. End cap; 21. Air inlet; 22. Engagement protrusion; 30. Second liquid guide element; 40. Heating element; 50. First liquid guide element; 510. Upper surface; 520. Lower surface; 60. Support; 610. First support portion; 611. First accommodating cavity; 620. Second support portion; 621. Flange; 622. Groove; 623. First channel portion; 624. First communication hole; 625. Second channel portion; 627. Second accommodating cavity; 628. Gap; 630. Third support portion; 631. Third accommodating cavity; 632. Clamping wall; 633. Air inlet groove; 670. Ventilation channel; 671. Vent hole; 672. First vent groove; 673. Second vent groove; 681. First limiting wall; 682. Second limiting wall; 683. Hole; 70. Battery core.

100a. Electronic atomization device; 10a. Housing; 11a. First shell; 12a. Second shell; 14a. Tubular element; 15a. Airflow sensor; 16a. Sealing element; 17a. Conductive element; 18a. Holding element; 19a. Connecting element; 110a. Proximal end; 111a. Aerosol output tube; 112a. Liquid storage cavity; 113a. Air outlet; 120a. Distal end; 141a. Through hole; 151a. First sensing surface; 152a. Second sensing surface; 161a. Air hole; 20a. End cap; 21a. Air inlet; 30a. Second liquid guide element; 40a. Heating element; 50a. First liquid guide element; 60a. Support; 610a. First support portion; 611a. First accommodating cavity; 620a. Second support portion; 621a. Flange; 622a. Groove; 623a. First channel portion; 624a. First communicating opening; 625a. Second channel portion; 627a. Second accommodating cavity; 630a. Third support portion; 631a.

[0059] Third accommodating cavity; 670a. Ventilation channel; 671a. Vent hole; 672a. Vent groove; 6111a. First section; 6112a. Second section; 6711a. Port. 6712a. Limiting wall; 70a. Battery core.

40 DETAILED DESCRIPTION

[0060] For ease of understanding of this application, this application is described in more detail below with reference to the accompanying drawings and specific embodiments. It should be noted that, when an element is expressed as "being fixed to"/"being fixedly connected to" another element, the element may be directly on the another element, or one or more intermediate elements may exist between the element and the another element. When one element is described to be "connected to" another element, the element may be directly connected to the another element, or one or more intermediate elements may exist therebetween. Terms "upper", "lower", "left", "right", "inner", "outer", and similar expressions used in this specification are for illustrative purposes only.

[0061] Unless otherwise defined, meanings of all technical and scientific terms used in this specification are the same as those usually understood by a person skilled in

the art of this application. Terms used in the specification of this application are merely intended to describe objectives of the specific embodiments, but are not intended to limit this application. The term "and/or" used in this specification includes any or all combinations of one or more related listed items.

[0062] In addition, technical features involved in different embodiments of this application described below may be combined with each other so long as they do not constitute a conflict with each other.

[0063] In the embodiments of this application, the "mounting" includes fixing or limiting an element or a device to a specific position or place in a manner such as welding, screwing, snapping, or bonding. The element or the device may be kept static at the specific position or place or moved within a limited range. The element or the device may or may not be disassembled after being fixed or limited to the specific position or place, which is not limited in the embodiments of this application.

[0064] In addition, terms "first", "second", and "third" in this application are merely intended for a purpose of description, and shall not be understood as an indication or implication of relative importance or implicit indication of the quantity of indicated technical features. Therefore, a feature defined by the terms such as "first", "second", and "third" may explicitly or implicitly include one or more of the features. In description of the disclosure, "a plurality of" or "several" indicates at least two, such as two or three, unless specifically defined otherwise.

Embodiment 1:

[0065] FIG. 1 is a schematic structural diagram of an electronic atomization device from a perspective according to an embodiment. FIG. 2 is a schematic structural diagram of the electronic atomization device in FIG. 1 from another perspective.

[0066] This application provides an electronic atomization device, which is configured to atomize a liquid substrate to generate an aerosol.

[0067] FIG. 1 and FIG. 2 show schematic diagrams of an electronic atomization device 100 according to an embodiment, which includes a plurality of components arranged in an external body or a housing (which may be referred to as a first shell). An overall design of the external body or the housing may be changed, and a form or a configuration of the external body that may define an overall dimension and a shape of the electronic atomization device 100 may be changed. Generally, an elongated body may be formed from a single integrated first shell, or the elongated first shell may be formed from two or more separable bodies.

[0068] For example, the electronic atomization device 100 may have a control body at an end. The control body includes a first shell containing one or more reusable components (for example, storage batteries such as rechargeable batteries and/or rechargeable supercapacitors, and various electronic devices for controlling an

operation of a product), and has the external body or the housing for inhalation at an other end.

[0069] In some embodiments, the external body or the housing of the electronic atomization device 100 substantially defines an outer surface of the electronic atomization device 100.

[0070] In specific embodiments shown in FIG. 1 and FIG. 2, the electronic atomization device 100 includes: a housing 10 that may include one or more reusable components. The housing 10 has a proximal end 110 and a distal end 120 that are opposite to each other along a longitudinal direction. During use, the proximal end 110 is an end close to a user for inhalation, and the distal end 120 is an end away from the user.

[0071] In some examples, the housing 10 or a part thereof may be formed by metal such as stainless steel or aluminum, or an alloy, or another suitable material including various plastics (for example, polycarbonate), metal-plating over plastic, ceramic, and the like.

[0072] In some embodiments, the housing 10 is jointly formed by a plurality of components. In addition, in some embodiments, the housing 10 is open at the distal end 120. As shown in FIG. 3 to FIG. 7, the housing 10 includes:

a first shell 11 and a second shell 12. The first shell 11 is close to or defines the proximal end 110, and the second shell 12 is close to or defines the distal end 120.

[0073] FIG. 3 is a schematic cross-sectional view of the electronic atomization device in FIG. 1 from a perspective. FIG. 4 is a schematic cross-sectional view of the electronic atomization device in FIG. 3 from another perspective. FIG. 5 is a schematic cross-sectional view of a holding element, a conductive element, and a battery core in FIG. 4 from a perspective after assembly. FIG. 6 is a schematic diagram of a detachable connection between an end cap and a housing of the electronic atomization device in FIG. 1. FIG. 7 is a schematic diagram in which a battery core is taken out or replaced after the end cap in FIG. 6 is detached from the housing.

[0074] As shown in FIG. 3 to FIG. 7, the electronic atomization device 100 further includes:

a battery core 70, configured to supply power and arranged in the second shell 12.

[0075] In the embodiments shown in FIG. 3 to FIG. 7, the electronic atomization device 100 further includes: an end cap 20, coupled to and closing the distal end 120 of the housing 10/the second shell 12. The end cap 20 may be removed and detached from the distal end 120 of the housing 10/the second shell 12. After the end cap 20 is removed or detached from the distal end 120 of the second shell 12, the distal end 120 of the housing 10 can be opened or exposed, so that the battery core 70 can be taken out or replaced from the distal end 120 of the housing 10/the second shell 12.

[0076] Referring to FIG. 3 to FIG. 7, the end cap 20 at least partially extends into the housing 10/the second shell 12 from the distal end 120 after assembly. Moreover, an air inlet 21 is provided on the end cap 20, so as to allow

external air to enter the electronic atomization device 100 after assembly.

[0077] To form a detachable connection between the end cap 20 and the distal end 120 of the housing 10, referring to FIG. 3 to FIG. 7, the electronic atomization device 100 further includes:

a connecting element 19, located in the housing 10 and arranged at the distal end 120. The connecting element 19 is fixedly connected to the second shell 12 of the housing 10 in a close-fitting manner, such as staking or interference. During use, the end cap 20 is detachably connected to the connecting element 19, so as to establish a detachable connection to the housing 10. In the embodiment, the connecting element 19 is made of a rigid alloy, such as stainless steel or polymer plastic.

[0078] Referring to FIG. 3 to FIG. 7, the connecting element 19 is substantially arranged in a circular shape. The connecting element 19 is provided with an engagement groove 191 configured to connect to the end cap 20. The engagement groove 191 includes a first portion 1911 extending along a circumferential direction and a second portion 1912 extending from the first portion 1911 toward the distal end 120 along an axial direction. Further, the second portion 1912 is open toward the distal end 120.

[0079] Referring to FIG. 3 to FIG. 7, the end cap 20 at least partially extends into the connecting element 19. The end cap 20 is provided with an engagement protrusion 22. During use, the engagement protrusion 22 stretches into the first portion 1911 of the engagement groove 191 and abuts against an end of the first portion 1911 of the engagement groove 191, thereby forming a lock to prevent the end cap 20 from being removed or detached along a longitudinal direction of the housing 10.

[0080] For an operation process in which the end cap 20 is removed, reference is made to FIG. 7. The end cap 20 is first rotated around a central axis, to move the engagement protrusion 22 from the first portion 1911 into the second portion 1912, as shown by an arrow P11 in FIG. 7. After the engagement protrusion 22 is moved from the first portion 1911 into the second portion 1912, the end cap 20 is in an unlocked state, and in this case, may be allowed to be detached from the housing 10 along the longitudinal direction of the electronic atomization device 100. A disassembly operation is shown by an arrow P12 in FIG. 7. The end cap 20 is moved along the longitudinal direction, so that the engagement protrusion 22 leaves the engagement groove 191 along the second portion 1912. Therefore, connection between the end cap 20 and the connecting element 19 is released, so that the end cap 20 can be detached or removed from the distal end 120 of the housing 10.

[0081] After the end cap 20 is removed, the distal end 120 of the housing 10 is opened, so that the battery core 70 can be taken out or removed from the distal end 120 of the housing 10 through gentle shaking or swinging.

[0082] As shown in FIG. 3 to FIG. 7, the electronic atomization device 100 further includes:

an air outlet 113, configured for inhalation by a user, where the air outlet 113 is located at the proximal end 110 of the housing 10 and is defined or formed by the first shell 11; and

a liquid storage cavity 112 configured to store the liquid substrate, and an atomization assembly configured to absorb the liquid substrate from the liquid storage cavity 112 and heat and atomize the liquid substrate. To facilitate atomization and output, the liquid storage cavity 112 and the atomization assembly are both arranged close to the proximal end 110. The electronic atomization device 100 further includes an aerosol output tube 111 arranged along the longitudinal direction. The aerosol output tube 111 at least partially extends in the liquid storage cavity 112, and a space between an outer wall of the aerosol output tube 111 and an inner surface of the housing 10/the first shell 11 forms the liquid storage cavity 112. An end portion of the aerosol output tube 111 opposite to the proximal end 110 is in communication with the air outlet 113, to output the aerosol atomized and generated by the atomization assembly to the air outlet 113 for inhalation.

[0083] As shown in FIG. 3 and FIG. 4, the aerosol output tube 111 and the housing 10/the first shell 11 are integrally molded by using a moldable material, so that a side of a prepared liquid storage cavity 112 at the proximal end 110 is closed, and a side of the prepared liquid storage cavity toward the distal end 120 is opened.

[0084] FIG. 8 is a schematic diagram from a perspective after some components of the electronic atomization device in FIG. 1 are assembled to a support. FIG. 9 is a schematic cross-sectional diagram from a perspective after some components of the electronic atomization device in FIG. 8 are assembled to a support. FIG. 10 is a schematic exploded view from a perspective before some components of the electronic atomization device in FIG. 1 are assembled with a support. FIG. 11 is a schematic exploded view from another perspective before some components in FIG. 10 are assembled with a support. FIG. 12 is a schematic cross-sectional exploded view from another perspective before some components in FIG. 10 are assembled with a support.

[0085] As shown in FIG. 3 to FIG. 12, further, a first liquid guide element 50 is arranged in the housing 10/the first shell 11. The first liquid guide element 50 is a layer of a sheet or blocky fiber, which is arranged perpendicular to the longitudinal direction of the housing 10/the first shell 11. In some embodiments, the first liquid guide element 50 is made of a flexible capillary fiber material, such as natural cotton fibers or non-woven fibers. Specifically, the first liquid guide element 50 includes liquid guide cotton in a shape of a sheet. Alternatively, in some other variant embodiments, the first liquid guide element 50 includes artificial cotton, hard artificial cotton, or artificial foam made of filamentous polyurethane, or the like. For example, the first liquid guide element 50 is made of a 138#

hard synthetic organic polymer fiber, which has a density of 0.1-0.9 mg/mm³. A total weight of the first liquid guide element 50, when not infiltrated with liquid, is approximately 0.04-0.06 g. The first liquid guide element 50 is prepared from an oriented fiber in an oriented arrangement substantially along a length direction, a width direction, or a radial direction. By arranging the oriented fiber in the length direction or the width direction of the first liquid guide element 50, the first liquid guide element 50 is endowed with a high anti-bending property and rigidity. Specifically, for example, the first liquid guide element 50 is hard artificial cotton including the oriented polyester fiber, hard artificial cotton, or artificial foam made of filamentous polyurethane, or the like.

[0086] Referring to FIG. 3 to FIG. 12, the first liquid guide element 50 is accommodated and arranged in a support 60. Further, after assembly, the first liquid guide element 50 and the support 60 jointly close a hole of the liquid storage cavity 112 toward the distal end 120. Because the support 60 is dense, a liquid substrate in the liquid storage cavity 112 may leave the liquid storage cavity 112 substantially only by being absorbed by the first liquid guide element 50 after assembly.

[0087] FIG. 13 is a partially enlarged view of the electronic atomization device in FIG. 3. FIG. 14 is a schematic structural diagram of the support in FIG. 12 from another perspective.

[0088] Referring to FIG. 3 to FIG. 14, an upper surface 510 of the first liquid guide element 50 adjacent to the liquid storage cavity 112 is in fluid communication with the liquid storage cavity 112, so as to absorb a liquid substrate. Further, after assembly, the first liquid guide element 50 and the support 60 jointly close and define a part of a boundary of the liquid storage cavity 112. As shown in FIG. 3 to FIG. 12, the first liquid guide element 50 is constructed in a circular shape.

[0089] As shown in FIG. 3 to FIG. 14, a tubular element 14 is further provided in the housing 10/the first shell 11. The tubular element 14 is an independent component and is preferably made of a relatively thin, rigid material. As a proper example, a ceramic tube, a stainless steel tube, or the like is used as the tubular element 14. After extending through the first liquid guide element 50 in an axial direction, the tubular element 14 is connected to the aerosol output tube 111 through interference, close fitting, or interference fitting, to further form sealing therebetween while fastening connection is enabled. After assembly, the first liquid guide element 50 is arranged around the tubular element 14.

[0090] Referring to FIG. 3 to FIG. 12, the atomization assembly is accommodated and assembled in the tubular element 14. The tubular element 14 is provided with several through holes 141 arranged at intervals along a circumferential direction. The atomization assembly is in fluid communication with the first liquid guide element 50 through the through hole 141 to receive a liquid substrate. In addition, in the embodiments shown in FIG. 3 to FIG. 12, the through hole 141 on the tubular element 14

substantially avoids the first liquid guide element 50. As shown in FIG. 3 and FIG. 4, the first liquid guide element 50 is closer to the proximal end 110 than the through hole 141 on the tubular element 14.

[0091] Referring to FIG. 3 to FIG. 12, in some embodiments, the atomization assembly includes a second liquid guide element 30. The second liquid guide element 30 is flexible in this embodiment, and, for example, is made of a flexible fiber, such as a cotton fiber, a non-woven fabric, a sponge, or the like. The second liquid guide element 30 is constructed to be in a shape of a tube or a barrel arranged along the longitudinal direction of the housing 10/the first shell 11. The second liquid guide element 30 is coaxial with the tubular element 14 and is located inside the tubular element 14. Alternatively, in some other variant embodiments, the second liquid guide element 30 may further include a rigid porous element, for example, porous ceramic, or porous glass.

[0092] In an embodiment, an outer side surface of the second liquid guide element 30 along a radial direction covers or is in communication with the through hole 141, so that the outer side surface of the second liquid guide element 30 is configured as a liquid absorbing surface, to receive and absorb, through the through hole 141, a liquid substrate passing through the first liquid guide element 50, as shown by an arrow R1 in FIG. 3 and FIG. 4. An inner side surface of the second liquid guide element 30 along the radial direction is configured as an atomization surface, and the atomization surface is coupled to/attached to/abuts against the heating element 40. Further, after the liquid substrate is transferred to the atomization surface, the liquid substrate is heated and atomized by the heating element 40 to generate an aerosol, which is released.

[0093] Referring to FIG. 3 to FIG. 12, in the embodiments, the heating element 40 is arranged to extend along the longitudinal direction of the second liquid guide element 30. The heating element 40 is arranged coaxially with the second liquid guide element 30. In some optional embodiments, the heating element 40 is a resistive heating mesh, a resistive heating coil, or the like. In the embodiment, the heating element 40 is a heating element prepared by coiling a sheet base material or a mesh base material. The coiled heating element 40 is in a non-closed tubular shape in a circumferential direction, and is in a cylindrical shape having a side opening in a longitudinal direction. A conductive pin is welded or arranged on two ends of the heating element 40, which is configured to guide a current on the heating element 40.

[0094] In some other variant implementations, the heating element 40 may be coupled to the second liquid guide element 30 through printing, deposition, sintering, physical assembly, or the like. In some other variant implementations, the second liquid guide element 30 may have a plane or a curved surface for supporting the heating element 40, and the heating element 40 is formed on the plane or the curved surface of the porous body through installing, printing, deposition, or the like.

Alternatively, in some other variant implementations, the heating element 40 is a conductive trajectory formed on a surface of the second liquid guide element 30. In some other variant implementations, the conductive trajectory of the heating element 40 may be in a form of a printed circuit formed by printing. In some other variant implementations, the heating element 40 is a patterned conductive trajectory. In some other implementations, the heating element 40 is planar. In some other variant implementations, the heating element 40 is a conductive trajectory extending in a meandering, circuitous, reciprocal, or zigzagging manner.

[0095] Referring to FIG. 3 to FIG. 12, the support 60 is further used to support and fix the first liquid guide element 50 and the tubular element 14. The support 60 is substantially in a cylindrical shape. The support 60 is rigid. For example, the support 60 is made of rigid polymer plastic.

[0096] Referring to FIG. 3 to FIG. 7, the housing 10/the first shell 11 is further provided with: a holding element 18, located in the second shell 12 and located between the battery core 70 and the support 60 in a longitudinal direction. The holding element 18 is configured to support and hold the elastic conductive element 17. The elastic conductive element 17 may be an electrical contact. In addition, the holding element 18 is configured to at least partially surround and hold the battery core 70.

[0097] Referring to FIG. 3 to FIG. 7, the holding element 18 is substantially in a ring shape arranged in a longitudinal direction of the second shell 12. In some embodiments, the holding element 18 is rigid, for example, made of an organic polymer plastic.

[0098] As shown in FIG. 5, the holding element 18 includes:

an upper end 1810 and a lower end 1820, facing away from each other; and
a separation wall 183, arranged to be perpendicular to an axial direction of the holding element 18, and separating an inner space of the holding element 18 to define a first holding space 181 located between the separation wall 183 and the upper end 1810 and a second holding space located between the separation wall 183 and the lower end 1820.

[0099] After assembly, the upper end 1810 of the holding element 18 at least partially extends into the support 60, and is connected to the support 60. The battery core 70 is at least partially held or mounted in the second holding space.

[0100] As shown in FIG. 5, the holding element 18 further includes:

a protrusion 182, extending from the separation wall 183 into the first holding space 181 in an axial direction, so as to support an airflow sensor 15 and a sealing element 16 that are accommodated and held in the support 60 after assembly. After assembly, the airflow sensor 15 and the sealing element 16 that are accommodated and mounted

in the support 60 abut against the protrusion 182.

[0101] In some embodiments, the airflow sensor 15 is, for example, a microphone, a micro-electromechanical system (MEMS) sensor, or the like.

[0102] In some specific embodiments of this application, the airflow sensor 15 is a high-end microphone commonly used in the art that is integrated with a plurality of hardware functions. For example, specifically, the airflow sensor 15 is a multifunctional microphone integrated with heat control, an LED (light emitting diode) light source, air flow detection, and the like. Further, in an embodiment, the electronic atomization device 100 is not provided with a main control circuit board, such as a flexible printed circuit (FPC) board, a printed circuit board (PCB), or the like, configured to operate the electronic atomization device 100, or a microcontroller unit (MCU) controller or the like arranged on the main control circuit board.

[0103] In an embodiment, the airflow sensor 15 is arranged to deviate from a longitudinal central axis of the electronic atomization device 100. For example, in FIG. 3, the airflow sensor 15 is arranged close to a side.

[0104] As shown in FIG. 3 to FIG. 5, the electronic atomization device 100 further includes:

an elastic conductive element 17, mounted and held on the holding element 18. In some embodiments, the elastic conductive element 17 and the holding element 18 are integrally prepared through metal insert molding, insert molding, or the like, thereby enabling firm coupling therebetween. Alternatively, in some other embodiments, the elastic conductive element 17 and the holding element 18 are mechanically connected, thereby enabling firm coupling therebetween. For example, the holding element 18 is provided with a fastening structure such as a clamping port or a groove used for clamping or fastening the conductive element 17, so that the conductive element 17 is firmly held on the holding element 18.

[0105] In some embodiments, the elastic conductive element 17 includes metal or an alloy with low resistivity. For example, the conductive element 17 includes gold, silver, copper, or an alloy thereof.

[0106] In some embodiments, the elastic conductive element 17 at least partially crosses or passes through a separation wall 183. Alternatively, the elastic conductive element 17 at least partially extends through the first holding space 181 or extends to the second holding space. Alternatively, the elastic conductive element 17 includes a first electrical contact portion 171 extending or exposed to the first holding space 181, and a second electrical contact portion 172 extending or exposed to the second holding space. During assembly, a battery core 70 elastically abuts against the second electrical contact portion 172 of the conductive element 17, so as to establish electric conduction. The airflow sensor 15 is welded or electrically connected to the first electrical contact portion 171 of the conductive element 17 to form an electrical connection.

[0107] In some embodiments, the elastic conductive

element 17 is formed by bending a sheet or a conductor precursor. In some embodiments, the elastic conductive element 17 is in a meandering and bending shape. In some embodiments, the elastic conductive element 17 is formed by bending a copper sheet. In some embodiments, the meandering and bent conductive element 17 has a substantially S shape. Alternatively, in some other embodiments, the meandering and bent conductive element 17 has a substantially U shape or the like. In some embodiments, at least one recess 173 is defined in the elastic conductive element 17. The separation wall 183 of the holding element 18 is embedded or snapped into the at least one recess 173.

[0108] According to the embodiment shown in FIG. 5, when the battery core 70 elastically abuts against the second electrical contact portion 172 of the conductive element 17 to form an electrical connection, the conductive element 17 is compressed during use. In addition, in the embodiment, an elastic property of the conductive element 17 enables it to be biased to abut against or engage with the battery core 70. Moreover, as shown in FIG. 7, when the battery core 70 is removed from the distal end 120, the battery core 70 is separated from the conductive element 17 to break electrical connection.

[0109] Referring to FIG. 8 to FIG. 14, a support 60 is arranged to substantially extend along a longitudinal direction of an electronic atomization device 100. The support 60 has a first end facing toward or close to a liquid storage cavity 112 and a second end facing away from the first end. The support 60 is substantially in a cylindrical shape extending from the first end to the second end. The support 60 is rigid. For example, the support 60 is made of rigid polymer plastic. As shown in FIG. 8 to FIG. 14, in some embodiments, the support 60 includes a first support portion 610, a second support portion 620, and a third support portion 630 that are arranged in sequence along a longitudinal direction. The third support portion 630 is connected to a holding element 18 through a mechanical connection or a firm connection.

[0110] As shown in FIG. 3 to FIG. 14, a first accommodating cavity 611 is defined in the first support portion 610, so as to accommodate and hold a first liquid guide element 50. After assembly, the first support portion 610 surrounds the first liquid guide element 50. At a place where it is close to the liquid storage cavity 112, the first support portion 610 is in an interference fit with the housing 10/the first shell 11. A sealing ring, such as an O-shaped ring, around the first support portion 610 is arranged outside the first support portion 610, to provide sealing between the first support portion 610 and the housing 10/the first shell 11.

[0111] As shown in FIG. 3 to FIG. 14, a mechanical connection and an interference fit are established between the third support portion 630 and the housing 10/the first shell 11. Specifically, a connection structure, such as an engagement groove or an engagement protrusion, may be arranged on the third support portion 630, to further establish a mechanical connection with the

housing 10/the first shell 11. In addition, the holding element 18 at least partially extends into the third support portion 630 to establish a mechanical connection with the third support portion 630. In addition, a sealing ring such as an O-ring is arranged outside the third support portion 630, to provide sealing between the third support portion 630 and the housing 10/the first shell 11.

[0112] As shown in FIG. 3 to FIG. 14, a plurality of flanges 621 that surround the second support portion 620 in a circumferential direction and a groove 622 that is located between adjacent flanges 621 are further arranged outside the second support portion 620 of the support 60. As shown in FIG. 3 to FIG. 14, the flange 621 is arranged between the sealing ring arranged outside the first support portion 610 and the sealing ring outside the third support portion 630 along the longitudinal direction of the support 60.

[0113] As shown in FIG. 3 to FIG. 14, a second accommodating cavity 627 is defined in the second support portion 620, and configured to at least partially mount and accommodate the tubular element 14 and the atomization assembly. Specifically, after assembly, at least part of the tubular element 14 passes through the first accommodating cavity 611 and is inserted into the second accommodating cavity 627 of the support 60. In addition, the tubular element 14 and the support 60 are in an interference fit to enable sealing therebetween. In addition, no flexible sealing element is between the tubular element 14 and the support 60. As shown in FIG. 3 to FIG. 14, after assembly, a part of the tubular element 14 extends into the support 60, and another part of the tubular element extends out of the support 60. For example, after assembly, the tubular element 14 has an exposed portion extending out of the support 60 and/or the first liquid guide element 50, so as to form a close-fitting connection with the aerosol output tube 111 through the exposed portion. The first end of the support 60 is open or has a first opening. The first liquid guide element 50 is received in the first accommodating cavity 611 from the first end through the first opening; and/or, the tubular element 14 and/or the atomization assembly passes through the first accommodating cavity 611 from the first end through the first opening and is received in the second accommodating cavity 627.

[0114] As shown in FIG. 14, a portion of the second accommodating cavity 627 close to the first accommodating cavity 611 has a gradually increased inner diameter, or the portion of the second accommodating cavity 627 close to the first accommodating cavity 611 has an inner side surface which is obliquely arranged. After assembly, a through hole 141 of the tubular element 14 and the portion of the second accommodating cavity 627 having the increased inner diameter are opposite and thus form a gap 628 therebetween. In addition, in FIG. 3 to FIG. 14, at least part of the through hole 141 of the tubular element 14 is staggered from the first liquid guide element 50, so that a part of the through hole 141 of the tubular element 14 is not covered or blocked by the inner

surface of the first liquid guide element 50.

[0115] As shown in FIG. 13, after assembly, a liquid buffer space surrounding the through hole 141 is defined by the gap 628. The gap 628 is in fluid communication with the lower surface 520 of the first liquid guide element 50. During use, a liquid substrate in a liquid storage cavity 112 is absorbed through an upper surface 510 of the first liquid guide element 50 and then flows to the gap 628 through the lower surface 520. Finally, the liquid substrate passes through the through hole 141 of the tubular element 14 and is absorbed by a second liquid guide element 30, as shown by an arrow R1 in FIG. 13.

[0116] In the embodiments shown in FIG. 3 to FIG. 14, when the first liquid guide element 50 is accommodated and assembled in the first accommodating cavity 611, the upper surface 510 of the first liquid guide element 50 is substantially flush with an opening of the first accommodating cavity 611. Alternatively, when the first liquid guide element 50 is accommodated and assembled in the first accommodating cavity 611, the upper surface 510 of the first liquid guide element 50 is substantially flush with the first end of the support 60.

[0117] As shown in FIG. 3 to FIG. 14, the third support portion 630 of the support 60 is further provided therein with:

a third accommodating cavity 631, configured to accommodate or mount an airflow sensor 15 and a sealing element 16. The airflow sensor 15 is accommodated and mounted in the third accommodating cavity 631 of the support 60 and is arranged facing away from the liquid storage cavity 112.

[0118] In the embodiments of FIG. 3 to FIG. 14, the airflow sensor 15 is in a shape of a sheet, a disk, or a cylinder. An axis of the airflow sensor 15 is arranged along the longitudinal direction of the support 60. The sealing element 16 is configured to wrap the airflow sensor 15. As shown in FIG. 12, the sealing element 16 includes a first sealing portion 161 arranged in the longitudinal direction of the support 60, and a second sealing portion 162 arranged along the longitudinal direction of the support 60. After assembly, the airflow sensor 15 is wrapped in the second sealing portion 162 of the sealing element 16. After assembly, the holding element 18 at least partially extends into the third accommodating cavity 631, and the protrusion 182 supports the first sealing portion 161 of the sealing element 16 accommodated and held in the support 60. The third accommodating cavity 631 is open at the second end of the support 60, or the second end of the support 60 has a second opening. The airflow sensor 15 is received in the third accommodating cavity 631 from the second end through the second opening.

[0119] As shown in FIG. 3 to FIG. 14, the third support portion 630 of the support 60 is further provided therein with:

a clamping wall 632, which is configured to clamp a second sealing portion 162 of a sealing element 16 and/or an airflow sensor 15 accommodated in a third

accommodating cavity 631, so that the second sealing portion and the airflow sensor are stably mounted. After being mounted, the second sealing portion 162 of the sealing element 16 abuts against or is clamped to the clamping wall 632.

[0120] As shown in FIG. 3 to FIG. 11, an air inlet groove 633 is arranged on an inner side surface of the third accommodating cavity 631, to provide a path for air to enter the third accommodating cavity 631.

[0121] As shown in FIG. 8 to FIG. 14, an air inlet channel is provided on the support 60, to provide a channel for air from the air inlet 21 to enter the second accommodating cavity 627. A complete air inlet channel includes:

a first channel portion 623, extending from the third accommodating cavity 631 along the longitudinal direction of the support 60, or extending through the third accommodating cavity to the groove 622 on the surface of the second support portion 620, where the first channel portion 623 defines a first communicating hole 624 on a surface of the second support portion 620;

at least one groove 622; and

a second channel portion 625, extending from the groove 622 on the surface of the second support portion 620, or extending through the groove to the second accommodating cavity 627, so as to deliver air to an atomization assembly in the second accommodating cavity 627. The second channel portion 625 may include a plurality of bent sections.

[0122] For a flow path of air during inhalation, reference is made to the arrow R2 in FIG. 3 to FIG. 14. External air entering through an air inlet 21 sequentially passes through a gap between a battery core 70 and a housing 10 and a holding element 18 and then enters the third accommodating cavity 631 through the air inlet groove 633. Then the external air flows into the groove 622 on the surface of the second support portion 620 through the first channel portion 623, and flows to the second channel portion 625 through the groove 622. Finally, the external air enters the tubular element 14 through the second channel portion 625, and carries an aerosol generated by an atomization assembly to deliver it to an air outlet 113 from an aerosol output tube 111.

[0123] As shown in FIG. 10, along a radial direction of a support 60, the first communicating hole 624 of the first channel portion 623 is arranged facing away from a port of the second channel portion 625 located on the surface of the support 60. Along the longitudinal direction of the support 60, the first communicating hole 624 and the port of the second channel portion 625 located on the surface of the support 60 have different longitudinal heights. Specifically, in FIG. 9 to FIG. 14, the first communicating hole 624 is farther from the third support portion 630 than the port of the second channel portion 625 located on the surface of the support 60.

[0124] According to the embodiments shown in FIG. 8 to FIG. 14, the airflow sensor 15 is configured to sense a change in air flowing through the support 60 and/or the electronic atomization device 100. Specifically, in the embodiments shown in FIG. 8 to FIG. 14, the airflow sensor 15 includes a first sensing surface 151 and a second sensing surface 152 that are opposite to each other. The second sealing portion 162 of the sealing element 16 wraps the airflow sensor 15, and the first sensing surface 151 and the second sensing surface 152 are substantially exposed. In the embodiments, the first sensing surface 151 and the second sensing surface 152 are isolated from each other. The first sensing surface 151 faces and is in communication with the first channel portion 623. The first sensing surface 151 is configured to sense a pressure in the first channel portion 623. As shown in FIG. 9 to FIG. 14, the first channel portion 623 is staggered from the airflow sensor 15. The second sensing surface 152 is in communication with the external atmosphere through an assembly gap, so as to sense a pressure of the external atmosphere. The airflow sensor 15 determines an air flow caused by inhalation of a user based on a difference between pressure values sensed by the first sensing surface 151 and the second sensing surface 152.

[0125] As shown in FIG. 9 to FIG. 14, the support 60 further defines a ventilation channel 670, to provide a flow path for air to enter a liquid storage cavity 112. Therefore, when a liquid substrate in a liquid storage cavity 112 is gradually consumed, and a negative pressure in the liquid storage cavity 112 is relatively low, the air can enter the liquid storage cavity 112 through the ventilation channel 670 to relieve or eliminate the negative pressure in the liquid storage cavity 112. Specifically, the ventilation channel 670 includes:

- a vent hole 671, extending from the groove 622 of the second support portion 620 to an inner bottom wall of the first accommodating cavity 611;
- a first vent groove 672, arranged on the inner bottom wall of the first accommodating cavity 611, where the first vent groove 672 extends from the vent hole 671 to an inner side wall of a support 60; and
- a second vent groove 673, extending from the first vent groove 672 to a first end of the support 60.

[0126] In the embodiments, the vent hole 671 has a diameter of approximately 0.3-2.0 mm. Moreover, the first vent groove 672 and/or the second vent groove 673 has a width and/or a depth of approximately 0.3-2.0 mm. When the negative pressure in the liquid storage cavity 112 exceeds a predetermined threshold, as shown by an arrow R3 in FIG. 9 to FIG. 14, the air enters the liquid storage cavity 112 sequentially through the vent hole 671, the first air vent groove 672, and the second air vent groove 673, thereby eliminating or relieving the negative pressure in the liquid storage cavity 112.

[0127] As shown in FIG. 14, to avoid or prevent a port

(that is, an air inlet port) of the vent hole 671 located in the groove 622 from being closed or blocked by a housing 10, a first limiting wall 681 and a second limiting wall 682 are arranged in the groove 622. The first limiting wall 681 and the second limiting wall 682 are each located on one of two sides of the port of the vent hole 671 located in the groove 622. The first limiting wall 681 and the second limiting wall 682 define a hole 683 in the groove 622 to maintain smooth air flow through the port of the vent hole 671 located in the groove 622, so that air can enter the ventilation channel.

[0128] In the embodiments, the first limiting wall 681 and the second limiting wall 682 are obliquely arranged relative to the longitudinal direction of the support 60. Moreover, a width of each of the first limiting wall 681 and the second limiting wall 682 is less than a radial width of a flange 621, so that a gap is maintained between the first limiting wall 681 and the second limiting wall 682 and the housing 10, and is in communication with the third accommodating cavity 631 below and/or the air inlet channel, thereby enabling air in the third accommodating cavity 631 and/or the air inlet channel to enter the ventilation channel 670. In addition, in the embodiments, a space of the hole 683 defined between the first limiting wall 681 and the second limiting wall 682 can further be as a liquid buffer chamber, to store, adsorb, or hold a liquid substrate seeped through the ventilation channel 670, so as to prevent the liquid substrate seeped from the ventilation channel 670 from further leaking into the third accommodating cavity 631. In addition, during use, a liquid substrate is held in the liquid buffer chamber defined by the hole 683. When a difference in air pressures inside and outside the liquid storage cavity 112 exceeds a threshold, the liquid substrate in the hole 683 can be driven by the air pressure difference to further flow back to an atomization assembly and/or a liquid storage cavity 112 through the ventilation channel 670.

[0129] FIG. 15 is a schematic diagram of an airflow sensor having a light source according to an embodiment. FIG. 16 is a schematic diagram in which light emitted by the airflow sensor in FIG. 15 is transmitted to a first shell.

[0130] FIG. 15 shows a schematic diagram of the airflow sensor 15 integrated with a light source (LED) and heat control according to an embodiment.

[0131] As shown in FIG. 15, the airflow sensor 15 includes:

- an interface 3, configured to generate an input electrical signal based on an air flow caused by inhalation of a user;
- an interface 4, configured to electrically connect to a positive electrode of a battery core 70;
- an interface 5, configured to connect to a heating element 40;
- an interface 6, electrically connected to the light source (LED) integrated in the airflow sensor 15; and
- an interface 2, connected to a negative electrode of

the battery core 70 through a ground connection.

[0132] In some embodiments, the airflow sensor 15 can determine an inhalation action of the user based on the input electrical signal from the interface 3.

[0133] In some embodiments, the airflow sensor 15 can be configured to provide a current to the light source (LED) through the interface 6 when it determines inhalation of the user, so that the light source (LED) emits light.

[0134] Alternatively, the light source (LED) is configured to emit light during the inhalation of the user.

[0135] In some embodiments, the airflow sensor 15 can be configured to, when determining the inhalation of the user, provide the current to the heating element 40 through the interface 5, so that the heating element 40 heats a liquid substrate in a second liquid guide element 30 to generate an aerosol.

[0136] The airflow sensor 15 integrated with the light source (LED) with the heat control may be, for example, a microphone of model IP9013-SOT23-6. Alternatively, in some other variant embodiments, the light source LED is a light emitting device independent of the airflow sensor 15, rather than being integrated in the airflow sensor 15.

[0137] In the embodiment, after mounting, the interface 4 of the airflow sensor 15 is welded to a first electrical contact portion 171 of a conductive element 17 through a conductive lead, so as to form an electrical connection with a battery core 70.

[0138] In the embodiment, the heating element 40 is connected to the interface 2 and the interface 5 of the airflow sensor 15 through a welding lead, so that the airflow sensor 15 can guide a current between the heating element 40 and the battery core 70, to provide electric power of the battery core 70 to the heating element 40 to heat a liquid substrate.

[0139] Alternatively, in some other variant embodiments, the electronic atomization device 100 may further include:

a circuit or a circuit board, which is provided with an MCU controller, and is electrically connected to the first electrical contact portion 171 to form an electrical connection with the battery core 70. The MCU controller is configured to control the light source LED to emit light and/or to control output of electric power to the heating element 40 when the airflow sensor 15 senses an inhalation action of a user.

[0140] As shown in FIG. 16, the light source LED is close to or located on a second sensing surface 152 and faces away from a first sensing surface 151. In addition, the light source LED is arranged facing away from a clamping wall 632 and/or a first channel portion 623. The light source LED emits light through the second sensing surface 152.

[0141] In some embodiments, a support 60 is light-transmissive. For example, the support 60 is made of a transparent, light-transmissive material, for example, polymer plastic such as polypropylene (PP) and polymethyl methacrylate (PMMA), acrylic, or the like.

[0142] In some embodiments, a second shell 12 is light-shielding or opaque. The second shell 12 may be made of an opaque polymer such as polycarbonate (PC), an alloy such as stainless steel/an aluminum alloy.

[0143] In some embodiments, a first shell 11 is transparent. For example, the first shell 11 is made of polymer plastic such as PP and PMMA, or acrylic.

[0144] As shown by an arrow R4 in FIG. 16, light emitted by the light source LED is transmitted through the support 60 toward a proximal end 110 and/or a liquid storage cavity 112, and then is emitted from the first shell 11. In this way, during use, when a user inhales through the air outlet 113, the user can further view, through a portion of the first shell 11 close to the proximal end 110, the light emitted by the light source LED, to determine whether an electronic atomization device 100 responds to an inhalation action and/or whether the electronic atomization device 100 generates an aerosol based on the inhalation action. A portion of the first shell 11 extends into the second shell 12 and is surrounded by the second shell 12. Another portion of the first shell 11 is exposed from or located outside the second shell 12, and the exposed portion of the first shell 11 exposed from the second shell 12 defines a light-transmissive region through which light emitted by a light source is transmitted out of the housing 10. In addition, the light-transmissive region of the housing 10 is optically coupled to a light source (LED) and/or an airflow sensor 15 through a light-transmissive support 60.

[0145] As shown in FIG. 3 to FIG. 16, the second shell 12 substantially extends to be flush with the first end of the support 60. Alternatively, the second shell 12 extends by a length from the distal end 120 to the liquid storage cavity 112. An inner surface of the second shell 12 may be reflective. For example, the inner surface of the second shell 12 is provided with a reflective coating, or the second shell 12 is made of a bright alloy material such as an aluminum alloy, so that the inner surface of the second shell 12 is substantially reflective, facilitating transmission or reflection of light irradiated onto the inner surface of the second shell 12 to a proximal end 110.

Embodiment 2:

[0146] FIG. 17 is a schematic cross-sectional view of an electronic atomization device from a perspective according to another embodiment. FIG. 18 is a schematic cross-sectional view of the electronic atomization device in FIG. 17 from a perspective. FIG. 19 is a schematic cross-sectional view from another perspective after some components of the electronic atomization device in FIG. 17 are assembled to a support. FIG. 20 is a schematic cross-sectional exploded view from another perspective before some components in FIG. 19 are assembled to a support. FIG. 21 is a schematic diagram in which light emitted by the airflow sensor in FIG. 17 is transmitted to a first shell.

[0147] FIG. 17 to FIG. 21 are schematic diagrams of an

electronic atomization device 100a according to still another embodiment. In the embodiment, the electronic atomization device 100a includes:

a housing 10a, including a first shell 11a close to and defining a proximal end 110a and a second shell 12a close to and defining a distal end 120a, where the first shell 11a at least partially extends into the second shell 12a and is surrounded by the second shell 12a;

an end cap 20a, coupled to the distal end 120a of the housing 10a and closing the distal end 120a, where the end cap 20a can be detached from the distal end 120a of the housing 10a to open the distal end 120a, for taking out or replacing the battery core 70a, and the end cap 20a is further provided with an air inlet 21a configured to allow air to enter the electronic atomization device 100a;

a connecting element 19a, firmly assembled in the housing 10a and arranged close to the distal end 120a, where the end cap 20a is detachably connected to the connecting element 19a, to form a detachable connection with the housing 10a, and moreover, the end cap 20a can be disconnected from the connecting element 19a and thus detached from the housing 10a;

a battery core 70a, configured to supply power;

a liquid storage cavity 112a, arranged close to the proximal end 110a and located in the first shell 11a;

an aerosol output tube 111a, at least partially extending inside the liquid storage cavity 112a, where a liquid storage cavity 112a is formed through a space between an outer wall of the aerosol output tube 111a and an inner surface of the housing 10a/the first shell 11a, and an end portion, opposite to the proximal end 110a, of the aerosol output tube 111a is in communication with the air outlet 113a, so as to output an aerosol atomized and generated by an atomization assembly to an air outlet 113a for inhalation;

a first liquid guide element 50a, accommodated and held in a support 60a and configured to absorb a liquid substrate in the liquid storage cavity 112a, where the first liquid guide element 50a is arranged to be substantially perpendicular to a longitudinal direction of the electronic atomization device 100a;

a tubular element 14a, for example, a stainless steel tube, a ceramic tube, or a plastic tube, arranged to extend in the liquid storage cavity 112a along a longitudinal direction, where the tubular element 14a is tightly fitted to the aerosol output tube 111a through staking, interference, or the like, the tubular element 14a is arranged to extend through the first liquid guide element 50a, and a tube wall of the tubular element 14a is further provided with a through hole 141a and the like, to allow a liquid substrate to pass through the through hole 141a and flow into the tubular element 14a;

a second liquid guide element 30a, made of a capil-

lary material or a porous material, for example, sponge, a cotton fiber, or a porous body such as a porous ceramic body, where the second liquid guide element 30a is arranged to extend inside the tubular element 14a along a longitudinal direction, the second liquid guide element 30a is constructed in a tubular shape, an outer surface of the second liquid guide element 30a can receive, through the through hole 141a in the tubular element 14a, a liquid substrate sourced from the liquid storage cavity 112a from the first liquid guide element 50a, and a liquid transmission direction is shown by the arrow R1 in FIG. 17 and FIG. 18; and

a heating element 40a, coupled to the inner surface of the second liquid guide element 30a, where the heating element 40a is configured to heat at least part of a liquid substrate in the second liquid guide element 30a to generate an aerosol released to the aerosol output tube 111a. In the preferred embodiment, the heating element 40a is a cylindrical heating mesh, a spiral coil, or the like.

[0148] As shown in FIG. 17 to FIG. 21, the electronic atomization device 100a further includes:

a holding element 18a, configured to at least partially surround and hold a battery core 70a; and

an elastic conductive element 17a, assembled and held on the holding element 18a, and at least partially configured to guide a current between the battery core 70a and the airflow sensor 15a/the heating element 40a.

[0149] As shown in FIG. 17 to FIG. 21, the electronic atomization device 100a further includes: a support 60a, configured to accommodate and hold a first liquid guide element 50a, a tubular element 14a, an airflow sensor 15a, a sealing element 16a, and the like. In the embodiment, the support 60a includes a first support portion 610a, a second support portion 620a, and a third support portion 630a that are arranged in sequence along a longitudinal direction. The third support portion 630a is mechanically or firmly connected to a holding element 18a.

[0150] As shown in FIG. 19 and FIG. 20, a first accommodating cavity 611a is defined in the first support portion 610a. In the embodiment, the first accommodating cavity 611a includes a first section 6111a and a second section 6112a that are arranged in sequence along a longitudinal direction. The first section 6111a is close to a first end of the support 60a, and an inner side surface of the first section 6111a is in an inclined, tapered shape or in a wide-mouth shape. The second section 6112a is in a cylindrical shape with a substantially constant diameter. In the embodiment, the first liquid guide element 50a is accommodated and held in the second section 6112a of the first accommodating cavity 611a. In addition, the first liquid guide element 50a avoids the tapered first section 6111a,

and a liquid substrate in a liquid storage cavity 112a is guided through the tapered first section 611a to the first liquid guide element 50a and is absorbed. In the embodiment, after assembly, the first liquid guide element 50a is not flush with the first end of the support 60a. For example, a spacing d1 exists therebetween in FIG. 19. In some embodiments, the spacing d1 is approximately 5-10 mm.

[0151] As shown in FIG. 17 to FIG. 20, at a place close to the liquid storage cavity 112a, the first support portion 610a is in an interference fit with a housing 10a/a first shell 11a. A sealing ring, such as an O-shaped ring, around the first support portion 610a is arranged outside the first support portion 610a, to provide sealing between the first support portion 610a and the housing 10a/the first shell 11a.

[0152] As shown in FIG. 17 to FIG. 20, a mechanical connection and an interference fit are established between the third support portion 630a and the housing 10a/the first shell 11a. In addition, a sealing ring, such as an O-shaped ring, is arranged outside the third support portion 630a, to provide sealing between the third support portion 630a and the housing 10a/the first shell 11a. Moreover, the holding element 18a at least partially extends into the third support portion 630a, and has a mechanical connection established with the third support portion 630a.

[0153] As shown in FIG. 17 to FIG. 20, a plurality of flanges 621a that surround the second support portion 620a along a circumferential direction and a groove 622a that is located between adjacent flanges 621a are further arranged outside the second support portion 620a of the support 60a.

[0154] As shown in FIG. 17 to FIG. 20, a second accommodating cavity 627a is defined in the second support portion 620a, to at least partially mount and accommodate the tubular element 14a and the atomization assembly. Specifically, after assembly, at least part of the tubular element 14a passes through the first accommodating cavity 611a and is inserted into the second accommodating cavity 627a. In addition, the tubular element 14a and the support 60a are in an interference fit, to enable sealing therebetween. In addition, no flexible sealing element is between the tubular element 14a and the support 60a. According to the embodiment shown in FIG. 17 to FIG. 20, after assembly, the tubular element 14a is completely located in the support 60a. Alternatively, in the embodiment, no portion of the tubular element 14a extends out of the support 60a. After assembly, an aerosol output tube 111a extends into the first accommodating cavity 611a to engage with the tubular element 14a.

[0155] As shown in FIG. 17 to FIG. 20, a portion of the second accommodating cavity 627a close to the first accommodating cavity 611a has a gradually increased inner diameter, or the portion of the second accommodating cavity 627a close to the first accommodating cavity 611a has an inner side surface which is obliquely arranged. After assembly, a through hole 141a of the

tubular element 14a is opposite to the portion of the second accommodating cavity 627a having the increased inner diameter, so that a gap is formed therebetween to enable the through hole 141a in fluid communication with the first liquid guide element 50a. During use, after a liquid substrate in a liquid storage cavity 112a is absorbed through an upper surface of the first liquid guide element 50a, it flows to the through hole 141a through a lower surface and is absorbed by a second liquid guide element 30a, as shown by the arrow R1 in FIG. 17 and FIG. 18.

[0156] As shown in FIG. 17 to FIG. 20, the third support portion 630a of the support 60a is further provided therein with:

a third accommodating cavity 631a, configured to accommodate or mount an airflow sensor 15a and a sealing element 16a. In the embodiment, an axis of the airflow sensor 15a and the sealing element 16a are arranged to be perpendicular to the longitudinal direction of the support 60a. The airflow sensor 15a is wrapped by the sealing element 16a. As shown in FIG. 17 and FIG. 18, the holding element 18a at least partially extends into the third accommodating cavity 631a, and supports the sealing element 16a accommodated and held in the third accommodating cavity 631a, so that the sealing element 16a is stably accommodated and mounted in the third accommodating cavity 631a.

[0157] As shown in FIG. 19 and FIG. 20, an air hole 161a is arranged on the sealing element 16a, so that air can enter the third accommodating cavity 631a after passing through the sealing element 16a.

[0158] As shown in FIG. 19 and FIG. 20, an air inlet channel is provided on the support 60a, to provide a channel for air to enter the second accommodating cavity 627a. A complete air inlet channel includes:

a first channel portion 623a, extending from the third accommodating cavity 631a along the longitudinal direction of the support 60a, or extending through the third accommodating cavity to the groove 622a on the surface of the second support portion 620a, where the first channel portion 623a defines a first communication hole 624a on a surface of the second support portion 620a;
at least one groove 622a; and
a second channel portion 625a, extending from the groove 622a on the surface of the second support portion 620a, or extending through the groove to the second accommodating cavity 627a, so as to deliver air to an atomization assembly in the second accommodating cavity 627a. The second channel portion 625a may include a plurality of bent sections.

[0159] For a flow path of air during inhalation, reference is made to the arrow R2 in FIG. 17 to FIG. 20. External air entering through the air inlet 21a sequentially passes through a gap between the battery core 70a and the housing 10a, and the holding element 18a, and then

enters the third accommodating cavity 631a through the air hole 161a of the sealing element 16a. Then the external air flows into the groove 622a on the surface of the second support portion 620a through the first channel portion 623a, and flows to the second channel portion 625a through the groove 622a. Finally, the external air enters the tubular element 14a through the second channel portion 625a, and carries an aerosol generated by an atomization assembly to deliver it to an air outlet 113a from an aerosol output tube 111a.

[0160] According to the embodiment shown in FIG. 19 and FIG. 20, the airflow sensor 15a is configured to sense a change in air flowing through the support 60a and/or the electronic atomization device 100a. In the embodiment, the airflow sensor 15a has a first sensing surface 151a and a second sensing surface 152a that are opposite to each other along a longitudinal direction of the electronic atomization device 100a. The first sensing surface 151a is arranged toward the proximal end 110a and is in communication with the air passing through the support 60a. The airflow sensor 15a determines an inhalation action of a user and generates a high-level signal when a difference between pressures of the first sensing surface 151a and the second sensing surface 152a is greater than a preset threshold due to an inhalation air flow. The first sensing surface 151a and the second sensing surface 152a are not wrapped by the flexible sealing element 16a, so as to be exposed for pressure sensing.

[0161] As shown in FIG. 19 and FIG. 20, the support 60a further defines a ventilation channel 670a, to provide a flow path for air to enter the liquid storage cavity 112a. Therefore, when the liquid substrate in the liquid storage cavity 112a is gradually consumed, and a negative pressure in the liquid storage cavity 112a is relatively low, the air can enter the liquid storage cavity 112a through the ventilation channel 670a to relieve or eliminate the negative pressure in the liquid storage cavity 112a. Specifically, the ventilation channel 670a includes:

- a vent hole 671a, radially extending through an outer side surface of a first support portion 610a to an inner side surface of a second section 6112a of a first accommodating cavity 611a; and
- a vent groove 672a, arranged on the inner side surface of the second section 6112a of the first accommodating cavity 611a, and extending from the vent hole 671a to the first section 6111a.

[0162] In the embodiment, the vent hole 671a has a diameter of approximately 0.3-2.0 mm. Moreover, the vent groove 672a has a width and/or a depth of approximately 0.3-2.0 mm. When the negative pressure in the liquid storage cavity 112a exceeds a predetermined threshold, as shown by the arrow R3 in FIG. 19 and FIG. 20, air enters the liquid storage cavity 112a sequentially through the vent hole 671a and the vent groove 672a, thereby eliminating or relieving the negative pressure in the liquid storage cavity 112a. To prevent an

entrance of the vent hole 671a from being covered or blocked by the housing 10a/the first shell 11a and maintain smooth air intake, the vent hole 671a is arranged as a port 6711a having an enlarged cross-sectional area at an entrance of the outer side surface of the support 60a. The cross-sectional area of the enlarged port 6711a is significantly enlarged, for example, a width or height of approximately 3-5 mm, helping maintain smooth air intake through the vent hole 671a.

[0163] In the embodiment, similar to the previous embodiment, the enlarged port 6711a is surrounded and defined by limiting walls 6712a located at two sides of the enlarged port 6711a. Similarly, a width of the limiting wall 6712a is less than a radial width of the flange 621a, so that a gap is defined between the limiting wall 6712a and the housing 10a and is in communication with a lower third accommodating cavity 631a and/or an air inlet channel, so that air in the third accommodating cavity 631a and/or the air inlet channel can enter the ventilation channel 670a. Moreover, in the embodiment, the limiting wall 6712a is arranged along the longitudinal direction of the support 60. In addition, in the embodiment, the enlarged port 6711a defined by the limiting wall 6712a may further be used as a liquid buffer chamber, to store, adsorb, or hold the liquid substrate seeped from the ventilation channel 670a, so as to prevent the liquid substrate seeped from the ventilation channel 670a from further leaking into the third accommodating cavity 631a. In addition, during use, a liquid substrate is held in the liquid buffer chamber defined by the enlarged port 6711a. When a difference in air pressures inside and outside the liquid storage cavity 112a exceeds a threshold, the liquid substrate in the enlarged port 6711a can further be driven through the air pressure difference to flow back to an atomization assembly and/or a liquid storage cavity 112a through the ventilation channel 670a.

[0164] As shown in FIG. 21, a light source is integrated or arranged in the airflow sensor 15a, and, for example, as shown in FIG. 15, configured to emit light in response to an inhalation action of a user. As shown by the arrow R4 in FIG. 21, the light emitted from the light source is transmitted through the support 60a toward the proximal end 110a and/or the liquid storage cavity 112a, and then is emitted from the first shell 11a. In this way, during use, when the user inhales through the air outlet 113a, the user can further view, through a portion of the first shell 11a close to the proximal end 110a, the light emitted by the light source, to determine whether an electronic atomization device 100a responds to an inhalation action and/or whether the electronic atomization device 100a generates an aerosol based on the inhalation action.

[0165] Alternatively, in some other variant embodiments, the light source is an individual LED lamp, and the light source is not integrated in the airflow sensor 15a. Correspondingly, the light source is arranged or accommodated in the third accommodating cavity 631a of the support 60a and is configured to emit light in response to the inhalation action of the user.

[0166] It should be noted that the preferred embodiments of this application are provided in the specification and the accompanying drawings of this application, but are not limited to the embodiments described in this specification. Further, a person of ordinary skill in the art may make improvements or modifications according to the foregoing descriptions, and all of the improvements and modifications shall fall within the protection scope of the appended claims of this application.

Claims

1. An electronic atomization device, comprising:

a liquid storage cavity, configured to store a liquid substrate;
 an atomization assembly, in fluid communication with the liquid storage cavity, and configured to absorb the liquid substrate from the liquid storage cavity and atomize the liquid substrate to generate an aerosol;
 a support, configured to support the atomization assembly, wherein at least part of the atomization assembly is accommodated inside the support and is arranged adjacent to the liquid storage cavity; and
 an airflow sensor, configured to sense a change in air flowing through an interior of the electronic atomization device, wherein the airflow sensor is accommodated or held in the support and is arranged facing away from the liquid storage cavity.

2. The electronic atomization device according to claim 1, wherein the airflow sensor is arranged to deviate from a longitudinal central axis of the electronic atomization device.

3. The electronic atomization device according to claim 1 or 2, wherein an axis of the airflow sensor is arranged substantially perpendicular to a longitudinal direction of the electronic atomization device; or the axis of the airflow sensor is arranged substantially parallel to the longitudinal direction of the electronic atomization device.

4. The electronic atomization device according to claim 1 or 2, comprising:

a battery core, configured to provide electric power, wherein
 the airflow sensor is electrically connected to the atomization assembly; and the airflow sensor is further configured to guide a current between the battery core and the atomization assembly when air flows through the electronic atomization device.

5. The electronic atomization device according to claim 1, wherein the support comprises a first end close to the liquid storage cavity along a longitudinal direction and a second end facing away from the first end; and the first end is provided with a first opening configured to allow accommodating of the atomization assembly in the support, and the second end is provided with a second opening configured to allow accommodating of the airflow sensor in the support.

6. The electronic atomization device according to claim 5, wherein the support defines a second accommodating cavity and a third accommodating cavity that are spaced apart from each other in the longitudinal direction, the second accommodating cavity is close to the first end and configured to accommodate the atomization assembly, and the third accommodating cavity is close to the second end and configured to accommodate the airflow sensor.

7. The electronic atomization device according to claim 6, wherein the interior of the electronic atomization device defines an airflow channel that provides an airflow path, and a portion of the airflow channel passes through the support to bring the third accommodating cavity into communication with the second accommodating cavity.

8. The electronic atomization device according to claim 1, further comprising:

a first liquid guide element, in fluid communication with the liquid storage cavity to absorb the liquid substrate, wherein
 the atomization assembly comprises:
 a second liquid guide element, comprising an outer side surface and an inner side surface that are opposite to each other, wherein the outer side surface is arranged to indirectly absorb, from the first liquid guide element, the liquid substrate sourced from the liquid storage cavity; and
 a heating element, coupled to the second liquid guide element and adjacent to the inner side surface, and configured to heat at least part of the liquid substrate in the second liquid guide element to generate an aerosol.

9. The electronic atomization device according to claim 8, wherein the support comprises a first support portion, a second support portion, and a third support portion that are arranged along a longitudinal direction;

the first support portion at least partially surrounds or accommodates the first liquid guide element;
 the second support portion at least partially sur-

- rounds or accommodates the second liquid guide element; and
the third support portion at least partially surrounds or accommodates the airflow sensor.
10. The electronic atomization device according to claim 9, wherein a first accommodating cavity is defined in the first support portion; the first accommodating cavity comprises a first section and a second section that are arranged in sequence; a cross-sectional area of the first section increases along a direction facing away from the second support portion, and the cross-sectional area of the second section is substantially constant; and the first liquid guide element is arranged in the second section, and avoids the first section.
11. The electronic atomization device according to claim 1 or 2, further comprising:
an airflow channel, defining an airflow path passing through the electronic atomization device, wherein a portion of the airflow channel is provided to extend around the support along a circumferential direction of the support.
12. The electronic atomization device according to claim 4, further comprising:
an elastic conductive element, arranged between the battery core and the airflow sensor, to provide an electrical connection therebetween.
13. The electronic atomization device according to claim 12, wherein the battery core abuts against the conductive element to form an electrical connection, and at least partially compresses the conductive element.
14. The electronic atomization device according to claim 12, wherein the conductive element is in a meandering and bent shape.
15. The electronic atomization device according to claim 12, further comprising:
a housing, having a proximal end and a distal end that are opposite to each other along a longitudinal direction; and
an end cap, at least partially closing the distal end of the housing, and detachably connected to the housing, wherein the end cap is constructed to be detachable from the housing to open the distal end of the housing, to allow the battery core to be taken out from the distal end of the housing, wherein
when the battery core is taken out from the distal end of the housing, the battery core is separated from the conductive element to break the electrical connection.
16. The electronic atomization device according to claim 12, further comprising:
a holding element, configured to hold or fasten the conductive element, and at least partially provide support for the airflow sensor accommodated in the support.
17. The electronic atomization device according to claim 1 or 2, further comprising:
a ventilation channel, at least partially defined on the support, to provide a flow path for air to enter the liquid storage cavity.
18. An electronic atomization device, comprising:
a liquid storage cavity, configured to store a liquid substrate;
a heating element, configured to heat the liquid substrate to generate an aerosol;
a battery core, configured to supply power to the heating element;
an airflow sensor, configured to sense a change in air flowing through an interior of the electronic atomization device, wherein along a longitudinal direction of the electronic atomization device, the airflow sensor is arranged between the heating element and the battery core; and
an elastic conductive element, arranged between the battery core and the airflow sensor, to provide an electrical connection therebetween, wherein
the heating element is electrically connected to the airflow sensor, and the airflow sensor is further configured to guide a current between the battery core and the heating element when the air flows through the electronic atomization device.
19. An electronic atomization device, comprising:
a liquid storage cavity, configured to store a liquid substrate;
a first liquid guide element, arranged to be perpendicular to a longitudinal direction of the electronic atomization device, and in fluid communication with the liquid storage cavity to absorb the liquid substrate;
a tubular element, extending through the first liquid guide element, wherein an atomization assembly is arranged in the tubular element, and the atomization assembly indirectly absorbs, from the first liquid guide element, the liquid substrate sourced from the liquid storage cavity and atomizes the liquid substrate to generate an aerosol;
a support, comprising a first accommodating cavity and a second accommodating cavity that are arranged along the longitudinal direction,

wherein the first accommodating cavity at least partially accommodates the first liquid guide element, and the second accommodating cavity at least partially accommodates the tubular element; and

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a ventilation channel, defined on the support, to provide a flow path for air to enter the liquid storage cavity, wherein the ventilation channel comprises:

a vent hole, extending through an outer surface of the support to an inner surface of the first accommodating cavity; and

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a vent groove, extending, from an inner side wall of the first accommodating cavity, toward the liquid storage cavity and crossing the first liquid guide element along the longitudinal direction of the electronic atomization device.

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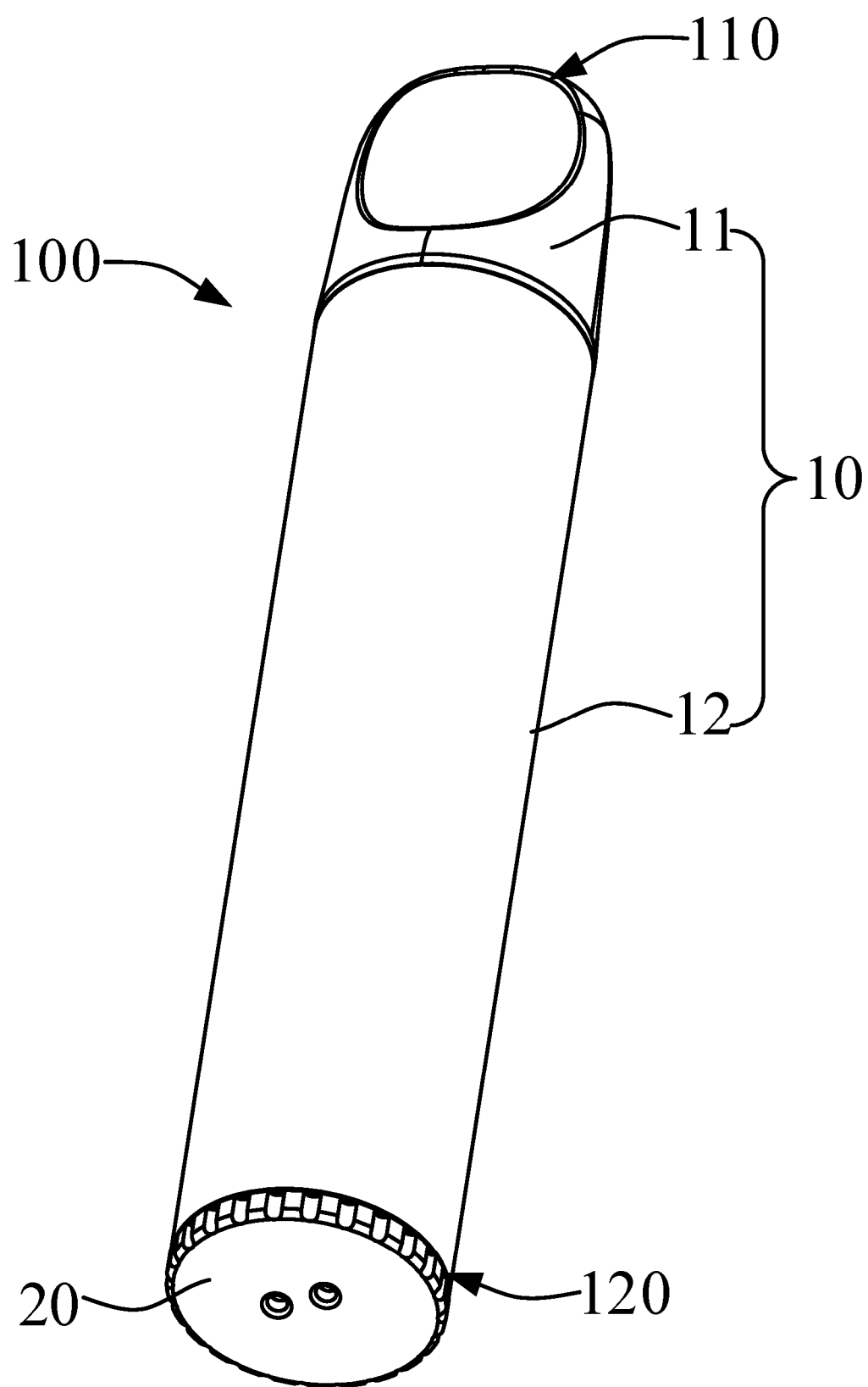


FIG. 1

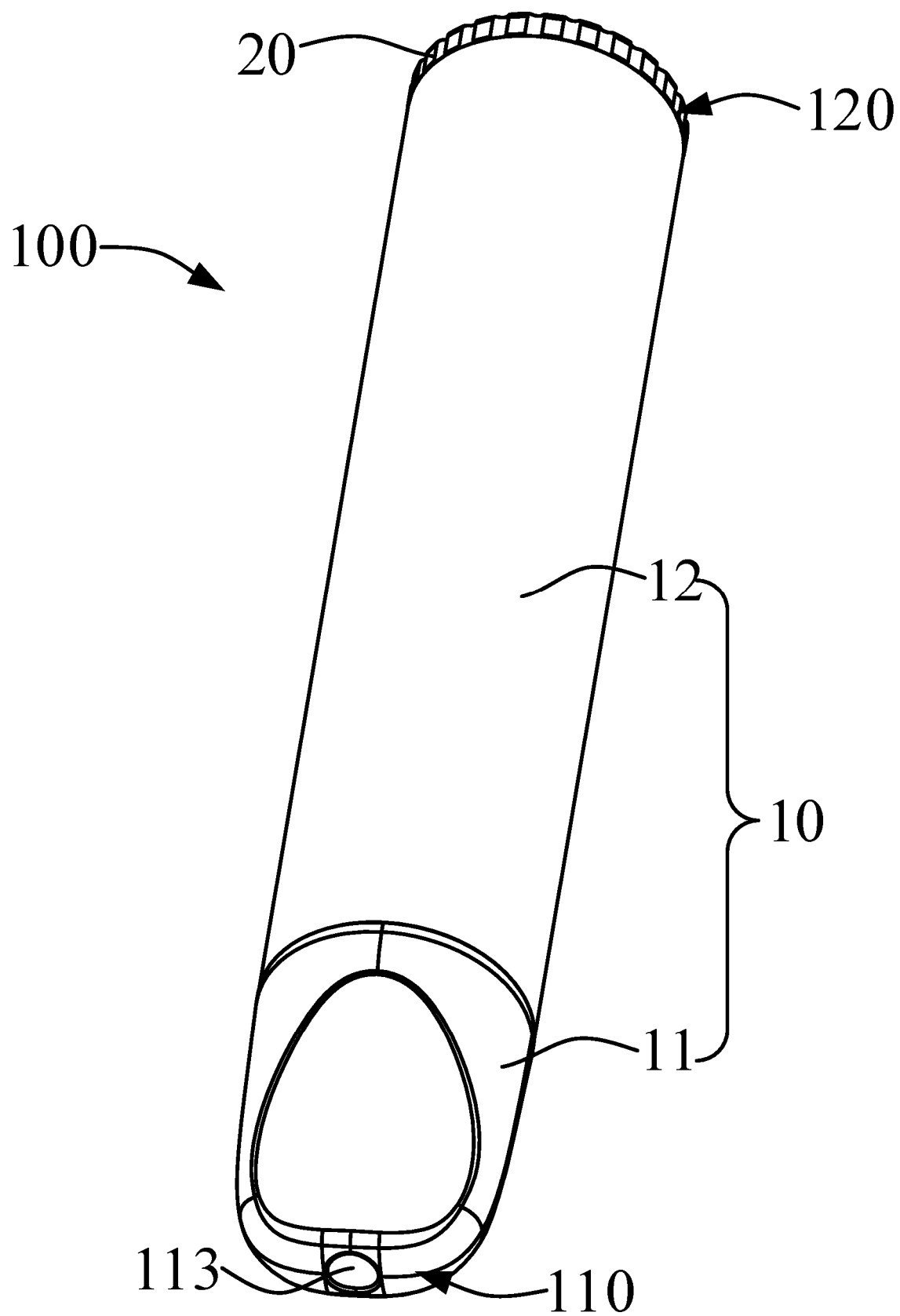


FIG. 2

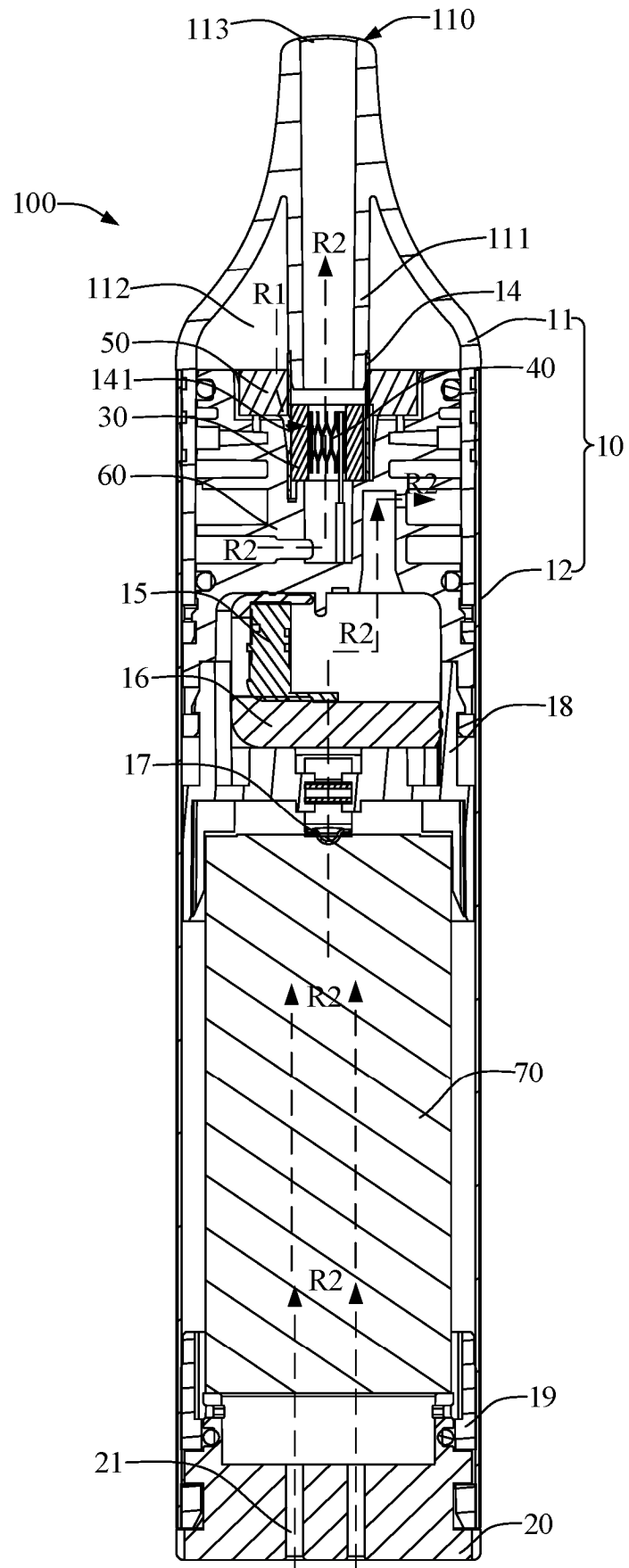


FIG. 3

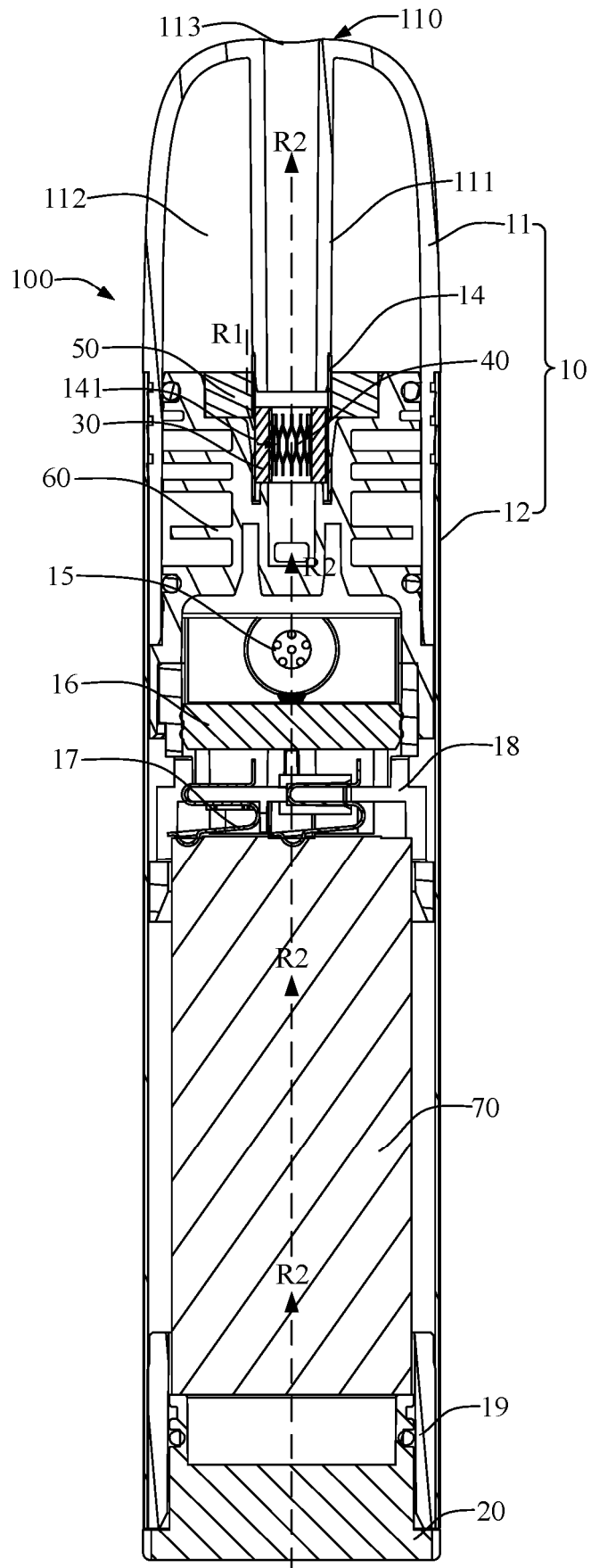


FIG. 4

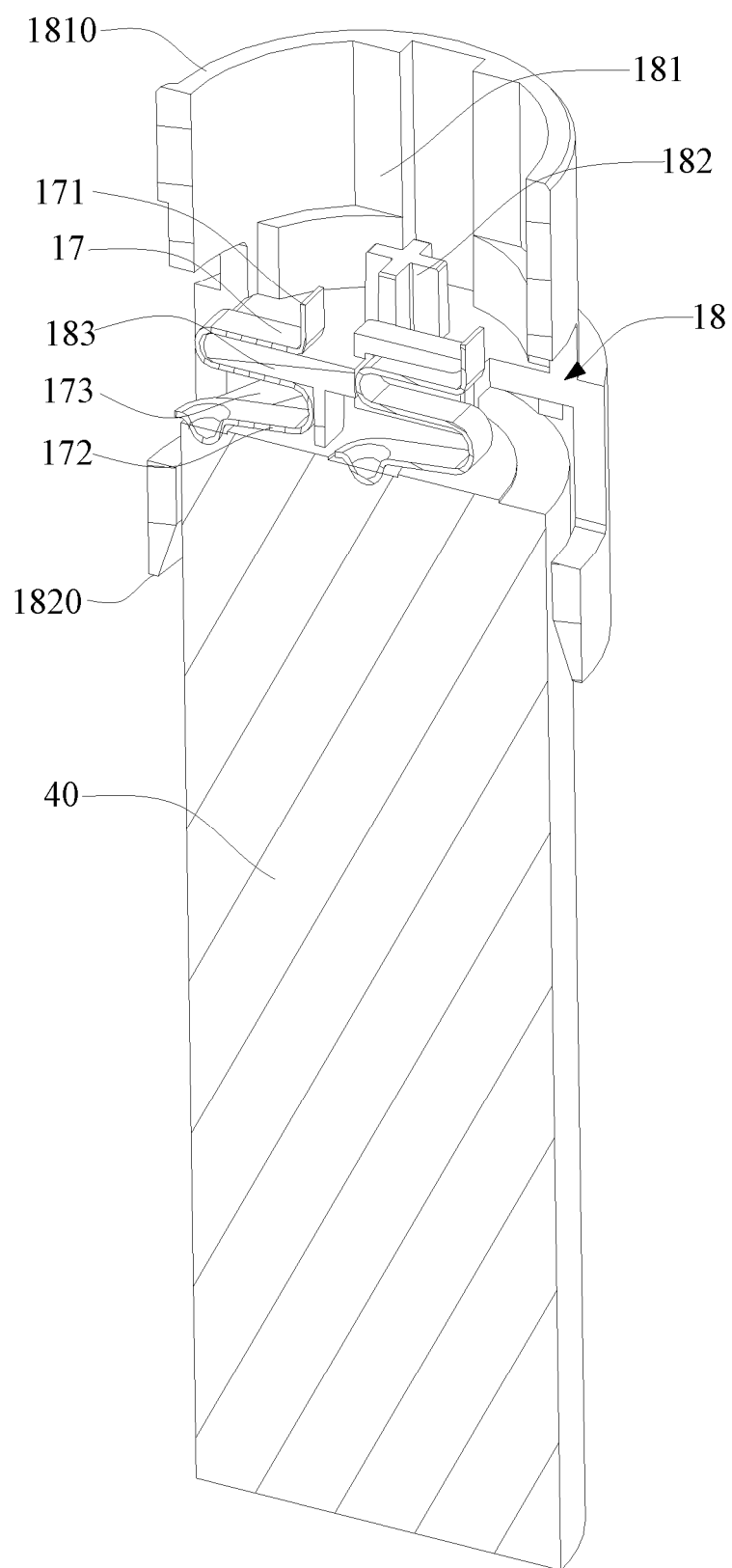


FIG. 5

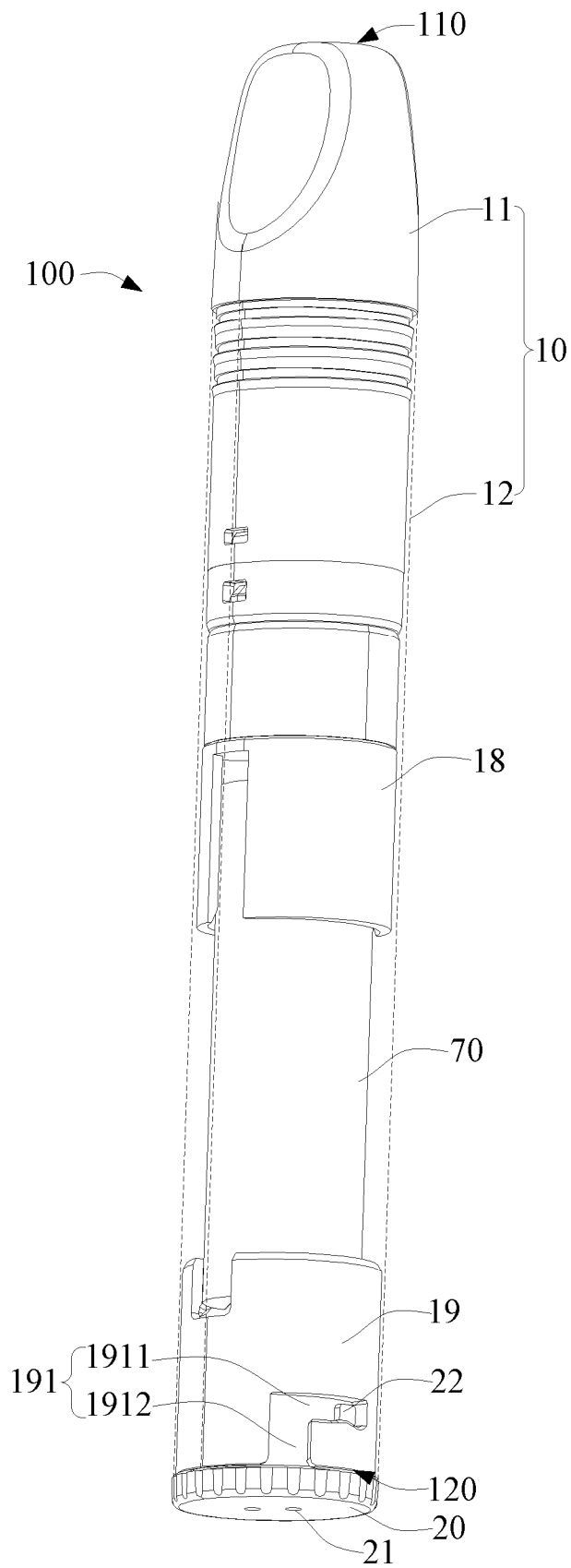


FIG. 6

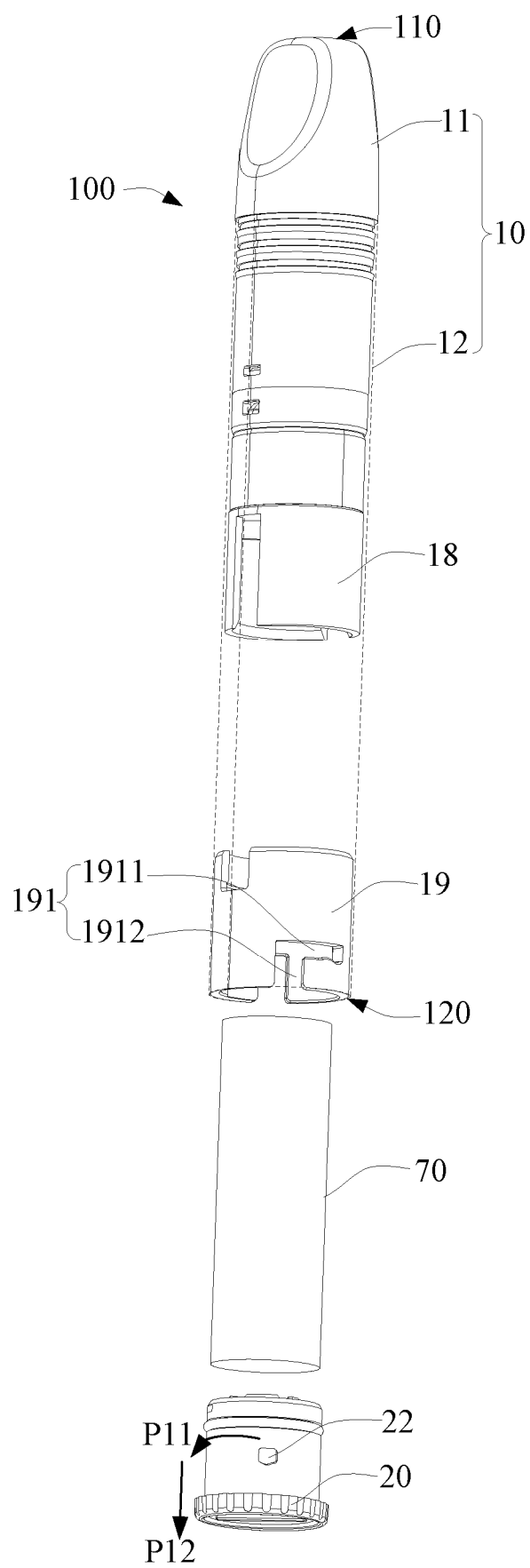


FIG. 7

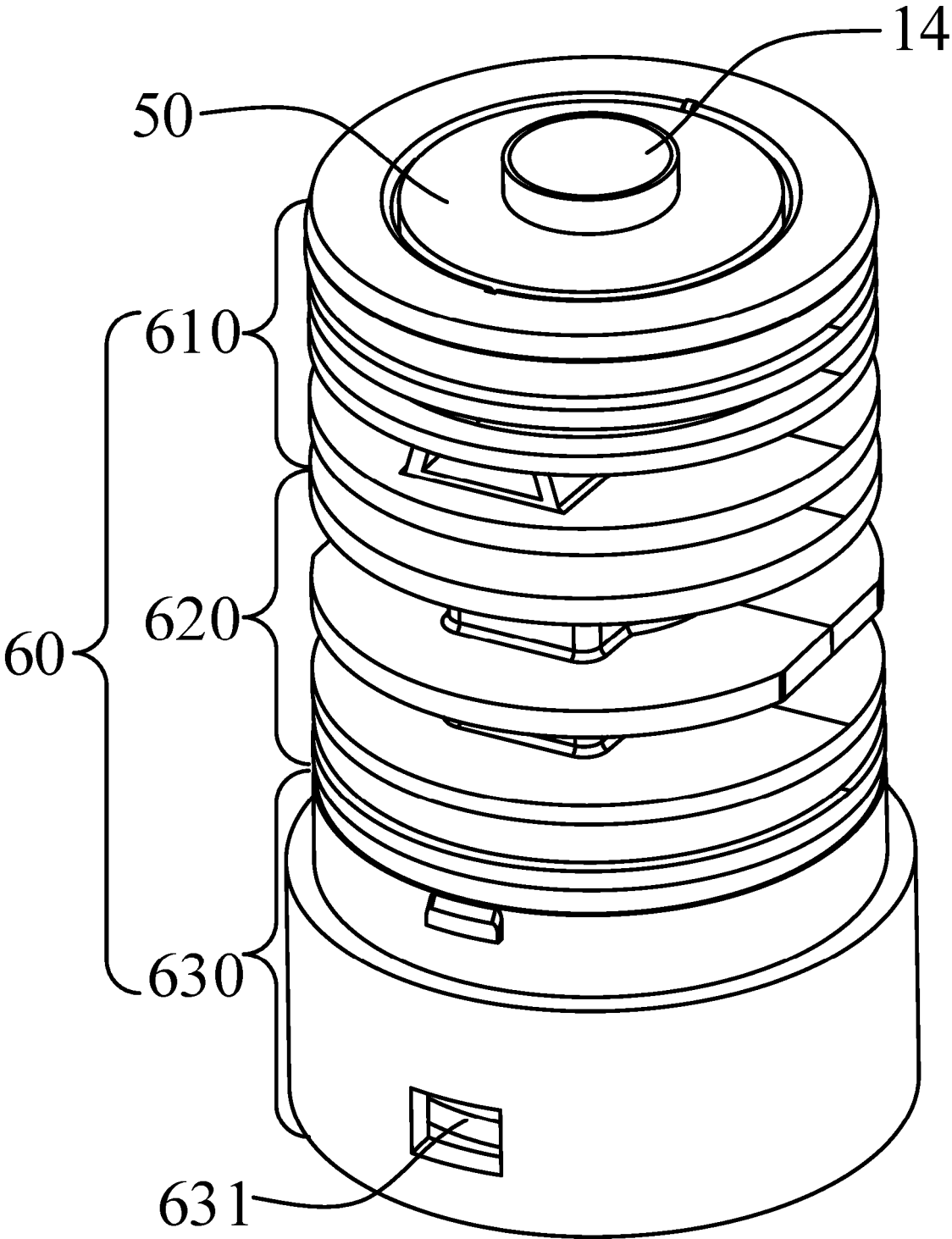


FIG. 8

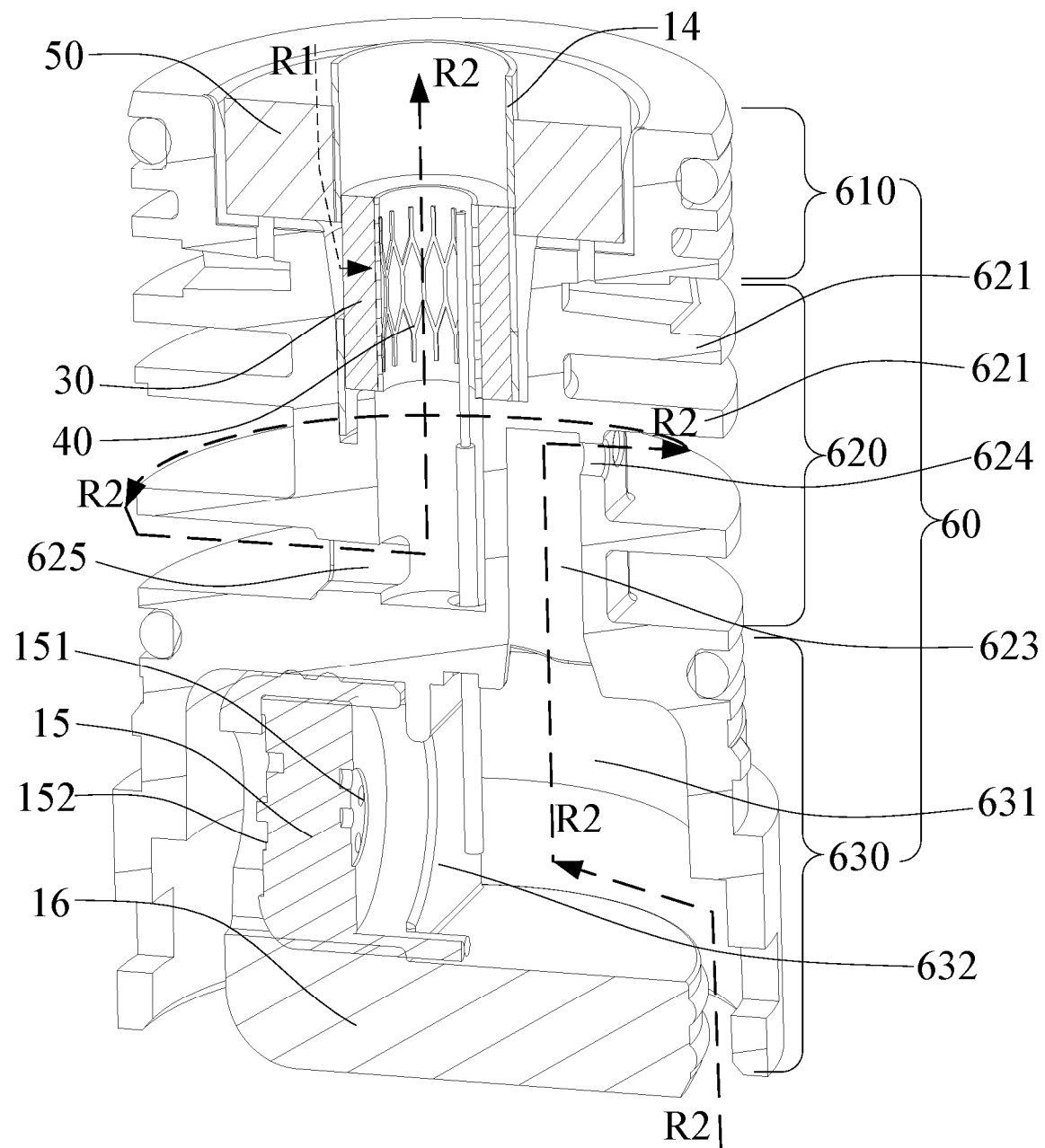


FIG. 9

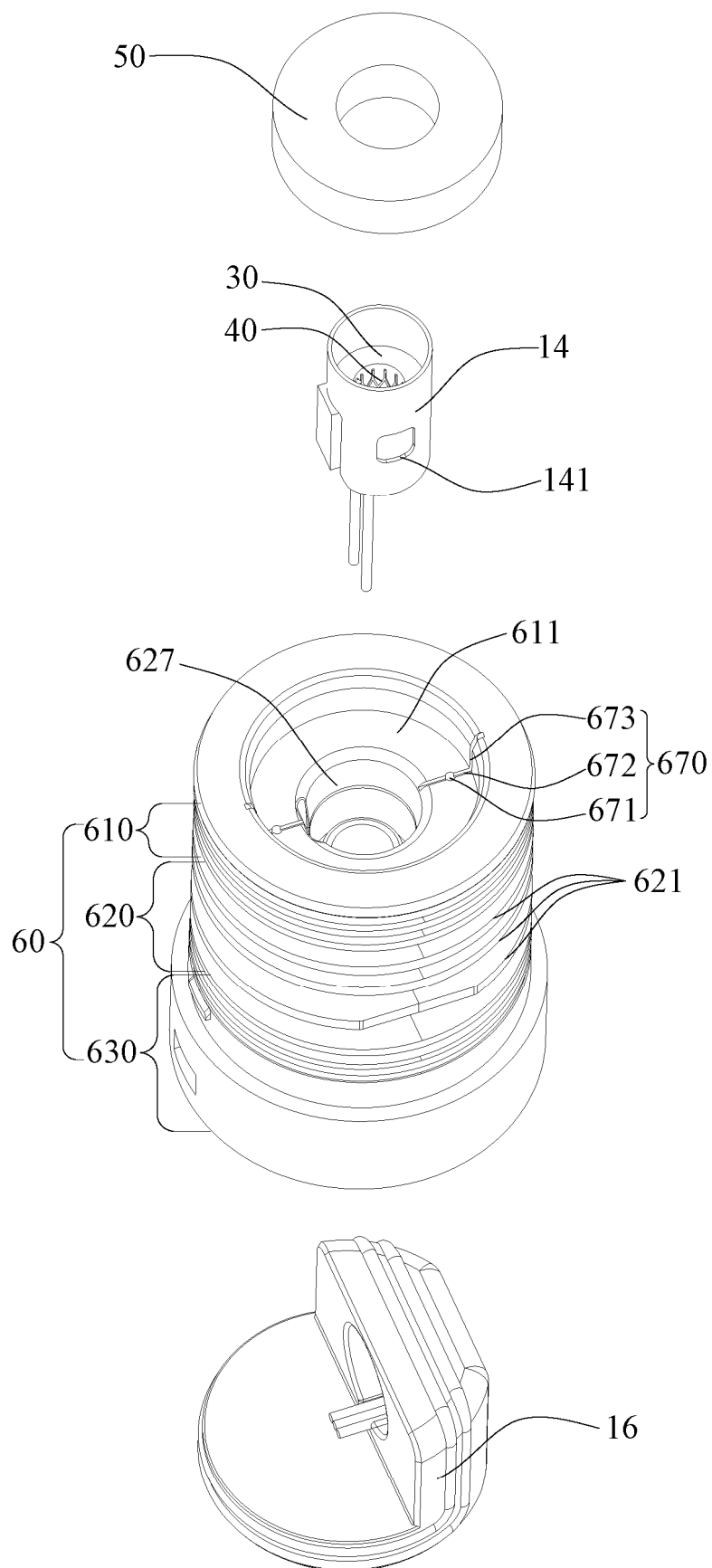


FIG. 10

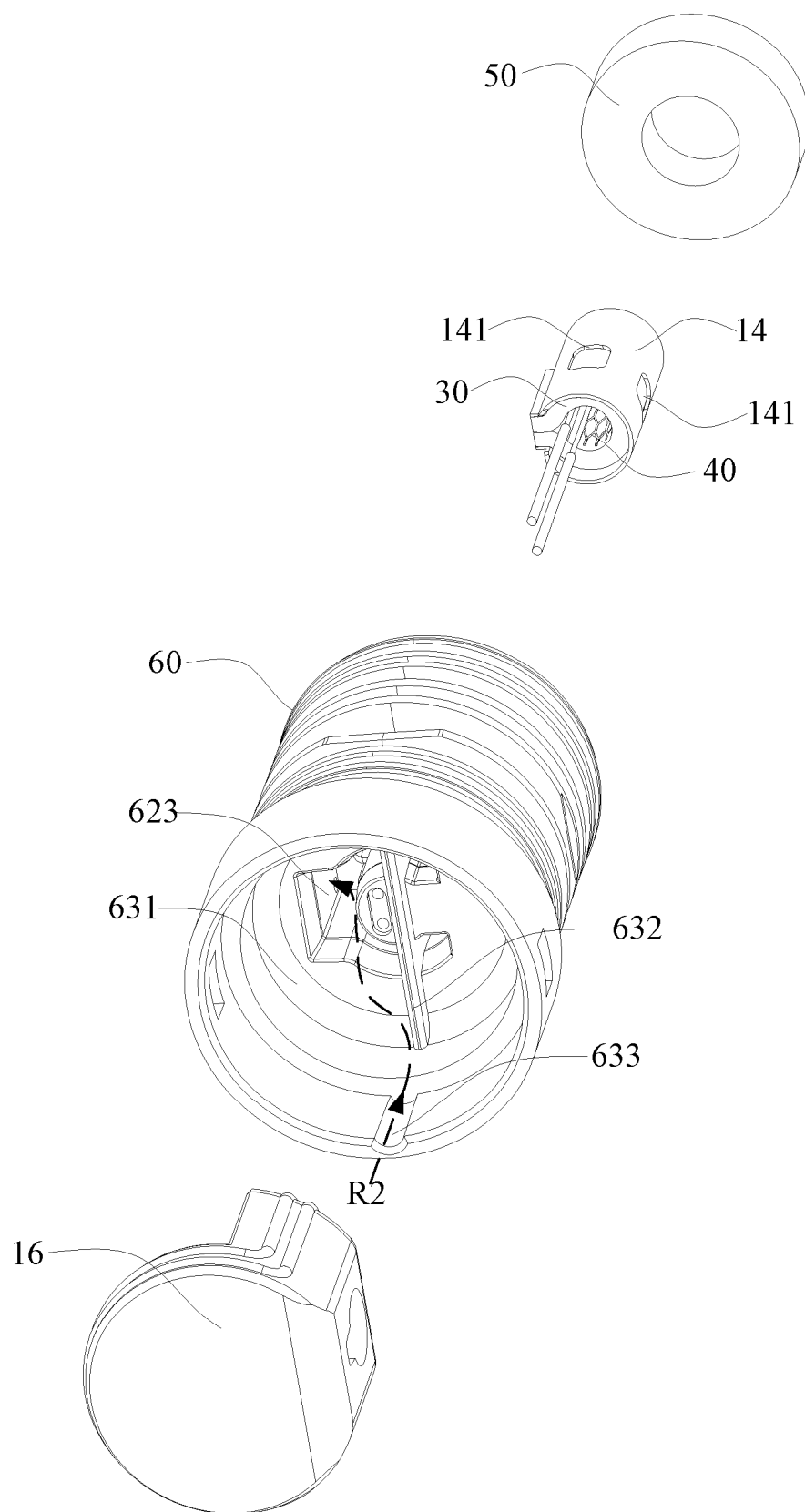
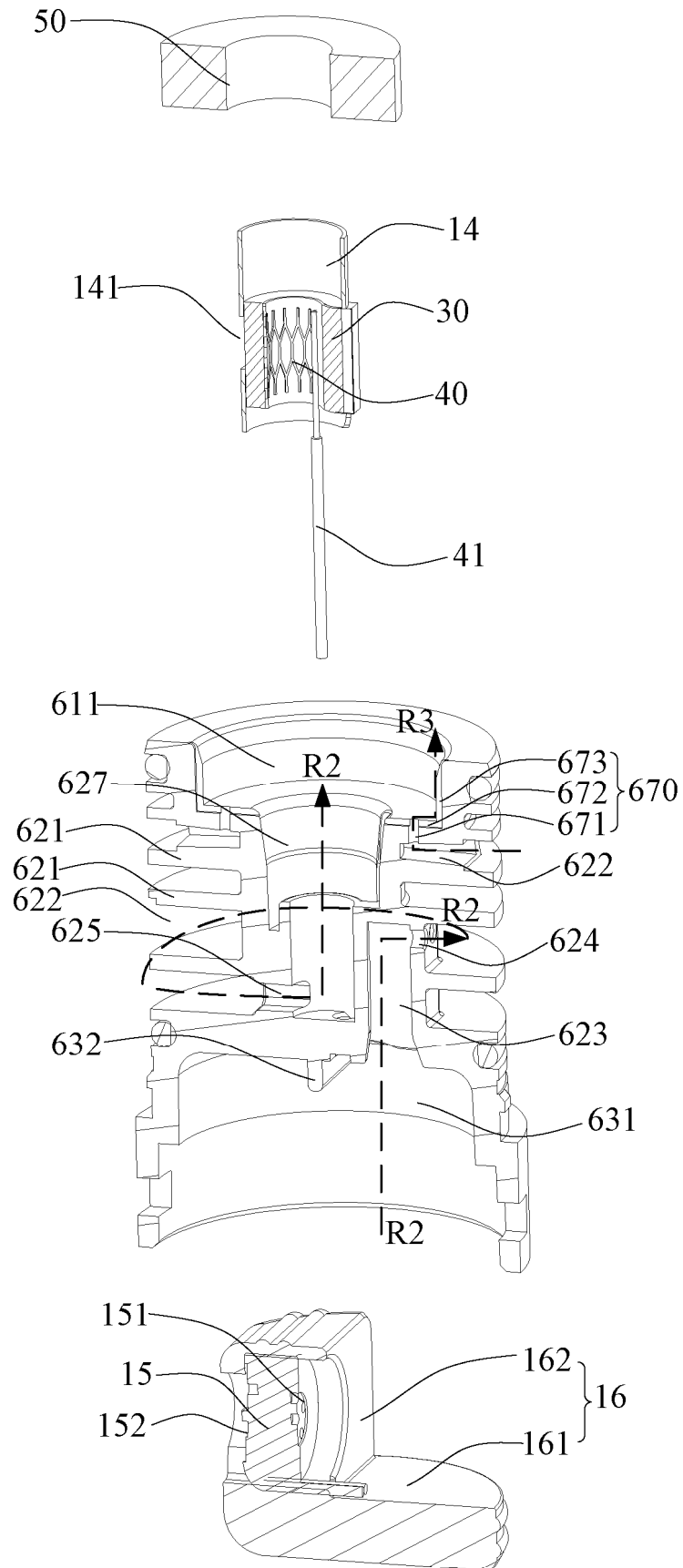


FIG. 11



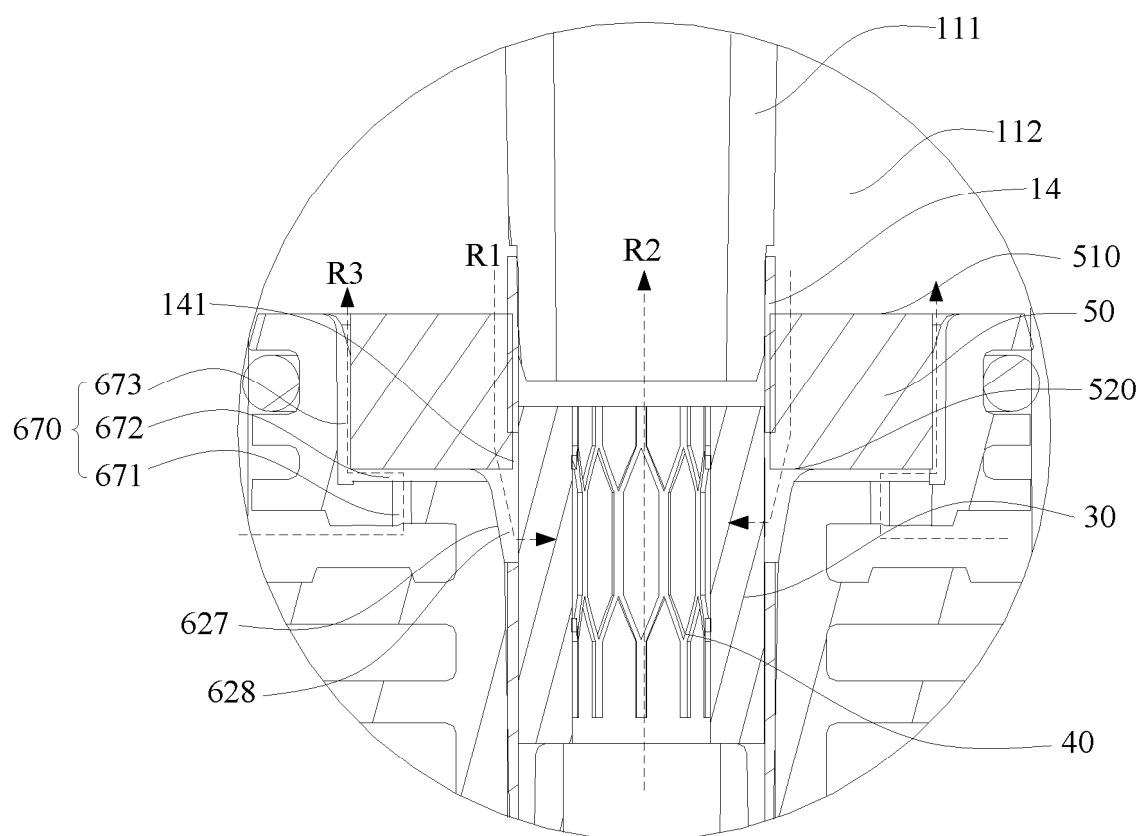


FIG. 13

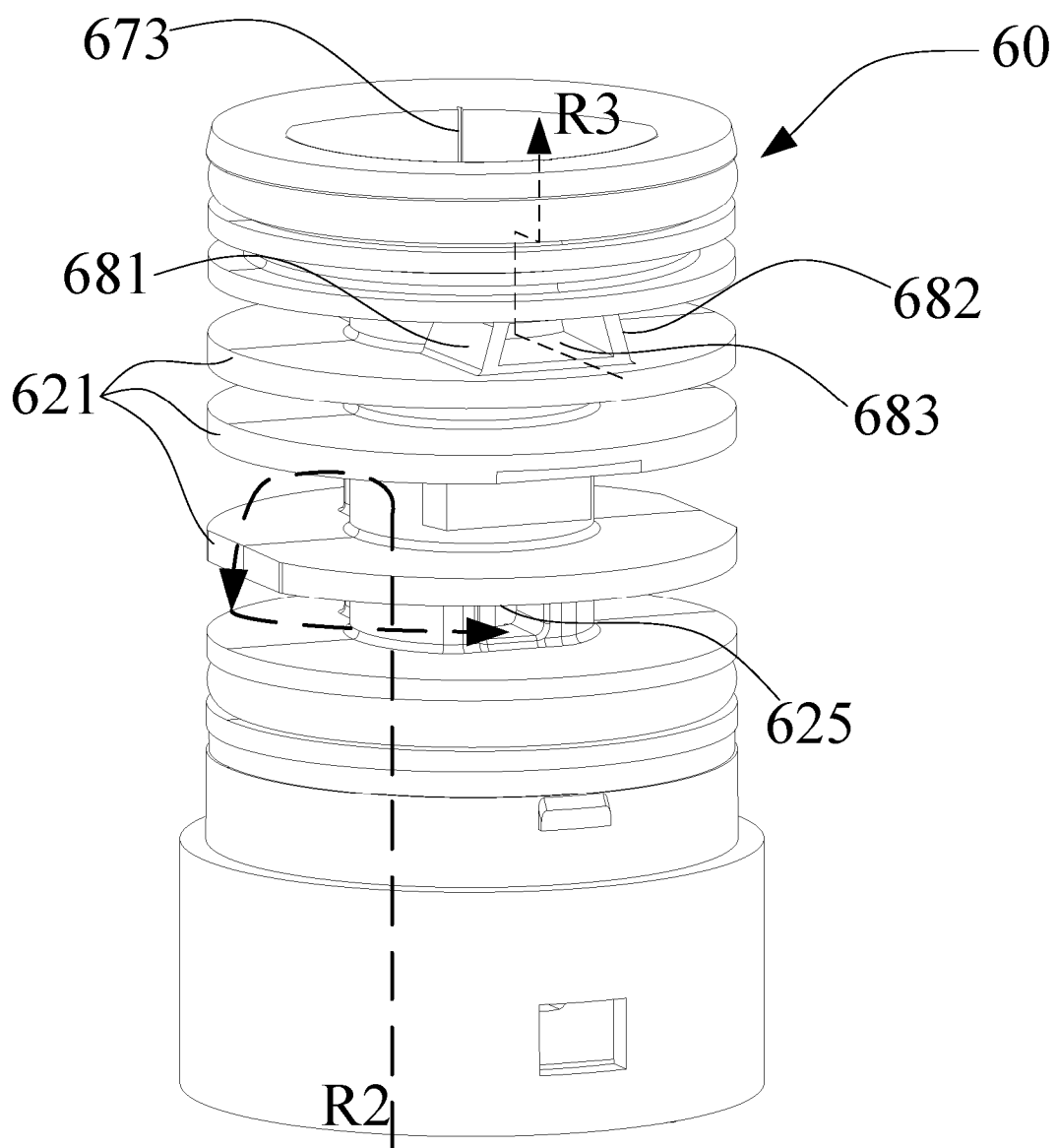


FIG. 14

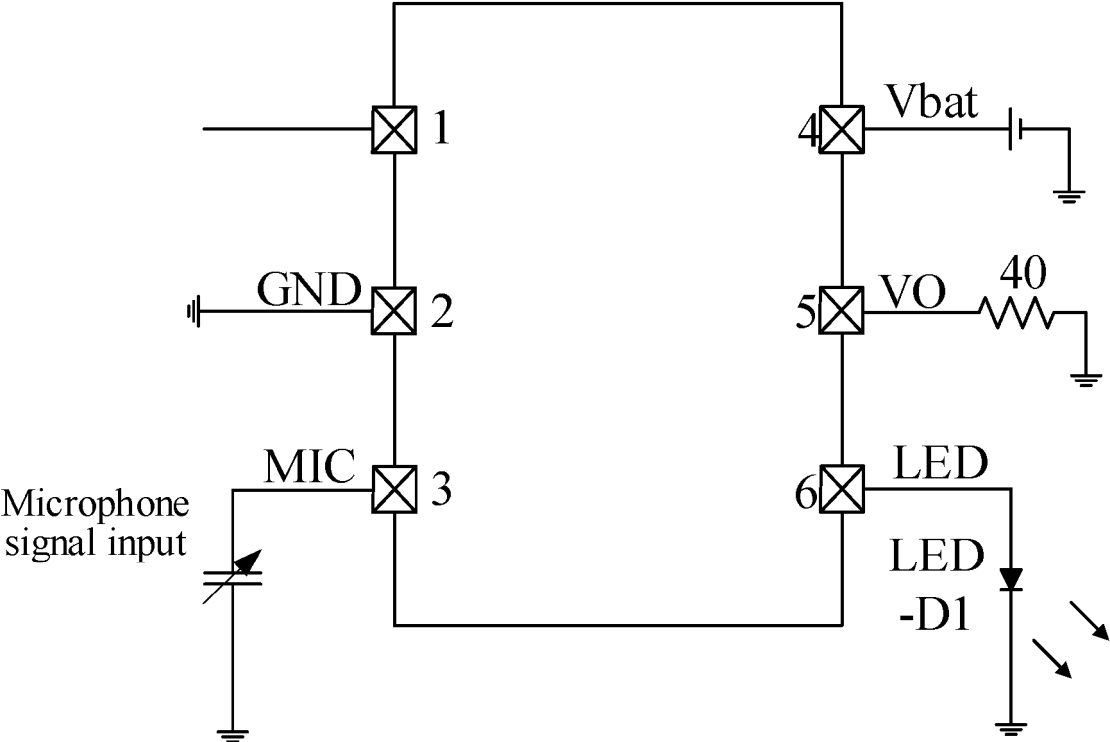


FIG. 15

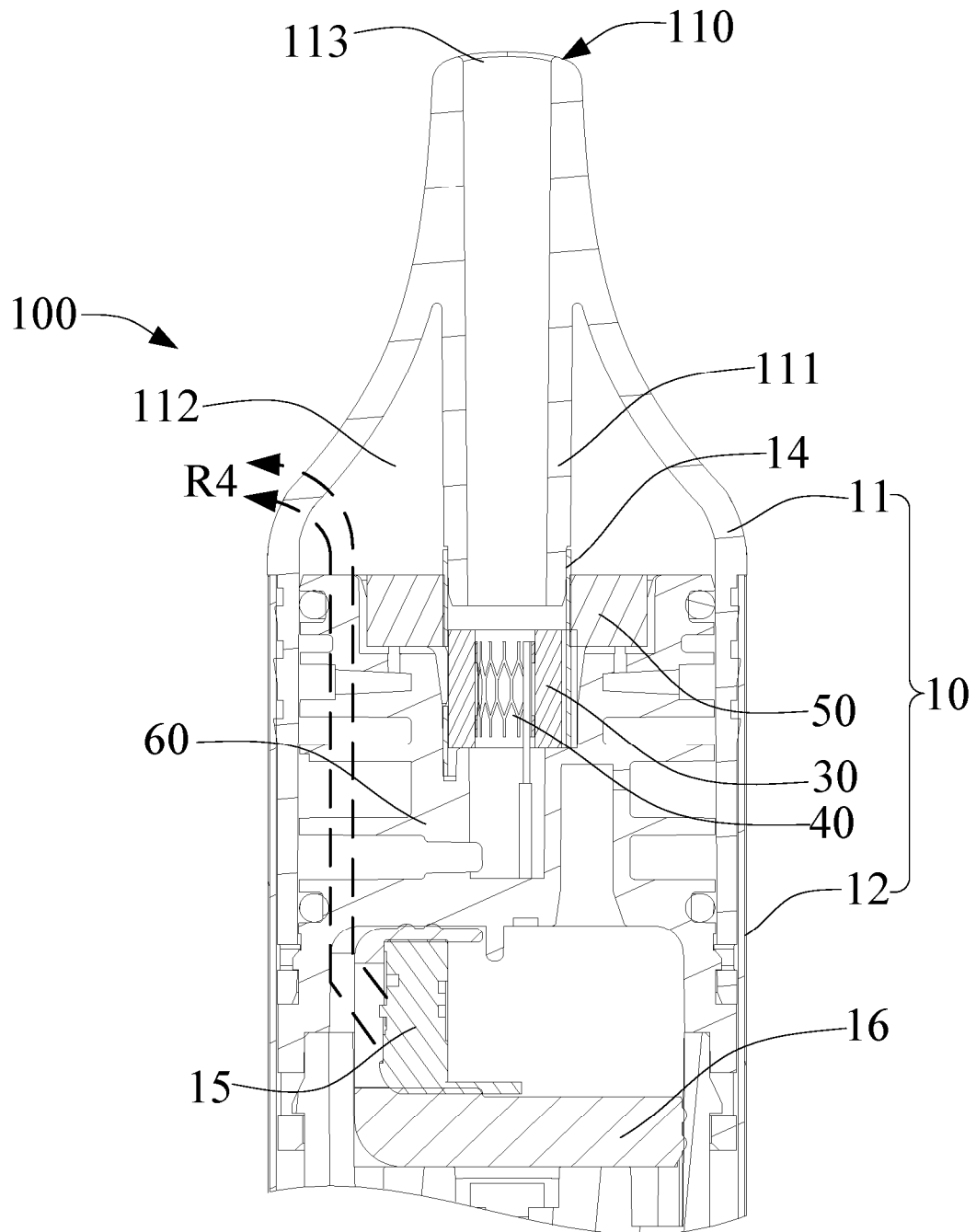


FIG. 16

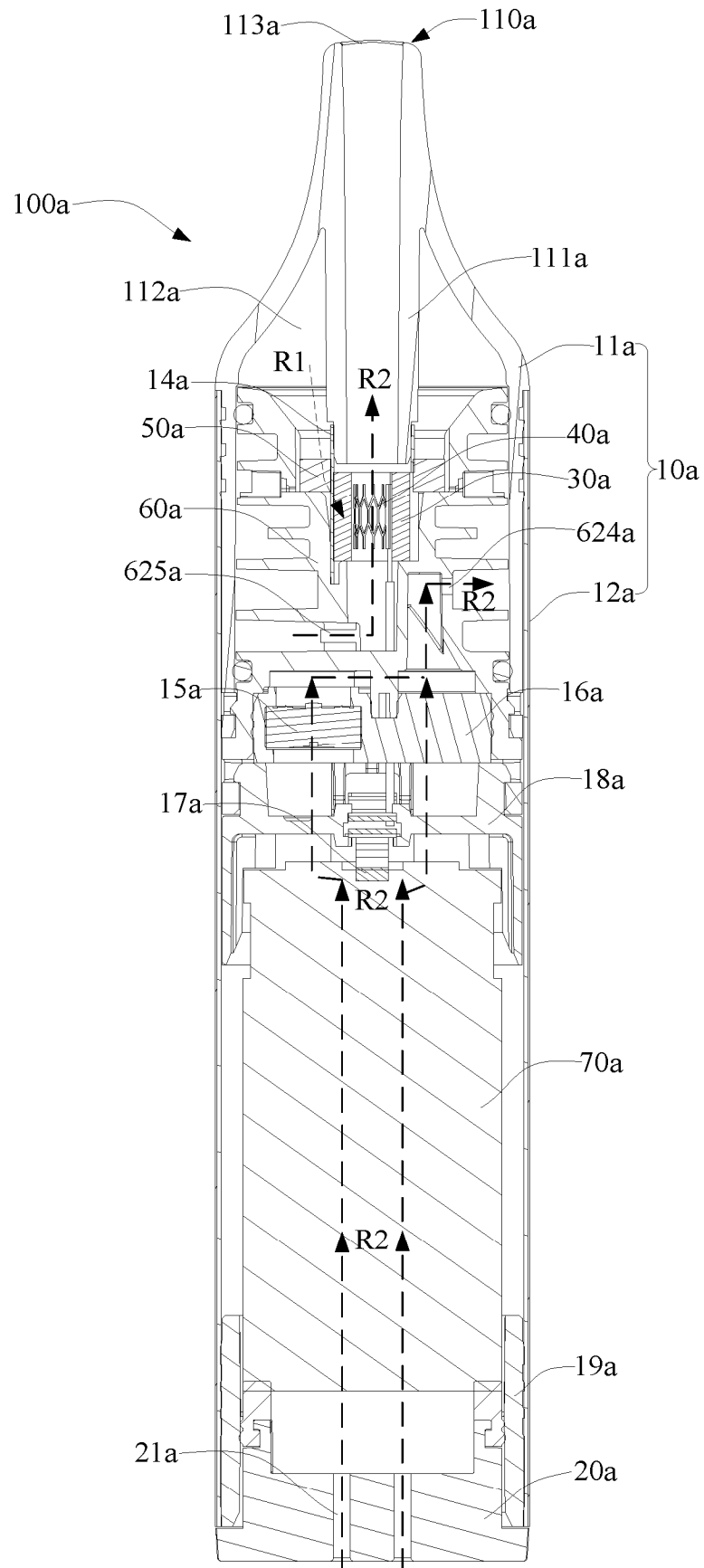


FIG. 17

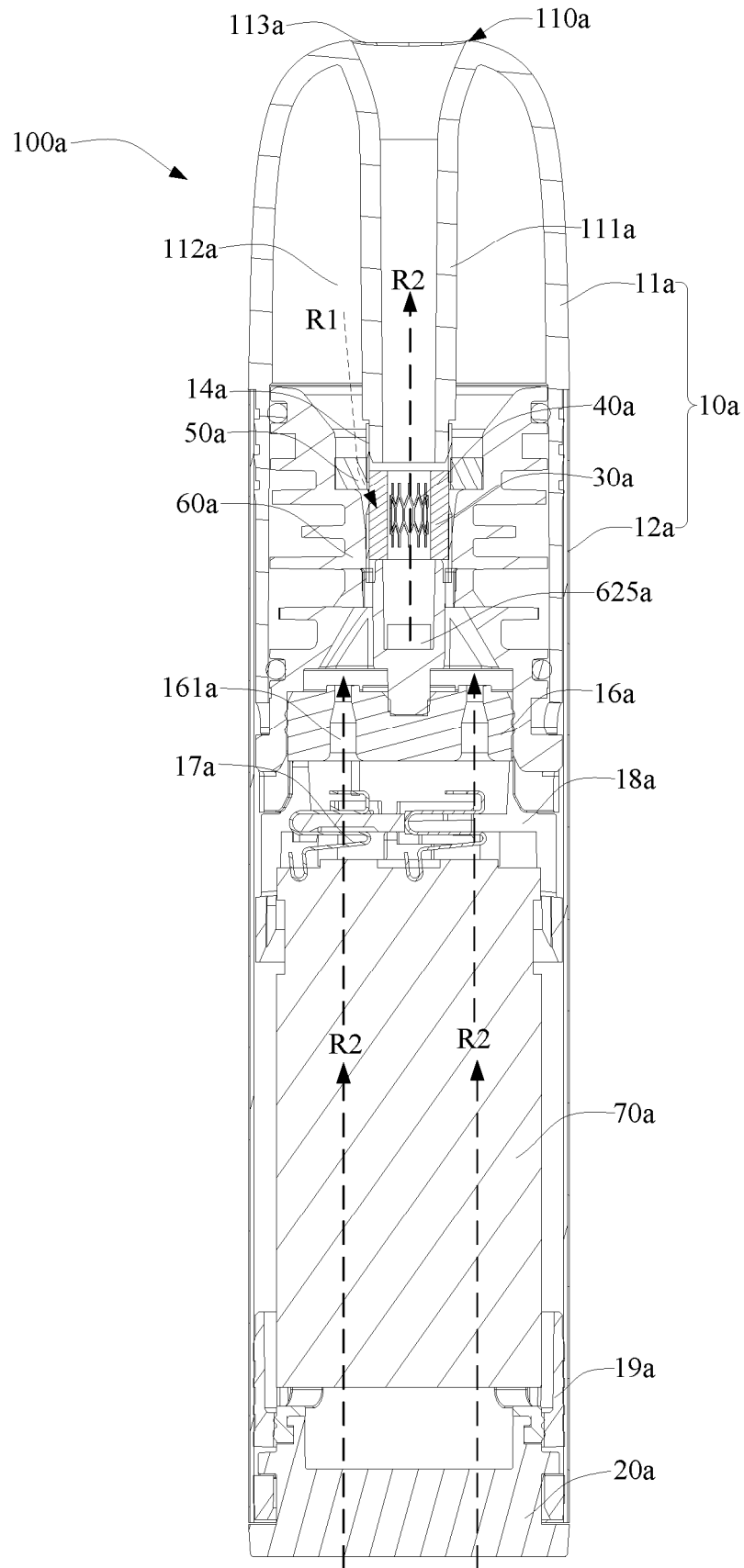


FIG. 18

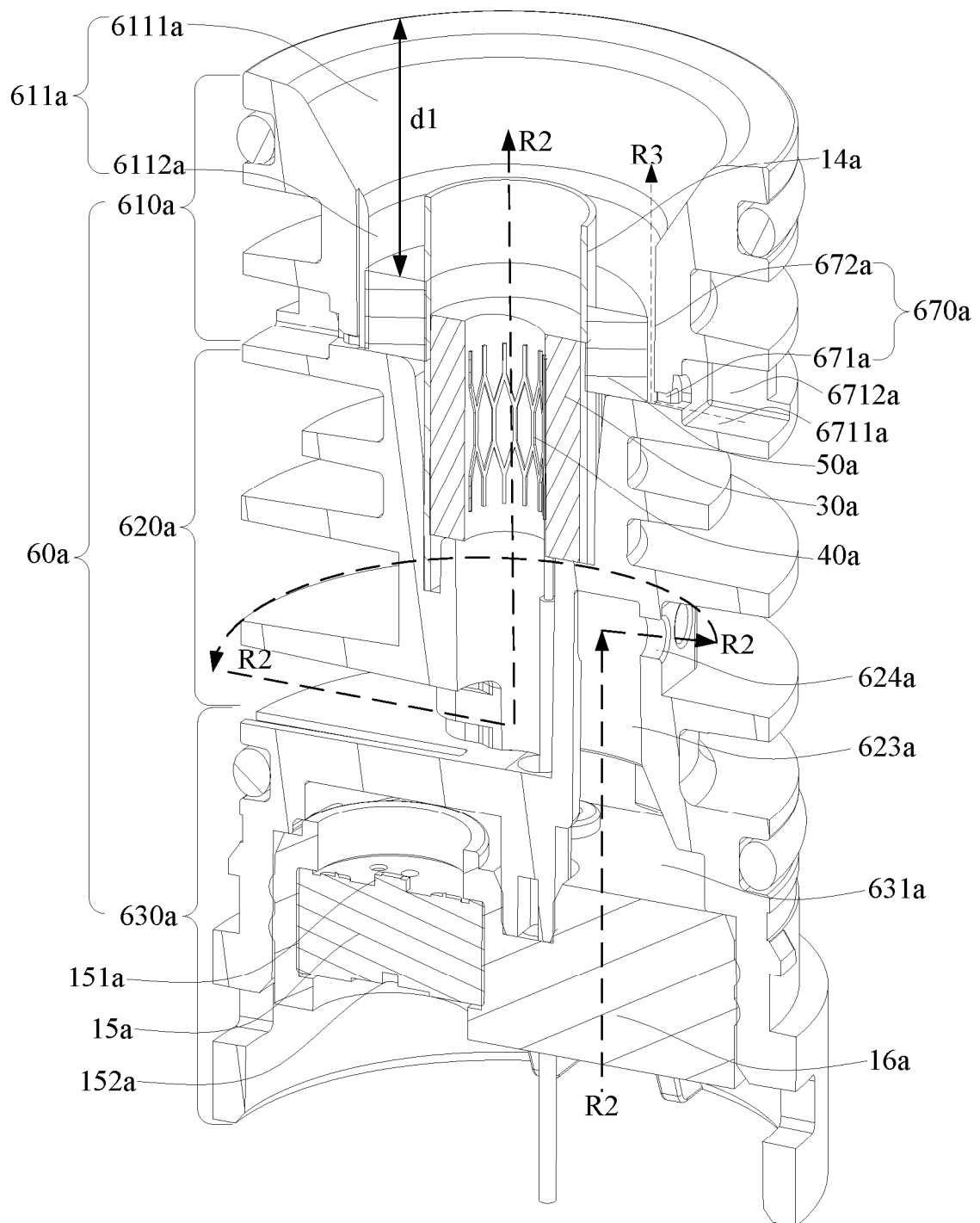


FIG. 19

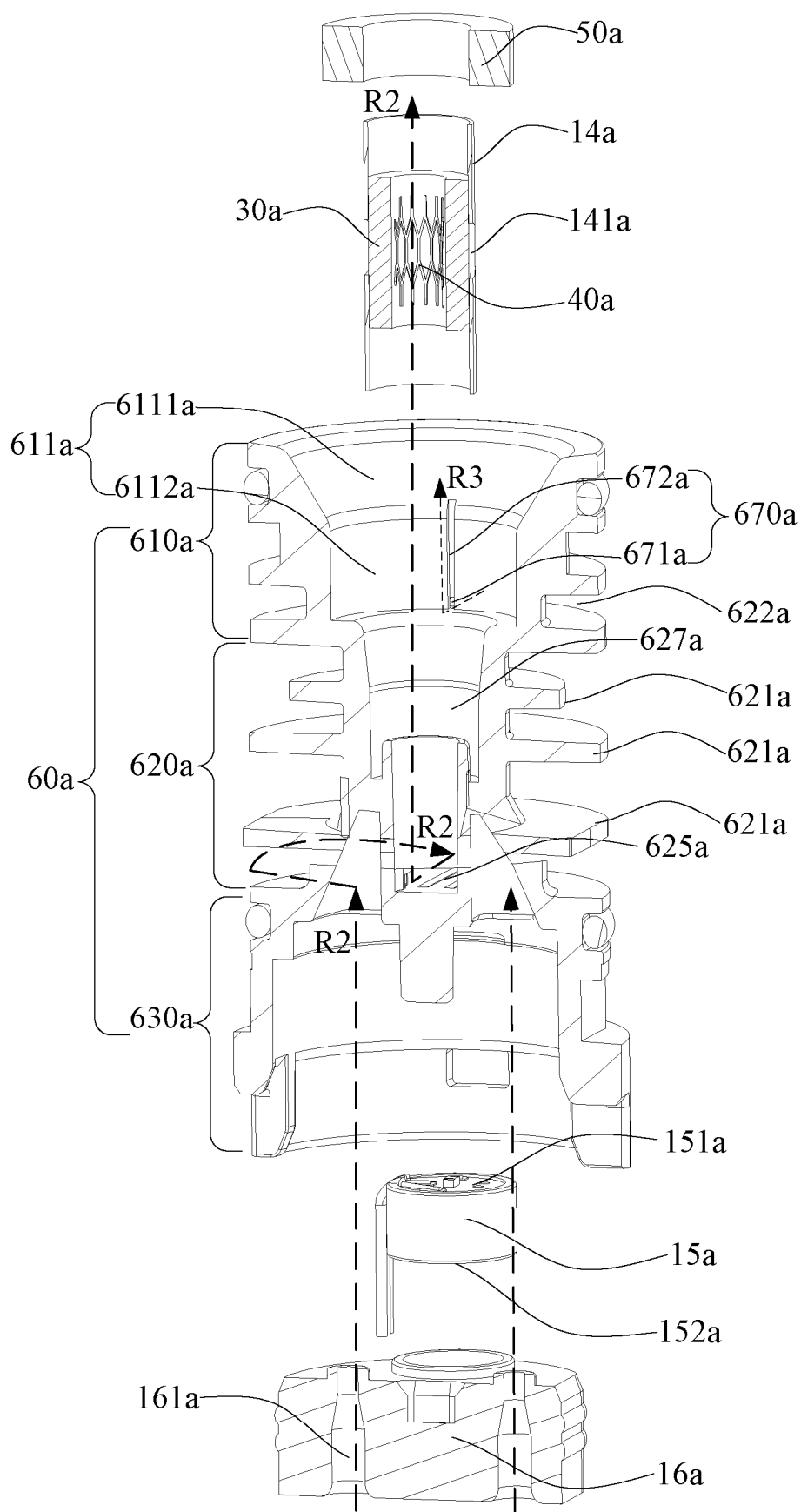


FIG. 20

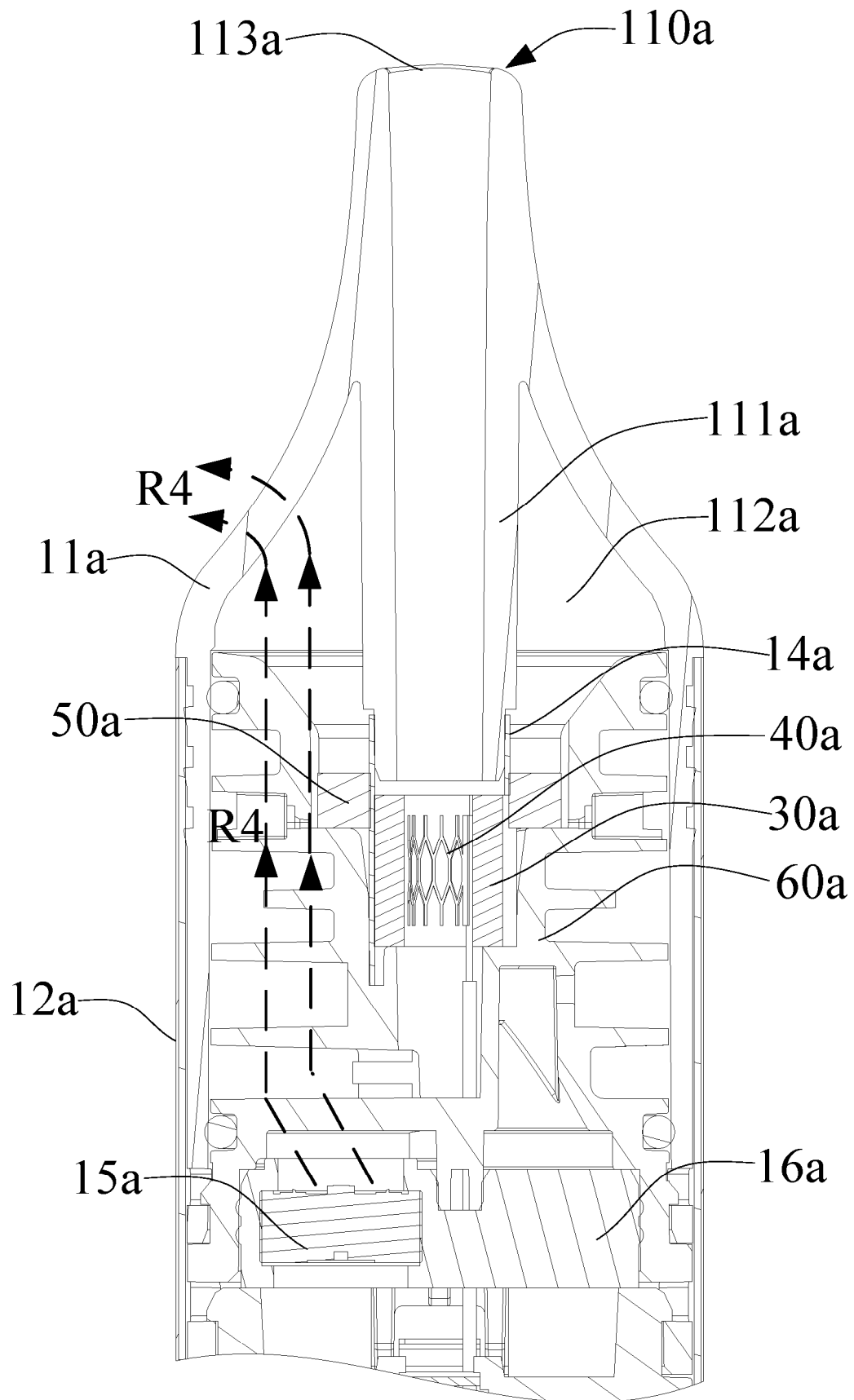


FIG. 21

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2024/120139

A. CLASSIFICATION OF SUBJECT MATTER

A24F40/51(2020.01)i; A24F40/46(2020.01)i; A24F40/48(2020.01)i; A24F40/40(2020.01)i; A24F40/10(2020.01)i

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A24F 40/-; A24F 47/-

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNTXT, ENTXTC, VEN: 电子烟, 雾化, 支架, 加热, 气流传感器, 咪头, MEMS, E-cigarette, atomiz+, holder, heat+, airflow sensor, microphone

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 221284712 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 09 July 2024 (2024-07-09) claims 1-19	1-19
X	CN 116616498 A (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 22 August 2023 (2023-08-22) description, paragraphs 0064-0133, and figures 2-10	1-17
X	CN 218354596 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 24 January 2023 (2023-01-24) description, paragraphs 0055-0098, and figures 2-11	18-19
X	CN 217826742 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 18 November 2022 (2022-11-18) description, paragraphs 0122-0246, and figures 1-23	1-17
X	WO 2023151625 A1 (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 17 August 2023 (2023-08-17) description, paragraphs 0064-0136, and figures 1-11	1-17

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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

Date of the actual completion of the international search 08 November 2024	Date of mailing of the international search report 02 January 2025
Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (July 2022)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2024/120139

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C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 114680376 A (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 01 July 2022 (2022-07-01) entire document	1-19
A	CN 217446684 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 20 September 2022 (2022-09-20) entire document	1-19

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2024/120139

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Invention 1: claims 1-17, which relate to: an electronic atomization device having an airflow sensor.

Invention 2: claim 18, which relates to: an electronic atomization device having an elastic conductive element arranged between a battery cell and an airflow sensor.

Invention 3: claim 19, which relates to: an electronic atomization device having: a first liquid guide element, a tubular element running through the first liquid guide element, and a ventilation channel.

The same or corresponding technical features "liquid storage cavity" and "airflow sensor for sensing the change of an airflow through the interior of an electronic atomization device" in inventions 1 and 2 are well-known in the art, and the same or corresponding technical features "liquid storage cavity", "atomization assembly" and "support" in inventions 1 and 3 are well-known in the art. The above inventions do not have a same or corresponding special technical feature that defines a contribution which the inventions make over the prior art, do not have a technical relationship therebetween, do not fall within a single general inventive concept, and therefore do not comply with the requirement of unity of invention and do not comply with PCT Rule 13.1, 13.2 and 13.3.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims: it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/CN2024/120139

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN	221284712	U	09 July 2024	None	
CN	116616498	A	22 August 2023	None	
CN	218354596	U	24 January 2023	None	
CN	217826742	U	18 November 2022	None	
WO	2023151625	A1	17 August 2023	None	
CN	114680376	A	01 July 2022	None	
CN	217446684	U	20 September 2022	None	

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 202311333075 [0001]