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(54) **ULTRASONIC ATOMIZATION ASSEMBLY, ULTRASONIC ATOMIZER AND ULTRASONIC ATOMIZATION DEVICE**

(57) An ultrasonic atomization assembly (105), an ultrasonic atomizer (10), and an ultrasonic atomization device (100) are provided. The ultrasonic atomization assembly (105) includes an ultrasonic atomization sheet (1051), including a first electrode and a second electrode; a first liquid guide element (1057), in contact with the ultrasonic atomization sheet (1051) and configured to transfer a liquid substrate to the ultrasonic atomization sheet (1051); and an atomization sleeve (1052), including a limiting portion (1052c), where one end of the atomization sleeve (1052) is provided with an opening. A part of the first liquid guide element (1057) is exposed to the opening, and the other part of the first liquid guide element (1057) is held between the limiting portion (1052c) and the ultrasonic atomization sheet (1051). The ultrasonic atomization sheet (1051) and the liquid guide element (1057) are accommodated in the atomization sleeve (1052) and a part of the liquid guide element (1057) is exposed to the opening at the end of the atomization sleeve (1052). The exposed part of the liquid guide element (1057) is convenient to absorb the liquid sub-

strate from external liquid guide elements (102, 103). In addition, the liquid guide element (1057) is fixed in the atomization sleeve (1052). This can avoid a problem that the liquid guide element (1057) is not easy assemble and easily shifts, resulting in damage to the ultrasonic atomization sheet (1051) caused by hard contact between the ultrasonic atomization sheet (1051) and oil guide ceramic.

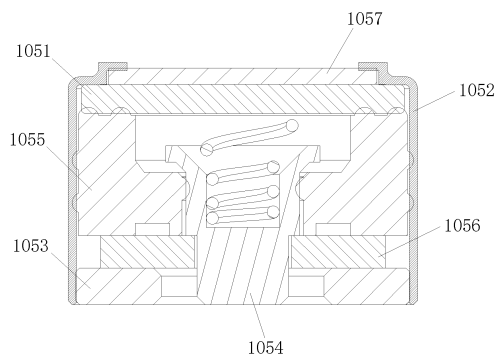


FIG. 15

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Description**CROSS-REFERENCE TO RELATED APPLICATIONS**

[0001] This application claims priority to Chinese Patent Application No. 202111485002.0, filed with the China National Intellectual Property Administration on December 7, 2021 and entitled "ULTRASONIC ATOMIZATION ASSEMBLY, ULTRASONIC ATOMIZER AND ULTRASONIC ATOMIZATION DEVICE", which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] This application relates to the field of atomization technologies, and in particular, to an ultrasonic atomization assembly, an ultrasonic atomizer, and an ultrasonic atomization device.

BACKGROUND

[0003] An ultrasonic atomizer includes an ultrasonic atomization sheet. When the ultrasonic atomization sheet generates high-frequency vibration, a liquid substrate may be atomized into a liquid mist for a user to inhale.

[0004] In the existing ultrasonic atomizer, thin-sheet oil storage cotton is usually added between the ultrasonic atomization sheet and an oil guide ceramic, to avoid damage to the ultrasonic atomization sheet in a process of guiding liquid to the ultrasonic atomization sheet. However, the oil storage cotton is usually fixed by downward abutment of an abutting support and upward abutment of the ultrasonic atomization sheet, and assembly and fixing are cumbersome, resulting in low production and manufacturing efficiency.

SUMMARY

[0005] This application provides an ultrasonic atomization assembly, an ultrasonic atomizer, and an ultrasonic atomization device, to improve a mounting and fixing effect between oil storage cotton and an ultrasonic atomization sheet in the ultrasonic atomizer.

[0006] An aspect of this application provides an ultrasonic atomization assembly, including:

an ultrasonic atomization sheet, configured to ultrasonically atomize a liquid substrate to form a liquid mist;

a first liquid guide element, where the first liquid guide element is in contact with the ultrasonic atomization sheet and is configured to transfer the liquid substrate to the ultrasonic atomization sheet; and

an atomization sleeve, where the atomization sleeve includes a limiting portion and one end of the atomization sleeve is provided with an opening, where the first liquid guide element is partially exposed to

the opening, and the other part of the first liquid guide element is held between the limiting portion and the ultrasonic atomization sheet.

5 [0007] In an example, a cross-sectional area of the first liquid guide element is greater than an area of the opening.

[0008] In an example, the first liquid guide element includes a first surface and a second surface opposite to the first surface, where
10 the first surface is partially exposed to the opening, and the second surface is in contact with the ultrasonic atomization sheet.

[0009] In an example, the ultrasonic atomization sheet includes a first surface in contact with the first liquid guide element, and a second surface opposite to the first surface, where

20 the first electrode is arranged on the first surface, and the second electrode is arranged on the second surface; or

the first electrode is arranged on the first surface and extends along a side wall of the ultrasonic atomization sheet to the second surface, and the second electrode is arranged on the second surface.

[0010] In an example, the atomization sleeve is made of a conductive material; and the atomization sleeve further includes an abutting portion, and the abutting portion is in contact with the first electrode to form an electrical connection.

[0011] In an example, both the limiting portion and the abutting portion extend radially toward the atomization sleeve.

[0012] In an example, a distance between the limiting portion and the abutting portion is less than a thickness of the first liquid guide element.

[0013] In an example, the limiting portion and the abutting portion are arranged in a stepped shape along an extension direction from one end of the atomization sleeve to the other end of the atomization sleeve.

[0014] In an example, the ultrasonic atomization assembly further includes an electrical connector accommodated in the atomization sleeve, where

45 one end of the electrical connector is in contact with the second electrode to form an electrical connection, and the other end of the electrical connector extends toward the other end of the atomization sleeve.

[0015] In an example, the ultrasonic atomization assembly further includes a resistor board accommodated in the atomization sleeve, where the resistor board includes a first electrical connection end directly or indirectly electrically connected to the atomization sleeve and a second electrical connection end directly or indirectly electrically connected to the electrical connector.

[0016] In an example, the ultrasonic atomization assembly further includes an elastic element accommodated in the atomization sleeve, where the elastic element

is spaced between the electrical connector and the atomization sleeve and is in elastic contact with the ultrasonic atomization sheet.

[0017] In an example, the ultrasonic atomization assembly further includes an elastic conductive element accommodated in the atomization sleeve, where the elastic conductive element is directly or indirectly electrically connected to the atomization sleeve, the elastic conductive element is directly or indirectly electrically connected to the electrical connector, and the elastic conductive element is in elastic contact with the ultrasonic atomization sheet.

[0018] In an example, the other end of the atomization sleeve is bent inward to form a coupling portion; or the ultrasonic atomization assembly further includes a coupling portion accommodated in the atomization sleeve, where the coupling portion is in contact with an inner wall of the atomization sleeve to form an electrical connection.

[0019] In an example, the atomization sleeve is made of a non-conductive material.

[0020] In an example, the atomization sleeve is in a cylindrical shape, and both the first liquid guide element and the ultrasonic atomization sheet are in a circular pie shape.

[0021] Another aspect of this application provides an ultrasonic atomizer, including a liquid storage cavity storing a liquid substrate and the ultrasonic atomization assembly, where the liquid storage cavity is in direct or indirect fluid communication with the first liquid guide element.

[0022] In an example, the ultrasonic atomizer further includes a second liquid guide element and a third liquid guide element, where the third liquid guide element is in fluid communication with the liquid storage cavity to absorb the liquid substrate stored in the liquid storage cavity, one end of the second liquid guide element is in contact with the third liquid guide element, and the other end of the second liquid guide element is in contact with the first liquid guide element, to cause the liquid substrate to be transferred from the liquid storage cavity to the first liquid guide element, where the first liquid guide element and the third liquid guide element are made of flexible porous materials, and the second liquid guide element is made of a solid porous material.

[0023] In an example, the ultrasonic atomizer further includes a second liquid guide element, a third liquid guide element, and a liquid temporary storage space, where one end of the third liquid guide element is in fluid communication with the liquid storage cavity to absorb the liquid substrate stored in the liquid storage cavity, and the other end of the third liquid guide element is in communication with the liquid temporary storage space; and one end of the second liquid guide element is in contact with the liquid temporary storage space, and the other end of the second liquid guide element is in contact with the first liquid guide element, to cause the liquid substrate to be transferred from the liquid storage cavity to

the first liquid guide element, where the first liquid guide element and the third liquid guide element are made of flexible porous materials, and the second liquid guide element is made of a solid porous material.

5 **[0024]** In an example, the second liquid guide element further includes a cotton pressing portion, the second liquid guide element is in contact with the first liquid guide element through the cotton pressing portion, and an end of the second liquid guide element provided with the cotton pressing portion is further provided with an air guide groove and an airflow channel port.

[0025] Another aspect of this application provides an ultrasonic atomizer, including:

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

a third liquid guide element, configured to be in fluid communication with the liquid storage cavity to absorb the liquid substrate stored in the liquid storage cavity;

20 a second liquid guide element, configured to receive the liquid substrate absorbed by the third liquid guide element;

a first liquid guide element, in contact with the second liquid guide element, to absorb the liquid substrate from the second liquid guide element; and

25 an ultrasonic atomization assembly, including an ultrasonic atomization sheet, where the ultrasonic atomization sheet is in contact with the first liquid guide element to ultrasonically atomize the liquid substrate in the first liquid guide element to form a liquid mist, where

30 the first liquid guide element and the third liquid guide element are made of flexible porous materials, and the second liquid guide element is made of a solid porous material; and

35 the second liquid guide element further includes a cotton pressing portion, the second liquid guide element is in contact with the first liquid guide element through the cotton pressing portion, and an end of the second liquid guide element provided with the cotton pressing portion is further provided with an air guide groove and an airflow channel port.

45 **[0026]** In an example, a liquid temporary storage space is spaced between the second liquid guide element and the third liquid guide element.

[0027] In an example, the second liquid guide element includes a plate-shaped liquid guide body and an airflow channel running through the liquid guide body;

50 a surface of the liquid guide body is partially recessed to form the liquid temporary storage space;

55 the other surface of the liquid guide body is partially protruded to form the cotton pressing portion, and the cotton pressing portion is in contact with the first liquid guide element; and

the other surface of the liquid guide body is further

provided with the air guide groove in communication with the airflow channel.

[0028] In an example, the second liquid guide element is in direct contact with the third liquid guide element.

[0029] In an example, the ultrasonic atomization assembly further includes an atomization sleeve, the atomization sleeve includes a limiting portion and one end of the atomization sleeve is provided with an opening, the first liquid guide element is at least partially exposed to the opening, and the first liquid guide element is held between the limiting portion and the ultrasonic atomization sheet.

[0030] In an example, the ultrasonic atomization assembly further includes a coupling portion and an electrical connector, the ultrasonic atomization sheet includes a first electrode and a second electrode, an abutting portion electrically connected to the first electrode is further arranged on one end of the atomization sleeve, the other end of the atomization sleeve is in contact with the coupling portion, and the electrical connector is electrically connected to the second electrode, where the coupling portion and the electrical connector are respectively configured to connect to a positive electrical contact and a negative electrical contact of a power supply assembly to be energized.

[0031] Another aspect of this application further provides an ultrasonic atomization device, where the ultrasonic atomization device includes a power supply assembly and the ultrasonic atomizer.

[0032] The ultrasonic atomization assembly, the ultrasonic atomizer, and the ultrasonic atomization device are provided in this application, the first liquid guide element is held between the limiting portion and the ultrasonic atomization sheet through the limiting portion in the atomization sleeve, so that the first liquid guide element is accommodated and fixed in the atomization sleeve, and the first liquid guide element is at least partially exposed to the opening at one end of the atomization sleeve. In an assembly and fixing process of the ultrasonic atomizer, the ultrasonic atomization assembly only needs to be mounted in a corresponding position, and there is no need to remount the first liquid guide element. This can avoid a problem of an assembly shift of the first liquid guide element, and improve production efficiency.

BRIEF DESCRIPTION OF THE DRAWINGS

[0033] One or more embodiments are exemplarily described with reference to the corresponding figures in the accompanying drawings, and the descriptions do not constitute a limitation to the embodiments. Components in the accompanying drawings that have same reference numerals are represented as similar components, and unless otherwise particularly stated, the figures in the accompanying drawings do not constitute a proportional limitation.

FIG. 1 is a schematic diagram of an ultrasonic atomization device according to an implementation of this application;

FIG. 2 is a schematic diagram of another ultrasonic atomization device according to an implementation of this application;

FIG. 3 is a schematic diagram of an ultrasonic atomizer according to an implementation of this application;

FIG. 4 is a schematic exploded view of an ultrasonic atomizer according to an implementation of this application;

FIG. 5 is a schematic cross-sectional view of an ultrasonic atomizer according to an implementation of this application;

FIG. 6 is another schematic cross-sectional view of an ultrasonic atomizer according to an implementation of this application;

FIG. 7 is a schematic diagram of a first liquid guide element according to an implementation of this application;

FIG. 8 is a schematic diagram of a second liquid guide element according to an implementation of this application;

FIG. 9 is a schematic diagram of a second liquid guide element from another perspective according to an implementation of this application;

FIG. 10 is a schematic diagram of a sealing member according to an implementation of this application;

FIG. 11 is a schematic diagram of a sealing member from another perspective according to an implementation of this application;

FIG. 12 is a schematic cross-sectional view of another ultrasonic atomizer according to an implementation of this application;

FIG. 13 is a schematic diagram of a sealing member of another ultrasonic atomizer according to an implementation of this application;

FIG. 14 is a schematic exploded view of an ultrasonic atomization assembly according to an implementation of this application;

FIG. 15 is a schematic cross-sectional view of an ultrasonic atomization assembly according to an implementation of this application;

FIG. 16 is a schematic cross-sectional view of a conductive atomization sleeve according to an implementation of this application; and

FIG. 17 is a schematic cross-sectional view of another ultrasonic atomization assembly according to an implementation of this application.

DETAILED DESCRIPTION

[0034] For ease of understanding of this application, this application is described below in more detail with reference to the accompanying drawings and specific implementations. It should be noted that when an element is expressed as "being fixed 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 an element is expressed as "being connected to" another element, the element may be directly connected to the another element, or one or more intermediate elements may exist between the element and the another element. Terms "upper", "lower", "left", "right", "inner", "outer", and similar expressions used in this specification are merely used for an illustrative purpose.

[0035] Unless otherwise defined, all technical and scientific terms used in this specification have the same meaning as that usually understood by a person skilled in the technical field to which this application belongs. The terms used in this specification of this application are merely intended to describe objectives of the specific implementations, and 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.

[0036] FIG. 1 is a schematic diagram of an ultrasonic atomization device according to an implementation of this application.

[0037] As shown in FIG. 1, an ultrasonic atomization device 100 includes an ultrasonic atomizer 10 and a power supply assembly 20. The ultrasonic atomizer 10 and the power supply assembly 20 are not detachable.

[0038] The ultrasonic atomizer 10 includes an ultrasonic atomization assembly 105. The ultrasonic atomization assembly 105 generates high-frequency oscillation under the action of power provided by the power supply assembly 20, so that a liquid substrate is atomized into an aerosol.

[0039] The power supply assembly 20 includes a battery core 21 and a circuit 22.

[0040] The battery core 21 provides power for operating the ultrasonic atomization device 100. The battery core 21 may be a rechargeable battery core or a disposable battery core.

[0041] The circuit 22 may control an overall operation of the ultrasonic atomization device 100. The circuit 22 not only controls operations of the battery core 21 and the ultrasonic atomization assembly 105, but also controls operations of other elements in the ultrasonic atomization device 100.

[0042] FIG. 2 is a schematic diagram of another ultrasonic atomization device according to an implementation of this application. Different from the example in FIG. 1, the ultrasonic atomizer 10 is detachably connected to the power supply assembly 20. The ultrasonic atomizer 10 includes an electrical contact 105a and an electrical contact 105b, and the power supply assembly 20 includes an electrical contact 20a and an electrical contact 20b (a positive electrical contact and a negative electrical contact). When the ultrasonic atomizer 10 is connected to the power supply assembly 20, the electrical contact 105a is in contact with the electrical contact 20a to form an electrical connection, and the electrical contact 105b

is in contact with the electrical contact 20b to form an electrical connection.

[0043] For ease of description, the following describes only an example in which the ultrasonic atomizer 10 is detachably connected to the power supply assembly 20.

[0044] As shown in FIG. 3 to FIG. 6, the ultrasonic atomizer 10 includes:

an upper housing 101, which is substantially in a flat cylindrical shape. The upper housing 101 includes a proximal end and a distal end opposite to each other along a length direction. The proximal end is configured as an end for a user to inhale an aerosol, and a suction nozzle for the user to inhale is arranged at the proximal end. The distal end is used as an end connected to the power supply assembly 20, and the distal end of the upper housing 101 is an opening on which a detachable bottom cap 106 is mounted. After the distal end is connected to the bottom cap 106, the upper housing 101 and the bottom cap 106 together define a housing of the ultrasonic atomizer 10, and the housing is hollow and necessary functional components for storing and atomizing the liquid substrate are arranged in the housing. The necessary functional components may be mounted inside the housing of the ultrasonic atomizer 10 through the opening of the upper housing 101.

[0045] It is understood with reference to FIG. 16 that a first electrode hole 1061 and a second electrode hole 1062 are provided on the bottom cap 106. The ultrasonic atomization assembly 105 may be electrically connected to the power supply assembly 20 through the first electrode hole 1061 and the second electrode hole 1062. In addition, the bottom cap 106 is further provided with an air inlet 1063 for external air to enter the ultrasonic atomizer 10. Further, an accommodation chamber 1065 is further provided on the bottom cap 106. Both the first electrode hole 1061 and the second electrode hole 1062 are located inside the accommodation chamber 1065, and the air inlet 1063 is located outside the accommodation chamber 1065. Further, a magnetic connector 1064 is further arranged on the bottom cap 106, so that the ultrasonic atomizer 10 is detachably connected to the power supply assembly 20.

[0046] A liquid storage cavity A configured to store the liquid substrate, a third liquid guide element 102 configured to absorb the liquid substrate from the liquid storage cavity A, a second liquid guide element 103 absorbing the liquid substrate, a second sealing member 104, and the ultrasonic atomization assembly 105 ultrasonically atomizing the liquid substrate are arranged inside the housing.

[0047] A vapor conveying tube 1011 is arranged inside the upper housing 101 along an axial direction. A space between an outer wall of the vapor conveying tube 1011 and an inner wall of the upper housing 101 forms the liquid storage cavity A configured to store the liquid substrate, and one end of the vapor conveying tube 1011 is in communication with the suction nozzle, so that the generated aerosol is conveyed to the suction nozzle for

inhaling. In a preferred implementation, the vapor conveying tube 1011 and the upper housing 101 are integrally molded by using a moldable material, so that the liquid storage cavity A formed after preparation is open toward the distal end.

[0048] It is understood with reference to FIG. 7 that the third liquid guide element 102 is a sheet-shaped or block-shaped organic porous fiber layer extending along a cross-sectional direction of the upper housing 101. After assembly, an upper surface of the third liquid guide element 102 close to the liquid storage cavity A is opposite to the liquid storage cavity A and is configured to absorb the liquid substrate, and a lower surface of the third liquid guide element 102 facing away from the liquid storage cavity A is configured to transfer the liquid substrate to the second liquid guide element 103, as shown by an arrow R1 in the figure. The third liquid guide element 102 is provided with an insertion hole for the vapor conveying tube 1011 to pass through.

[0049] In a preferred implementation, the third liquid guide element 102 is prepared by using an elastic organic porous material and exhibits proper flexibility and rigidity. During implementation, the third liquid guide element 102 has a material smaller than a material of the upper housing 101 or a material defining the liquid storage cavity A. Specifically, the material is hard artificial wool with a Shore Hardness in a range from 20A to 70A. In an optional implementation, the third liquid guide element 102 is made of hard artificial wool including an oriented polyester fiber, hard artificial wool or artificial foam formed by filamentary polyurethane, or the like. The third liquid guide element 102 has a hardness or flexibility between that of common flexible plant cotton/non-woven fabric (with a Shore Hardness of less than 20 A) and that of a rigid porous ceramic/micro-porous metal (with a Shore Hardness of greater than 80 A). Therefore, the third liquid guide element 102 has a stable structure and has an extremely low expansion after the third liquid guide element 102 absorbs the liquid substrate and is immersed by the liquid substrate. After assembly, the third liquid guide element 102 is in contact with the inner wall of the upper housing 101 or a tube wall of the vapor conveying tube 1011 between a flexible contact and a rigid contact. The third liquid guide element 102 can independently seal the liquid storage cavity A by using the flexibility of the third liquid guide element 102, and the third liquid guide element 102 has a specific hardness and can be easily fixed and held. Specifically, as shown in the foregoing figure, a shape of the third liquid guide element 102 basically fits to an opening of a lower end of the liquid storage cavity A, so that the third liquid guide element 102 may be configured to cover, block, and seal the liquid storage cavity A. In a more preferred implementation, the third liquid guide element 102 has a Shore Hardness in a range from 50A to 70 A, and is approximately equivalent to a thermoplastic elastomer or silicone.

[0050] The third liquid guide element 102 is substantially in an elliptical shape, and the insertion hole fitting

the vapor conveying tube 1011 is also in an elliptical shape. The third liquid guide element 102 is prepared by using oriented fibers such as polyethylene and/or polypropylene that are basically oriented and arranged along a length direction. The oriented fibers are arranged along the length direction of the third liquid guide element 102, so that the third liquid guide element 102 exhibits strong bending resistance and is hard. In addition, the third liquid guide element 102 prepared by using the organic fibers keeps a sufficient gap between fiber materials during preparation, so that the liquid substrate can be transferred, and the third liquid guide element 102 can have proper flexibility. The third liquid guide element 102 having the oriented fibers is anisotropic. Specifically, a flexural strength along the length direction is at least greater than a flexural strength along a width direction. Alternatively, a liquid guide rate along the length direction is greater than a liquid guide rate along a width direction.

[0051] A surface or an inside of the third liquid guide element 102 has a texture 1021 extending along the length direction. Specifically, the texture 1021 is prepared by using the oriented fibers through a textile process such as roller pressing, and during preparation, a spacing between some fibers is increased through the roller pressing, a hydroentanglement process, or the like, so that a visible dent is formed at a position at which the spacing is increased, and a width of the dent is less than 1 mm and is approximately between 0.1 mm and 0.5 mm. The texture 1021 is formed on the surface or the inside of the third liquid guide element 102 through the dent, which is advantageous for transferring and maintaining the liquid substrate and improving hardness performance.

[0052] In the third liquid guide element 102 in the foregoing embodiment, the third liquid guide element 102 has a length d4 of 16.4 mm, a width d5 of 7.80 mm, and a thickness of 2.0 mm.

[0053] It is understood with reference to FIG. 8 and FIG. 9 that the second liquid guide element 103 and the third liquid guide element 102 are spaced apart. The second liquid guide element 103 is made of a porous material, for example, a porous ceramic. The second liquid guide element 103 includes a substantially plate-shaped liquid guide body 1031. An airflow channel 1032 running through the liquid guide body 1031 is arranged at a central position of the liquid guide body 1031. The airflow channel 1032 protrudes from the liquid guide body 1031 and is in fluid communication with the vapor conveying tube 1011. The aerosol obtained through ultrasonic atomization may be transmitted to the vapor conveying tube 1011 through the airflow channel 1032.

[0054] An upper surface of the liquid guide body 1031 is partially recessed to form some liquid temporary storage spaces 1033. Two liquid temporary storage spaces 1033 are symmetrically provided on a left side and a right side of the airflow channel 1032. After assembly, the liquid temporary storage space 1033 is in fluid communication with the liquid storage cavity A. The liquid substrate transferred by the third liquid guide element 102 to the

second liquid guide element 103 may be temporarily stored in the liquid temporary storage space 1033. In this way, a contact area between the liquid substrate and the second liquid guide element 103 is larger, and a speed at which the second liquid guide element 103 conducts the liquid substrate is increased. A vertical distance from a bottom end of the liquid temporary storage space 1033 to the ultrasonic atomization assembly 105 is in a range from 0.5 mm to 1.5 mm (preferably, in a range from 0.5 mm to 1.4 mm; further preferably, in a range from 0.8 mm to 1.4 mm; and further preferably, in a range from 1 mm to 1.4 mm), so that a distance from the liquid substrate in the liquid temporary storage space 1033 to the ultrasonic atomization assembly 105 is as short as possible, thereby further improving a conduction speed of the liquid substrate, avoiding dry burning of the ultrasonic atomization assembly 105, and making a smoke amount of the ultrasonic atomization assembly 105 more stable.

[0055] A lower surface of the liquid guide body 1031 partially protrudes to form a cotton pressing portion 1034. The cotton pressing portion 1034 is substantially in a circle shape, and the cotton pressing portion 1034 abuts against the ultrasonic atomization assembly 105. The lower surface of the liquid guide body 1031 is further provided with two air guide grooves 1035. The air guide groove 1035 is in communication with the airflow channel 1032. After entering the ultrasonic atomizer 10 through the air inlet 1063, external air flows into the airflow channel 1032 through the air guide groove 1035 (as shown by R2 in the figure).

[0056] The foregoing ultrasonic atomizer transfers the liquid substrate to the second liquid guide element 103 through the third liquid guide element 102, so that oil frying caused by transferring excessive liquid substrates or excessively fast transfer of the liquid substrate to the ultrasonic atomization sheet 1051 can be avoided.

[0057] As shown in FIG. 10 and FIG. 11, the second sealing member 104 includes a first portion 1041 and a second portion 1042 that are integrally formed. The second sealing member 104 is preferably made of a flexible material such as silicone or a thermoplastic elastomer. After assembly, the first portion 1041 is positioned between the inner wall of the upper housing 101 and the liquid guide body 1031, and the second portion 1042 is positioned between the airflow channel 1032 and the vapor conveying tube 1011, to form a seal. An upper end portion of the first portion 1041 abuts against a lower surface of the third liquid guide element 102 to at least partially hold the third liquid guide element 102.

[0058] The first portion 1041 has two liquid holes 1041a. The liquid substrate transferred by the third liquid guide element 102 to the second liquid guide element 103 may be temporarily stored in the liquid temporary storage space 1033 through the liquid hole 1041a. An outer surface of the first portion 1041 has a first convex rib 1041b extending along a circumferential direction. The first convex rib 1041b abuts against the inner wall of the upper housing 101. An inner surface of the first

portion 1041 has a second convex rib 1041c extending along the circumferential direction. The second convex rib 1041c abuts against the liquid guide body 1031. A good sealing effect can be formed through the first convex rib 1041b and the second convex rib 1041c. An outer surface of the second portion 1042 has a third convex rib 1042a extending along the circumferential direction, and the third convex rib 1042a abuts against the vapor conveying tube 1011, so that a good sealing effect is formed. A third step (not shown) is further formed on the inner surface of the first portion 1041, and the third step abuts against an upper end portion of the liquid guide body 1031, so that a good sealing effect is further formed.

[0059] In a further preferred implementation, the ultrasonic atomizer 10 further includes an air channel for air to enter the liquid storage cavity A, to replenish the air into the liquid storage cavity A, to alleviate a negative pressure of the liquid storage cavity A caused by consumption of the liquid substrate. Specifically, during implementation, a groove 1042b is provided on the second portion 1042. Air in the airflow channel 1032 or the vapor conveying tube 1011 flows into the liquid temporary storage space 1033 through the groove 1042b, and then flows to the liquid storage cavity A (as shown by R3 in the figure).

[0060] It is understood with reference to FIG. 12 and FIG. 13 that, in another example, the ultrasonic atomizer 10 includes a second liquid guide element 1003 and a second sealing member 1004 that are different from the examples in FIG. 3 to FIG. 11.

[0061] The second liquid guide element 1003 includes an annular body. The liquid substrate transferred by the third liquid guide element 102 to the second liquid guide element 1003 is transferred to the ultrasonic atomization assembly 105 through the annular body (as shown by R1 in FIG. 12). The annular body includes an airflow channel, and two sides of the annular body are provided with air guide grooves. After entering the ultrasonic atomizer 10 through the air inlet 1063, the external air changes a direction at least once when passing through the air guide groove, and flows into the airflow channel (as shown by R2 in FIG. 12). The air guide groove includes an airflow guiding surface obliquely extending toward the outside of the airflow channel, so that the airflow whose direction is changed may flow out from the air guide groove into the airflow channel at a preset angle. This facilitates mixing of the air and atomized particles, and improves inhalation experience.

[0062] The second sealing member 1004 includes an airflow hole 1004a, an airflow groove 1004b, and a first notch groove 1004c. After entering the ultrasonic atomizer 10 through the air inlet 1063, the external air may flow into the airflow groove 1004b through the airflow hole 1004a, and flow to the liquid storage cavity A through the first notch groove 1004c and a gap between the third liquid guide element 102 and the inner wall of the upper housing 101 (as shown by R3 in FIG. 12). This can alleviate a negative pressure in the liquid storage cavity A,

and facilitate transfer of the liquid substrate.

[0063] Further, the second sealing member 1004 further includes a second notch groove 1004d. The liquid substrate that permeates into the airflow groove 1004b in the liquid storage cavity A may flow into the second liquid guide element 1003 through the second notch groove 1004d, and then flow into the ultrasonic atomization assembly 105. This can avoid a risk of liquid leaking, and improve utilization of the liquid substrate.

[0064] It is understood with reference to FIG. 14 to FIG. 16 that the ultrasonic atomization assembly 105 includes an ultrasonic atomization sheet 1051, a first electrical connector (1052 and 1053), a second electrical connector 1054, a first sealing member 1055, a resistor board 1056, and a first liquid guide element 1057.

[0065] Both the first liquid guide element 1057 and the ultrasonic atomization sheet 1051 are in a circular pie shape. The first liquid guide element 1057 is made of common flexible plant cotton, or is another liquid guide element made of an elastic porous material. A first electrode is formed on an upper surface (or an atomizing surface) of the ultrasonic atomization sheet 1051, and a second electrode is formed on a lower surface of the ultrasonic atomization sheet 1051. In a preferred implementation, the ultrasonic atomization sheet 1051 includes a piezoelectric ceramic substrate, and a through hole is provided on a middle region of the piezoelectric ceramic substrate.

[0066] The first electrical connector (1052 and 1053) includes an atomization sleeve 1052 and a coupling portion 1053. The atomization sleeve 1052 and the coupling portion 1053 each are made of a conductive material. The ultrasonic atomization sheet 1051, the second electrical connector 1054, the first sealing member 1055, the resistor board 1056, and the first liquid guide element 1057 are all arranged in or accommodated in the atomization sleeve 1052.

[0067] The atomization sleeve 1052 includes a body 1052a, a limiting portion 1052c, and an abutting portion 1052b. The body 1052a is in a cylindrical shape. To be specific, the body 1052a is hollow and both an upper end and a lower end are provided with openings. A part of the body 1052c close to the upper end may be bent twice to form the limiting portion 1052c and the abutting portion 1052b. The limiting portion 1052c is located above the abutting portion 1052b. Both the limiting portion 1052c and the abutting portion 1052b extend radially toward the atomization sleeve 1052. In addition, the limiting portion 1052c and the abutting portion 1052b are arranged in a stepped shape along an extension direction from an upper end of the atomization sleeve 1052 to a lower end of the atomization sleeve 1052. It is easy to imagine that the limiting portion 1052c and the abutting portion 1052b are formed in various manners, which are not limited to the foregoing descriptions. For example, it is also feasible that the limiting portion 1052c and the abutting portion 1052b are formed by welding external members on the body 1052a.

[0068] After assembly, the first liquid guide element 1057 partially abuts against the limiting portion 1052c. Apart of the upper surface of the ultrasonic atomization sheet 1051 abuts against the lower surface of the first liquid guide element 1057 and the other part of the upper surface (having the first electrode) of the ultrasonic atomization sheet 1051 abuts against the abutting portion 1052b. In this way, the ultrasonic atomization sheet 1051 is in contact with the abutting portion 1052b, to form an electrical connection. A part of the first liquid guide element 1057 is held between the limiting portion 1052c and the ultrasonic atomization sheet 1051 and the other part of the first liquid guide element 1057 is exposed to the opening at the upper end of the body 1052a and abuts against the cotton pressing portion 1034.

[0069] In a preferred implementation, a distance h between the limiting portion 1052c and the abutting portion 1052b is slightly less than a thickness of the first liquid guide element 1057, to facilitate clamping of the part of the first liquid guide element 1057 between the limiting portion 1052c and the ultrasonic atomization sheet 1051.

[0070] It can be learned from the foregoing that, an area of the upper surface of the ultrasonic atomization sheet 1051 is greater than an area of the lower surface of the first liquid guide element 1057 (or a cross-sectional area of the first liquid guide element 1057). A part of an upper surface of the first liquid guide element 1057 is exposed to the opening at the upper end of the body 1052a. At least a part of the first electrode is formed on the upper surface of the ultrasonic atomization sheet 1051 not covered by the first liquid guide element 1057, that is, the at least a part of the first electrode is formed on the upper surface of a part of the ultrasonic atomization sheet 1051 located outside the first liquid guide element 1057. The cross-sectional area of the first liquid guide element 1057 is greater than an area of the opening at the upper end of the body 1052a.

[0071] The second electrical connector 1054 is an elastic electrode and has a conductive spring. One end of the second electrical connector 1054 is in contact with the second electrode to form an electrical connection, and the other end of the second electrical connector 1054 extends toward the lower end of the atomization sleeve 1052 and is flush with the lower end of the atomization sleeve 1052.

[0072] The first sealing member 1055 is substantially in a ring shape. The first sealing member 1055 includes an elastic element made of an insulating elastic material, for example, silicone or soft glue. The first sealing member 1055 is sleeved on the second electrical connector 1054, an upper end of the first sealing member 1055 abuts against the lower surface of the ultrasonic atomization sheet 1051, and a peripheral side wall of the first sealing member 1055 abuts against an inner wall of the atomization sleeve 1052. In this way, a good seal is formed, and vibration transfer of the ultrasonic atomization sheet can be reduced. Similar to the foregoing second sealing member 104, a convex rib may be arranged

on the upper end and/or the peripheral side wall of the first sealing member 1055, to form a better sealing effect.

[0073] The resistor board 1056 is in a square shape, a through hole is provide on a middle of the resistor board 1056, and the resistor board 1056 is sleeved on the second electrical connector 1054 through the through hole. The resistor board 1056 is arranged between the coupling portion 1053 and the second electrical connector 1054, and has a first electrical connection end (not shown) directly or indirectly electrically connected to the coupling portion 1053, and a second electrical connection end (not shown) directly or indirectly electrically connected to the second electrical connector 1054. The resistor board 1056 may consume energy stored by the ultrasonic atomization sheet 1051 after the ultrasonic atomization sheet 1051 is energized and then disconnected, to ensure that the ultrasonic atomization sheet 1051 can work normally after being energized again, and avoid that the ultrasonic atomization sheet 1051 releases an instantaneous high voltage after being energized again and other electronic components are burned out.

[0074] In an optional implementation, the first sealing member 1055 includes an elastic conductive element shaped by and made of a mixture of an elastic material and a metal particle. The elastic material may be silicone, soft glue, or the like. The elastic conductive element is in elastic contact with the ultrasonic atomization sheet 1051. One area of the elastic conductive element is directly or indirectly electrically connected to the first electrical connector (1052 and 1053), and the other area of the elastic conductive element is directly or indirectly electrically connected to the second electrical connector 1054. In this way, there is no need to arrange the resistor board 1056, and the vibration transfer of the ultrasonic atomization sheet 1051 is reduced by elasticity of the first sealing member 1055. In addition, the elastic conductive element is electrically connected to the first electrical connector (1052 and 1053) and the second electrical connector 1054, so that a loop is formed to consume the energy stored by the ultrasonic atomization sheet 1051 after the ultrasonic atomization sheet 1051 is energized and then disconnected, to ensure that the ultrasonic atomization sheet 1051 can work normally after being energized again, and avoid that the ultrasonic atomization sheet 1051 releases the instantaneous high voltage after being energized again and the other electronic components are burned out.

[0075] The coupling portion 1053 forms an electrical contact 105a of the ultrasonic atomizer 10, and the second electrical connector 1054 forms an electrical contact 105b of the ultrasonic atomizer 10. The coupling portion 1053 is in a ring shape and is sleeved on the second electrical connector 1054, and the coupling portion 1053 is flush with the lower end of the atomization sleeve 1052. The coupling portion 1053 is in contact with the atomization sleeve 1052 to form an electrical connection, and the coupling portion 1053 and the second electrical connector 1054 are spaced apart. The coupling portion 1053

is configured to electrically connect to the power supply assembly 20. After assembly, the ultrasonic atomization assembly 105 is partially accommodated in the accommodation chamber 1065, the first electrode hole 1061 and the second electrical connector 1054 are arranged coaxially, and the second electrode hole 1062 is arranged corresponding to the coupling portion 1053.

[0076] It should be noted that, in another example, the first electrode and the second electrode may respectively extend to a peripheral side surface of the ultrasonic atomization sheet 1051, to come into contact with the first electrical connector (1052 and 1053) and the second electrical connector 1054 to form an electrical connection. Alternatively, the first electrode may be formed on the upper surface of the ultrasonic atomization sheet 1051 and extend to the lower surface of the ultrasonic atomization sheet 1051, to come into contact with the first electrical connector (1052 and 1053) to form an electrical connection, and the second electrode may be formed on the lower surface of the ultrasonic atomization sheet 1051.

[0077] It should be noted that, in another example, the ultrasonic atomization sheet 1051 may be in a non-circular pie shape.

[0078] It should be noted that, in another example, it is also feasible that the first electrical connector is implemented by one or an integrally formed structural member. For example, the lower end of the atomization sleeve 1052 is bent inward to form the coupling portion 1053.

[0079] It should be noted that, in another example, it is also feasible that the atomization sleeve 1052 is made of a non-conductive material, and is in contact with the first electrode of the ultrasonic atomization sheet 1051 through another electrical connector to form an electrical connection. In this case, the atomization sleeve 1052 may only include a limiting portion 1052c, and the part of the first liquid guide element 1057 is held between the limiting portion 1052c and the ultrasonic atomization sheet 1051.

[0080] It should be noted that, in another example, the ultrasonic atomization assembly 105 may be formed by only the ultrasonic atomization sheet 1051, the first liquid guide element 1057, and the atomization sleeve 1052, and the ultrasonic atomization assembly 105 is arranged in the ultrasonic atomizer 10. The first electrical connector (1052 and 1053), the second electrical connector 1054, the first sealing member 1055, and the resistor board 1056 may be arranged in the ultrasonic atomizer 10. It is also feasible that the first electrical connector (1052 and 1053) and the second electrical connector 1054 may further be arranged in the power supply assembly 20. Similarly, the resistor board 1056 may also be arranged in the power supply assembly 20.

[0081] It should be noted that, in another example, it is also feasible that only one of the second liquid guide element 103 and the third liquid guide element 102 may be reserved.

[0082] It should be noted that, for the ultrasonic atom-

izer 10 having three-level guide liquid, to be specific, the ultrasonic atomizer 10 having the first liquid guide element 1057, the second liquid guide element 103, and the third liquid guide element 102, in another example, the ultrasonic atomization assembly 105 may adopt the structure shown in FIG. 17, to be specific, a solution in which the first liquid guide element 1057 and the ultrasonic atomization sheet 1051 are arranged separately may be adopted (in this solution, the atomization sleeve 1052 does not have a limiting portion). In an example, the ultrasonic atomization assembly 105 may be formed by only the ultrasonic atomization sheet 1051, the first electrical connector (1052 and 1053), and the second electrical connector 1054. The first liquid guide element 1057 is clamped between the ultrasonic atomization assembly 105 and the second liquid guide element 103. Alternatively, the ultrasonic atomization assembly 105 is formed by only the ultrasonic atomization sheet 1051. The first electrical connector (1052 and 1053) and the second electrical connector 1054 may be arranged in the ultrasonic atomizer 10 or the power supply assembly.

[0083] It should be noted that, in another example, the second liquid guide element 103 may also be made of cotton.

[0084] It should be noted that the specification of this application and the accompanying drawings thereof illustrate preferred embodiments of this application. However, this application may be implemented in various different forms, and is not limited to the embodiments described in this specification. These embodiments are not intended to be an additional limitation on the content of this application, and are described for the purpose of providing a more thorough and comprehensive understanding of the content disclosed in this application. Moreover, the foregoing technical features may further be combined to form various embodiments not listed above, and all such embodiments shall be construed as falling within the scope of the specification of this application. Further, a person of ordinary skill in the art may make improvements and variations based on the above descriptions, and such improvements and variations shall all fall within the protection scope of the appended claims of this application.

Claims

1. An ultrasonic atomization assembly, comprising:

an ultrasonic atomization sheet, wherein the ultrasonic atomization sheet comprises a first electrode and a second electrode and is configured to ultrasonically atomize a liquid substrate to form a liquid mist;

a first liquid guide element, wherein the first liquid guide element is in contact with the ultrasonic atomization sheet and is configured to transfer the liquid substrate to the ultrasonic atomization

sheet; and

an atomization sleeve, wherein the atomization sleeve comprises a limiting portion and one end of the atomization sleeve is provided with an opening, wherein the first liquid guide element is at least partially exposed to the opening, and the first liquid guide element is held between the limiting portion and the ultrasonic atomization sheet.

2. The ultrasonic atomization assembly according to claim 1, wherein a cross-sectional area of the first liquid guide element is greater than an area of the opening.

3. The ultrasonic atomization assembly according to claim 1, wherein the first liquid guide element comprises a first surface and a second surface opposite to the first surface, wherein the first surface is partially exposed to the opening, and the second surface is in contact with the ultrasonic atomization sheet.

4. The ultrasonic atomization assembly according to claim 1, wherein the ultrasonic atomization sheet comprises a first surface in contact with the first liquid guide element, and a second surface opposite to the first surface, wherein

the first electrode is arranged on the first surface, and the second electrode is arranged on the second surface; or

the first electrode is arranged on the first surface and extends along a side wall of the ultrasonic atomization sheet to the second surface, and the second electrode is arranged on the second surface.

5. The ultrasonic atomization assembly according to claim 1, wherein the atomization sleeve is made of a conductive material; and the atomization sleeve further comprises an abutting portion, and the abutting portion is in contact with the first electrode to form an electrical connection.

6. The ultrasonic atomization assembly according to claim 5, wherein both the limiting portion and the abutting portion extend radially toward the atomization sleeve.

7. The ultrasonic atomization assembly according to claim 6, wherein a distance between the limiting portion and the abutting portion is less than a thickness of the first liquid guide element.

8. The ultrasonic atomization assembly according to claim 5, wherein the limiting portion and the abutting portion are arranged in a stepped shape along an

extension direction from one end of the atomization sleeve to the other end of the atomization sleeve.

9. The ultrasonic atomization assembly according to claim 5, wherein the ultrasonic atomization assembly further comprises an electrical connector accommodated in the atomization sleeve, wherein one end of the electrical connector is in contact with the second electrode to form an electrical connection, and the other end of the electrical connector extends toward the other end of the atomization sleeve. 5
10. The ultrasonic atomization assembly according to claim 9, wherein the ultrasonic atomization assembly further comprises a resistor board accommodated in the atomization sleeve, wherein the resistor board comprises a first electrical connection end directly or indirectly electrically connected to the atomization sleeve and a second electrical connection end directly or indirectly electrically connected to the electrical connector. 10
11. The ultrasonic atomization assembly according to claim 9, wherein the ultrasonic atomization assembly further comprises an elastic element accommodated in the atomization sleeve, wherein the elastic element is spaced between the electrical connector and the atomization sleeve and is in elastic contact with the ultrasonic atomization sheet. 15
12. The ultrasonic atomization assembly according to claim 9, wherein the ultrasonic atomization assembly further comprises an elastic conductive element accommodated in the atomization sleeve, wherein the elastic conductive element is directly or indirectly electrically connected to the atomization sleeve, the elastic conductive element is directly or indirectly electrically connected to the electrical connector, and the elastic conductive element is in elastic contact with the ultrasonic atomization sheet. 20
13. The ultrasonic atomization assembly according to claim 5, wherein the other end of the atomization sleeve is bent inward to form a coupling portion; or the ultrasonic atomization assembly further comprises a coupling portion accommodated in the atomization sleeve, wherein the coupling portion is in contact with an inner wall of the atomization sleeve to form an electrical connection. 25
14. The ultrasonic atomization assembly according to any one of claims 1 to 4, wherein the atomization sleeve is made of a non-conductive material. 30
15. The ultrasonic atomization assembly according to any one of claims 1 to 14, wherein the atomization sleeve is in a cylindrical shape, and both the first 35

liquid guide element and the ultrasonic atomization sheet are in a circular pie shape.

16. An ultrasonic atomizer, comprising a liquid storage cavity storing a liquid substrate and the ultrasonic atomization assembly according to any one of claims 1 to 15, wherein the liquid storage cavity is in direct or indirect fluid communication with the first liquid guide element. 40
17. The ultrasonic atomizer according to claim 16, wherein the ultrasonic atomizer further comprises a second liquid guide element and a third liquid guide element, wherein the third liquid guide element is in fluid communication with the liquid storage cavity to absorb the liquid substrate stored in the liquid storage cavity, one end of the second liquid guide element is in contact with the third liquid guide element, and the other end of the second liquid guide element is in contact with the first liquid guide element, to cause the liquid substrate to be transferred from the liquid storage cavity to the first liquid guide element, wherein the first liquid guide element and the third liquid guide element are made of flexible porous materials, and the second liquid guide element is made of a solid porous material. 45
18. The ultrasonic atomizer according to claim 16, wherein the ultrasonic atomizer further comprises a second liquid guide element, a third liquid guide element, and a liquid temporary storage space, wherein one end of the third liquid guide element is in fluid communication with the liquid storage cavity to absorb the liquid substrate stored in the liquid storage cavity, and the other end of the third liquid guide element is in communication with the liquid temporary storage space; and one end of the second liquid guide element is in contact with the liquid temporary storage space, and the other end of the second liquid guide element is in contact with the first liquid guide element, to cause the liquid substrate to be transferred from the liquid storage cavity to the first liquid guide element, wherein the first liquid guide element and the third liquid guide element are made of flexible porous materials, and the second liquid guide element is made of a solid porous material. 50
19. The ultrasonic atomizer according to claim 17 or 18, wherein the second liquid guide element further comprises a cotton pressing portion, the second liquid guide element is in contact with the first liquid guide element through the cotton pressing portion, and an end of the second liquid guide element provided with the cotton pressing portion is further provided with an air guide groove and an airflow channel port. 55
20. An ultrasonic atomizer, comprising:

a liquid storage cavity, configured to store a liquid substrate;
 a third liquid guide element, configured to be in fluid communication with the liquid storage cavity to absorb the liquid substrate stored in the liquid storage cavity;
 a second liquid guide element, configured to receive the liquid substrate absorbed by the third liquid guide element;
 a first liquid guide element, in contact with the second liquid guide element, to absorb the liquid substrate from the second liquid guide element; and
 an ultrasonic atomization assembly, comprising an ultrasonic atomization sheet, wherein the ultrasonic atomization sheet is in contact with the first liquid guide element to ultrasonically atomize the liquid substrate in the first liquid guide element to form a liquid mist, wherein the first liquid guide element and the third liquid guide element are made of flexible porous materials, and the second liquid guide element is made of a solid porous material; and the second liquid guide element further comprises a cotton pressing portion, the second liquid guide element is in contact with the first liquid guide element through the cotton pressing portion, and an end of the second liquid guide element provided with the cotton pressing portion is further provided with an air guide groove and an airflow channel port.

21. The ultrasonic atomizer according to claim 20, wherein a liquid temporary storage space is spaced between the second liquid guide element and the third liquid guide element.

22. The ultrasonic atomizer according to claim 21, wherein the second liquid guide element comprises a plate-shaped liquid guide body and an airflow channel running through the liquid guide body;

a surface of the liquid guide body is partially recessed to form the liquid temporary storage space;
 the other surface of the liquid guide body is partially protruded to form the cotton pressing portion, and the cotton pressing portion is in contact with the first liquid guide element; and
 the other surface of the liquid guide body is further provided with the air guide groove in communication with the airflow channel.

23. The ultrasonic atomizer according to claim 20, wherein the second liquid guide element is in direct contact with the third liquid guide element.

24. The ultrasonic atomizer according to claim 20,

wherein the ultrasonic atomization assembly further comprises an atomization sleeve, the atomization sleeve comprises a limiting portion and one end of the atomization sleeve is provided with an opening, the first liquid guide element is at least partially exposed to the opening, and the first liquid guide element is held between the limiting portion and the ultrasonic atomization sheet.

25. The ultrasonic atomizer according to claim 24, wherein the ultrasonic atomization assembly further comprises a coupling portion and an electrical connector, the ultrasonic atomization sheet comprises a first electrode and a second electrode, an abutting portion electrically connected to the first electrode is further arranged on one end of the atomization sleeve, the other end of the atomization sleeve is in contact with the coupling portion, and the electrical connector is electrically connected to the second electrode, wherein the coupling portion and the electrical connector are respectively configured to connect to a positive electrical contact and a negative electrical contact of a power supply assembly to be energized.

26. An ultrasonic atomization device, comprising a power supply assembly and the ultrasonic atomizer according to any one of claims 16 to 25.

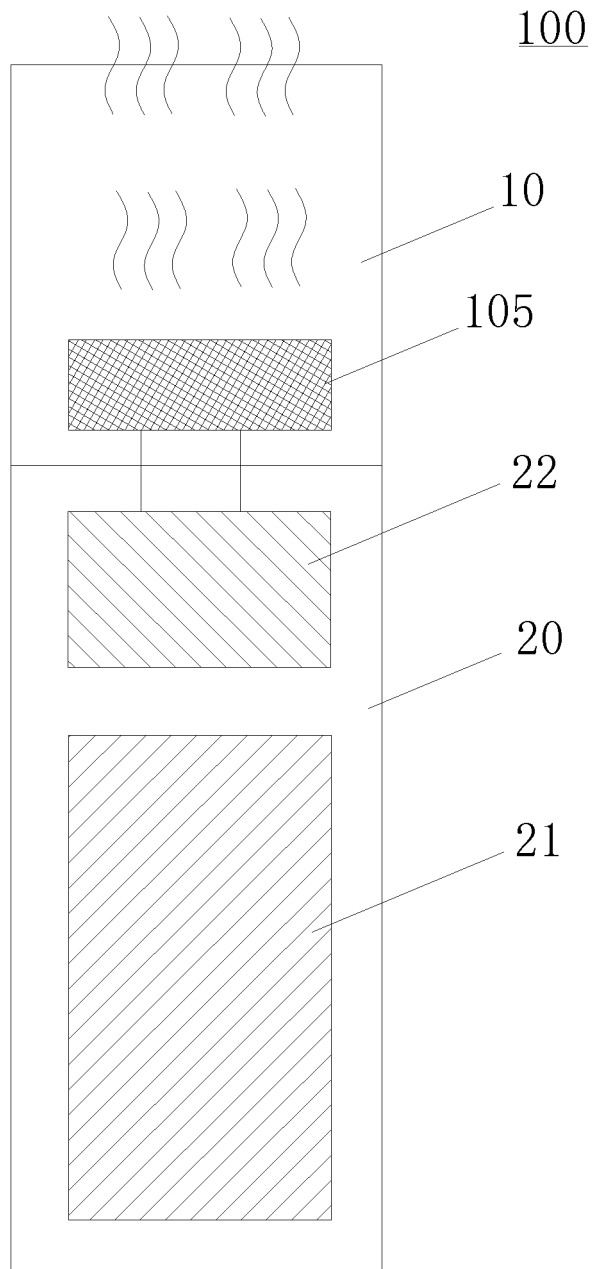


FIG. 1

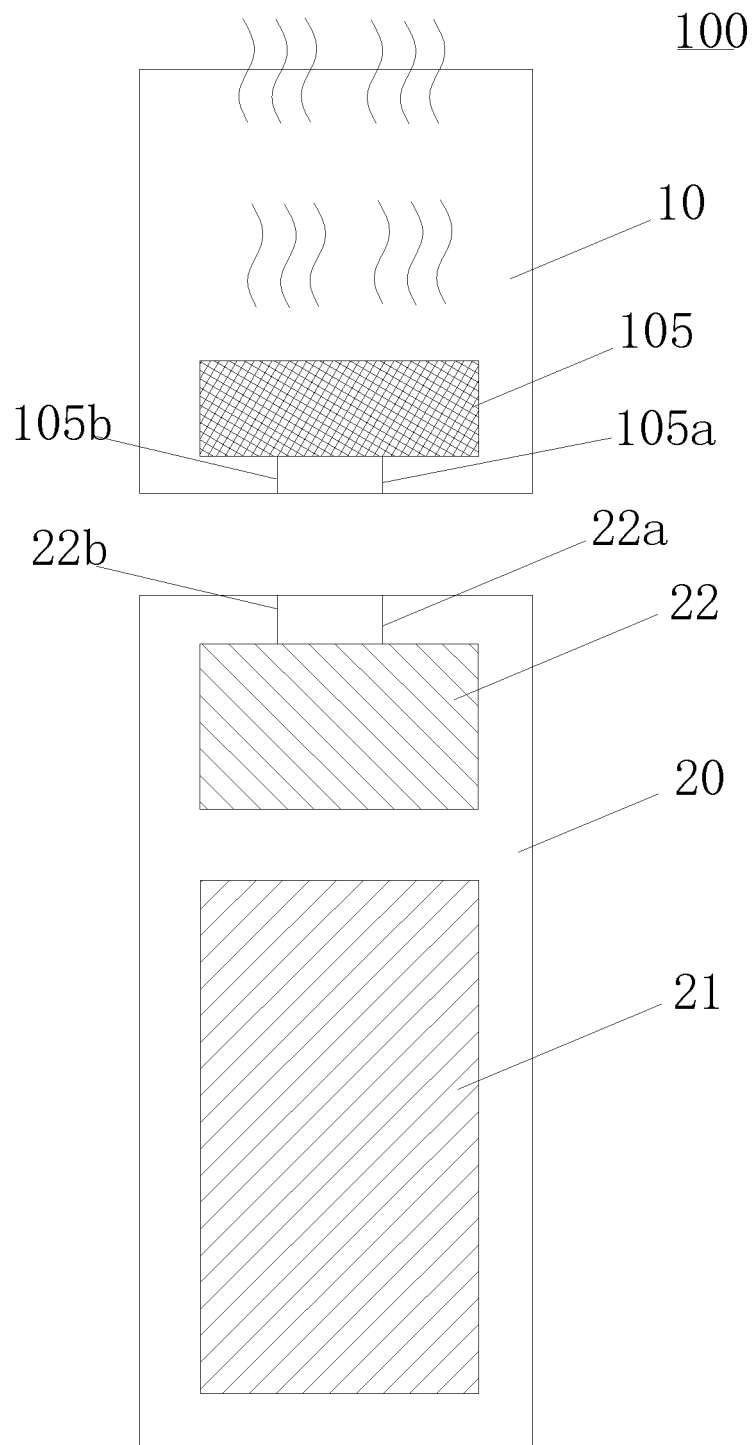
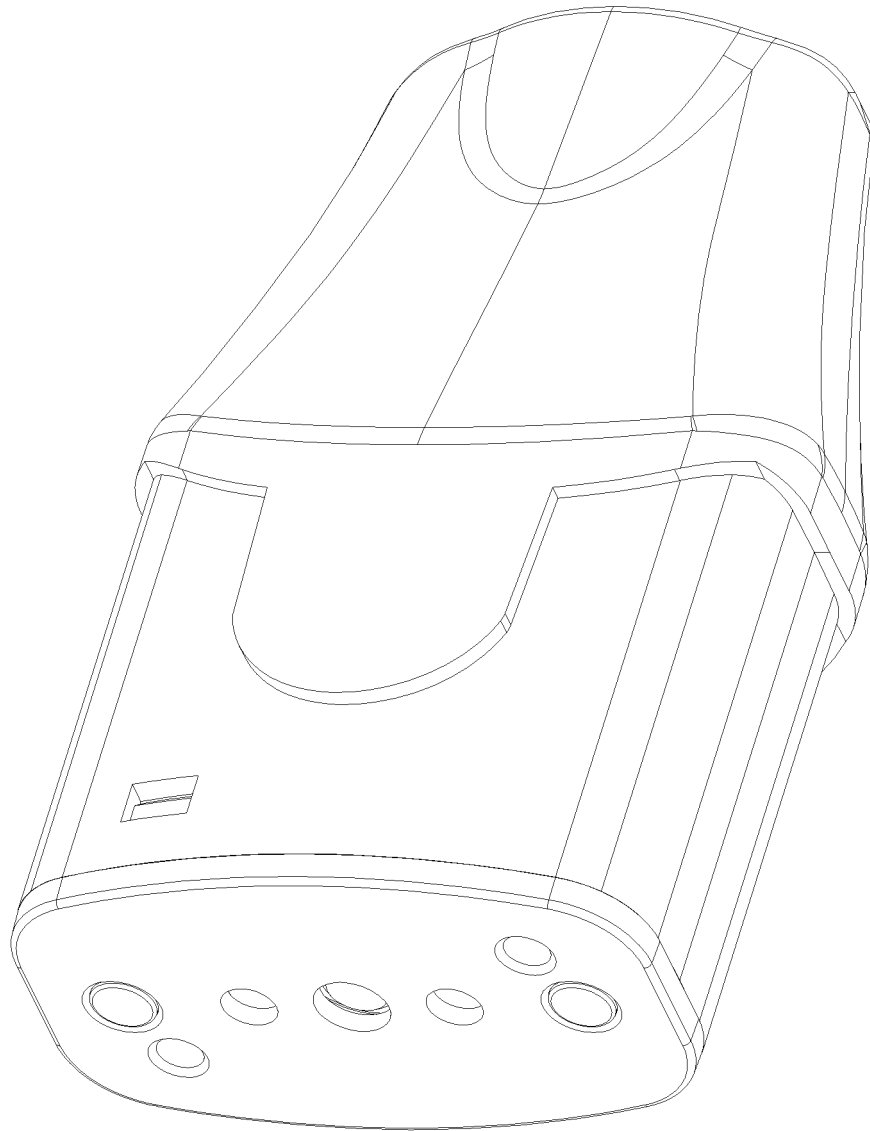


FIG. 2



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FIG. 3

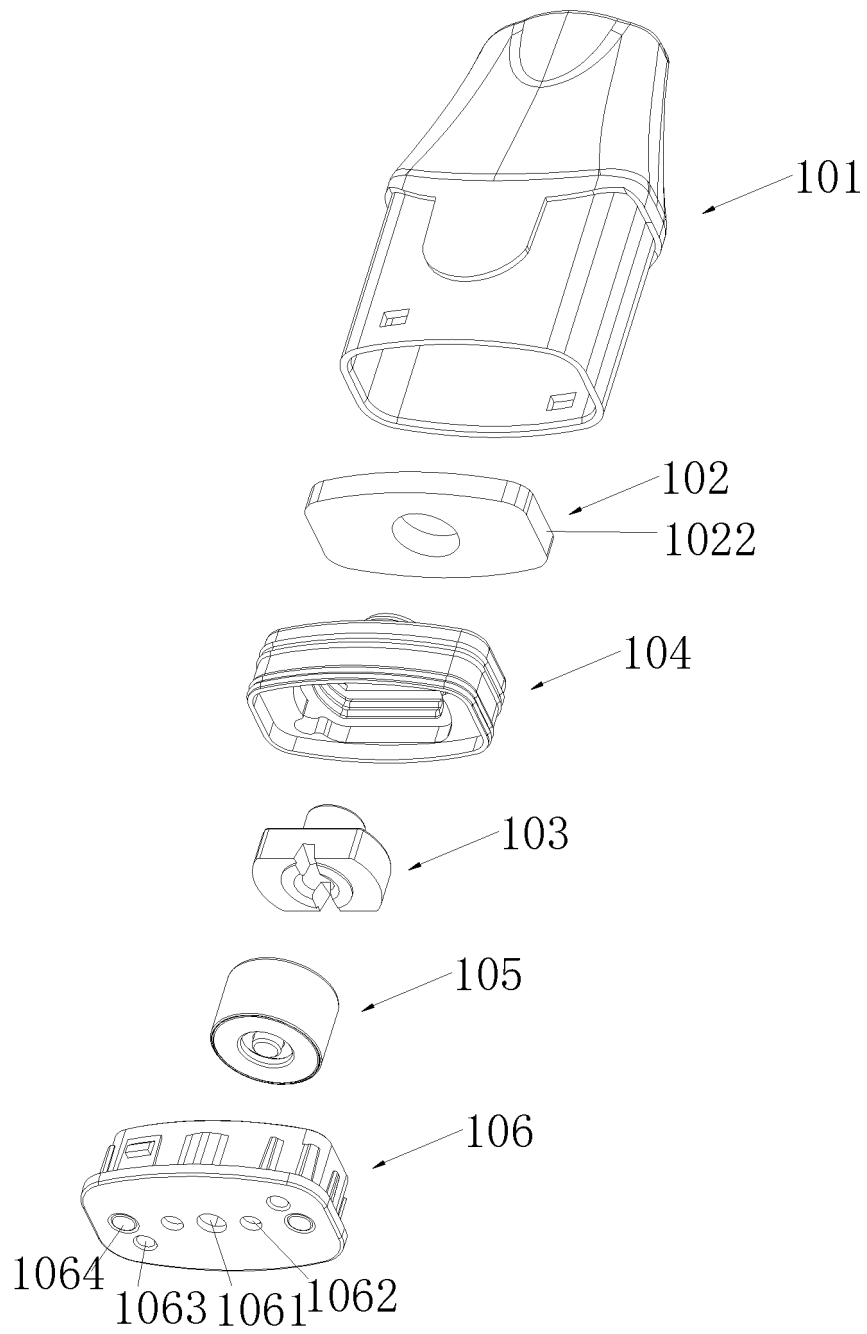


FIG. 4

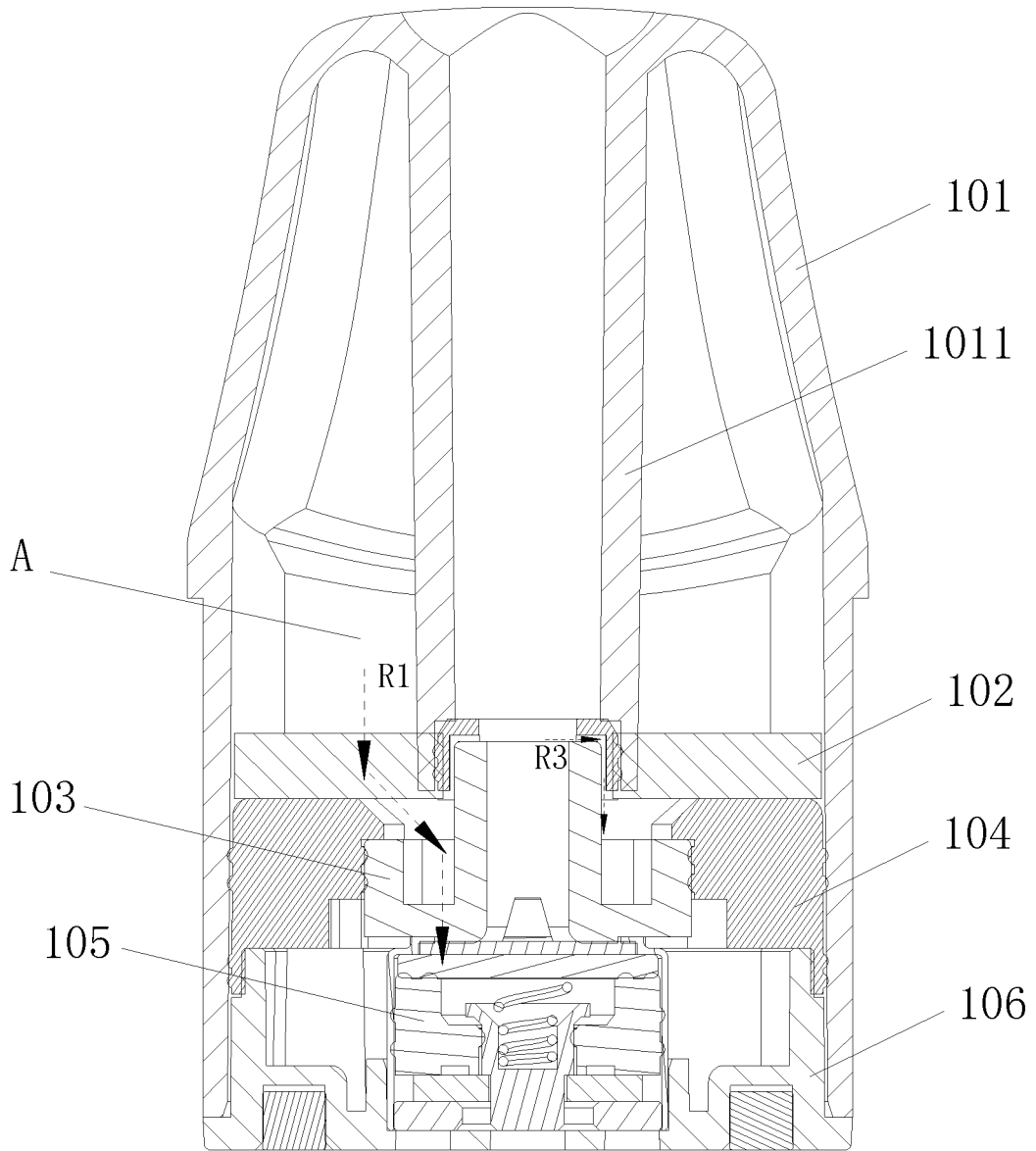


FIG. 5

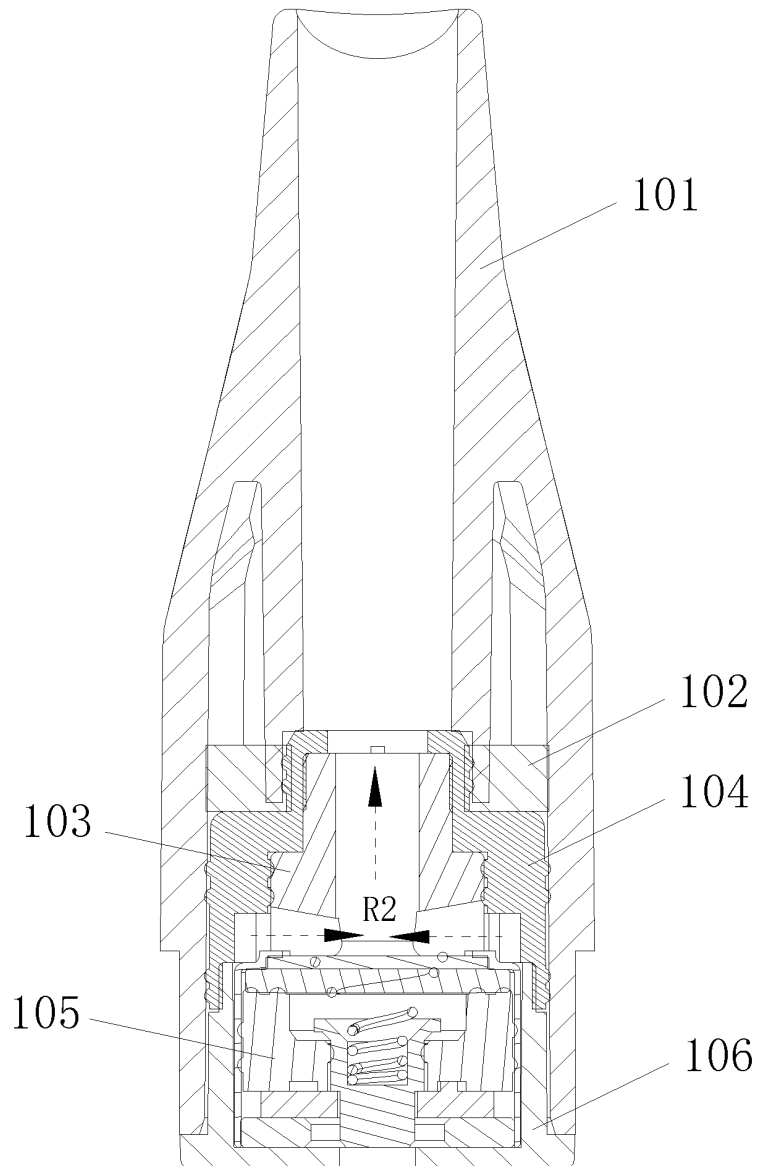


FIG. 6

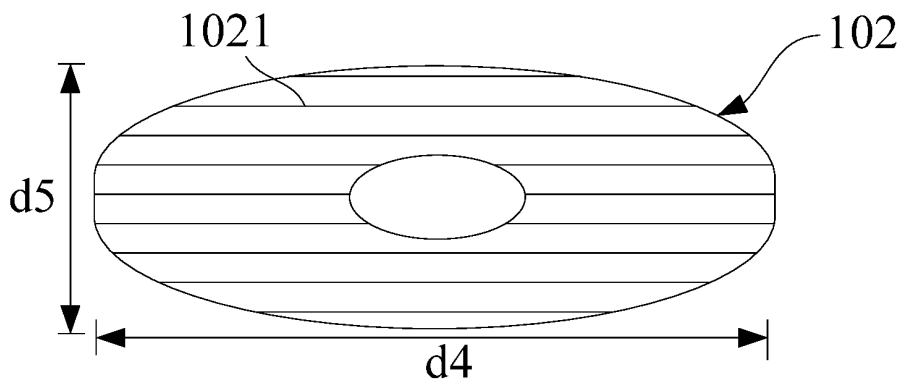


FIG. 7

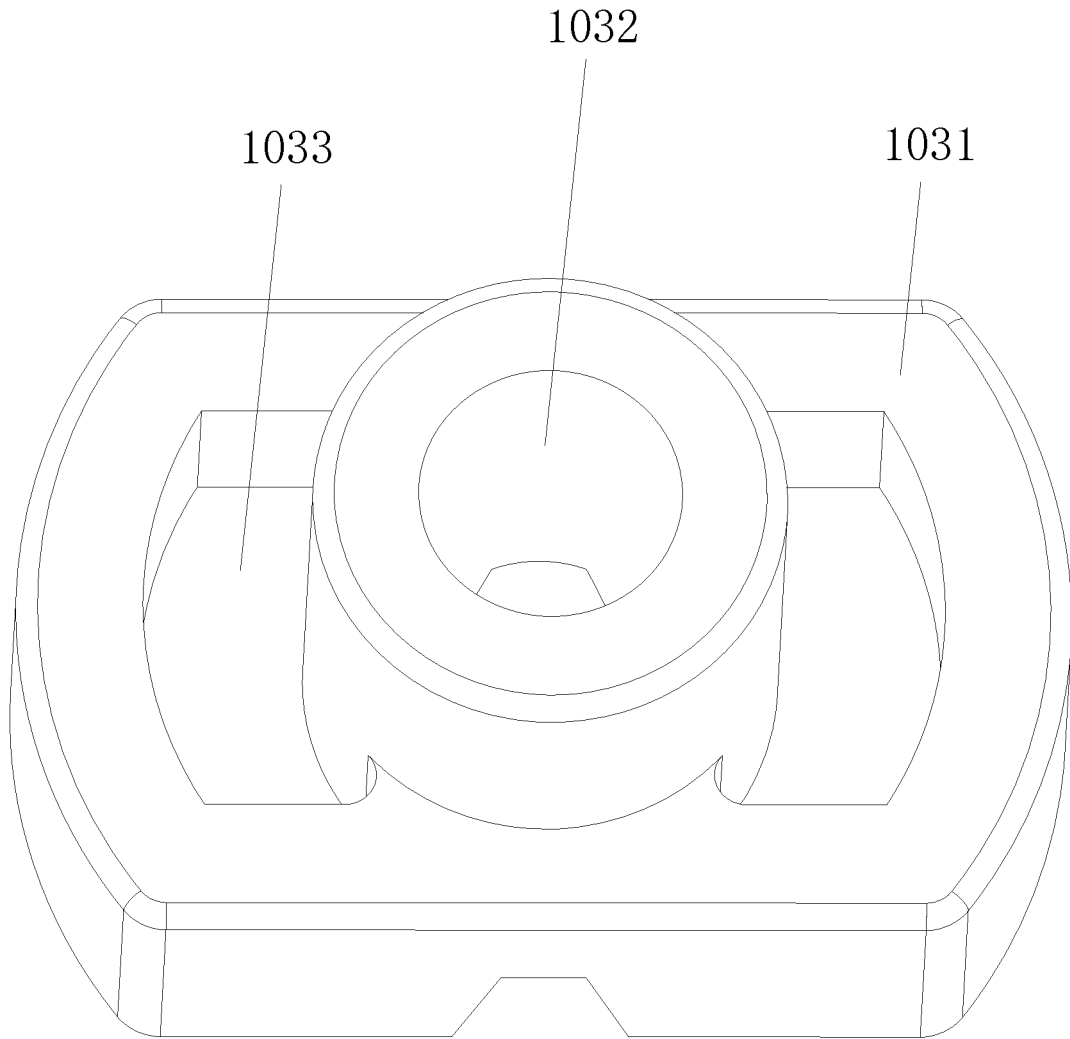


FIG. 8

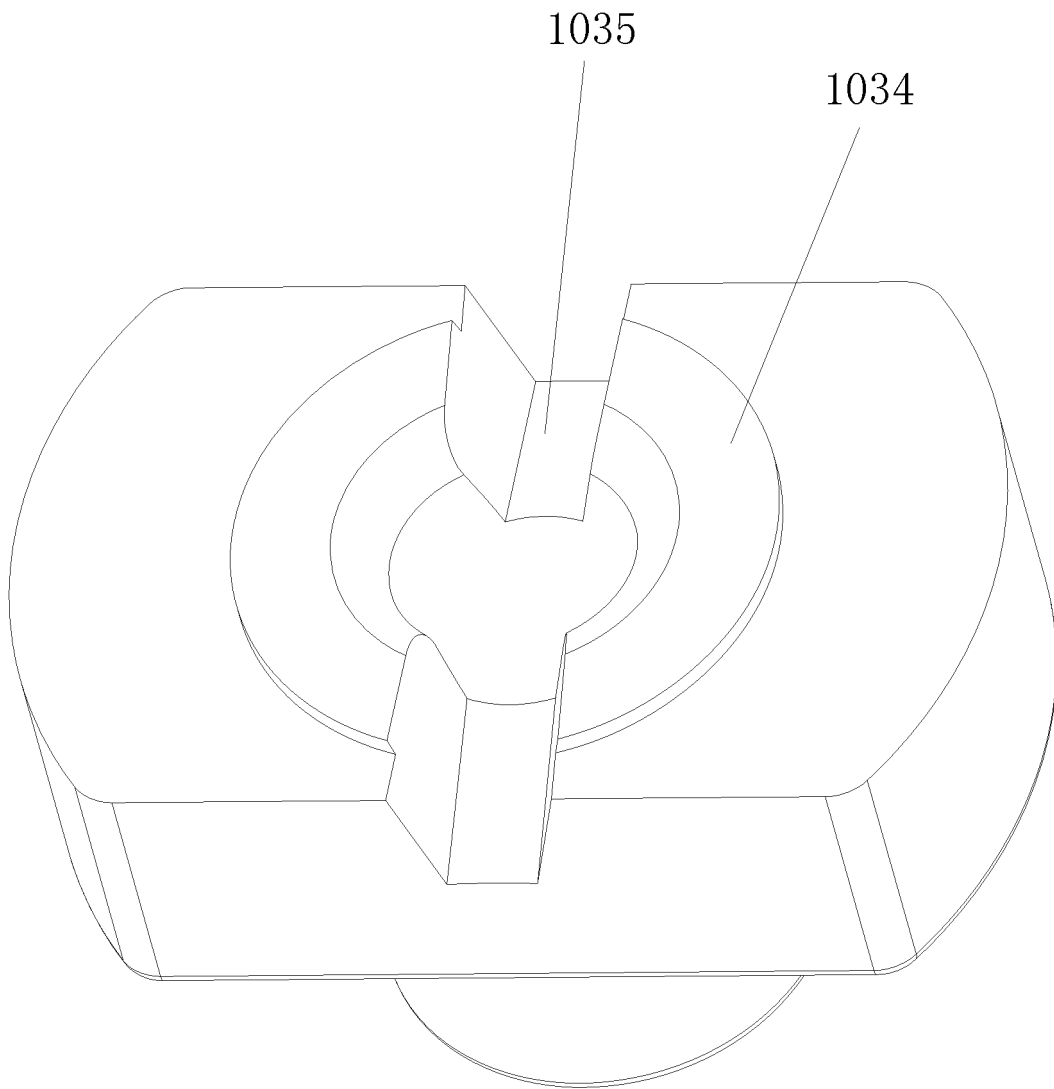


FIG. 9

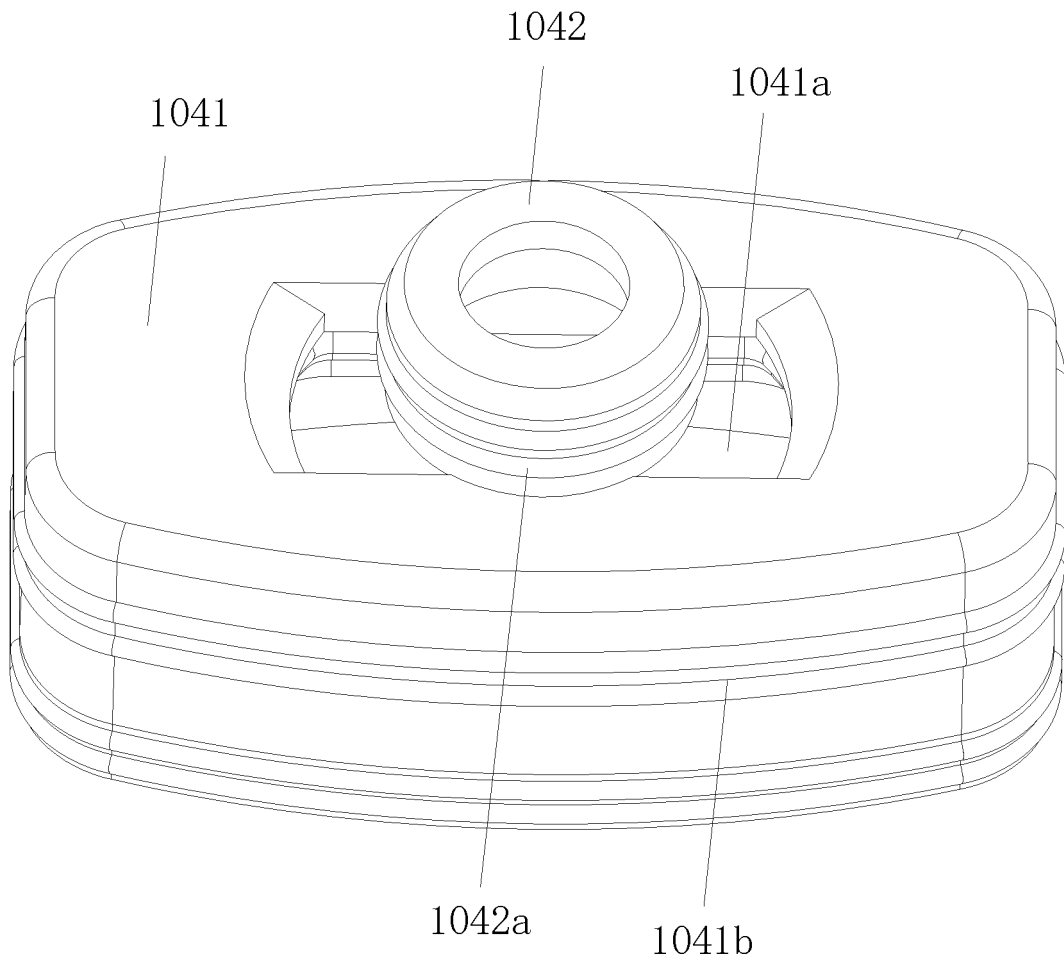


FIG. 10

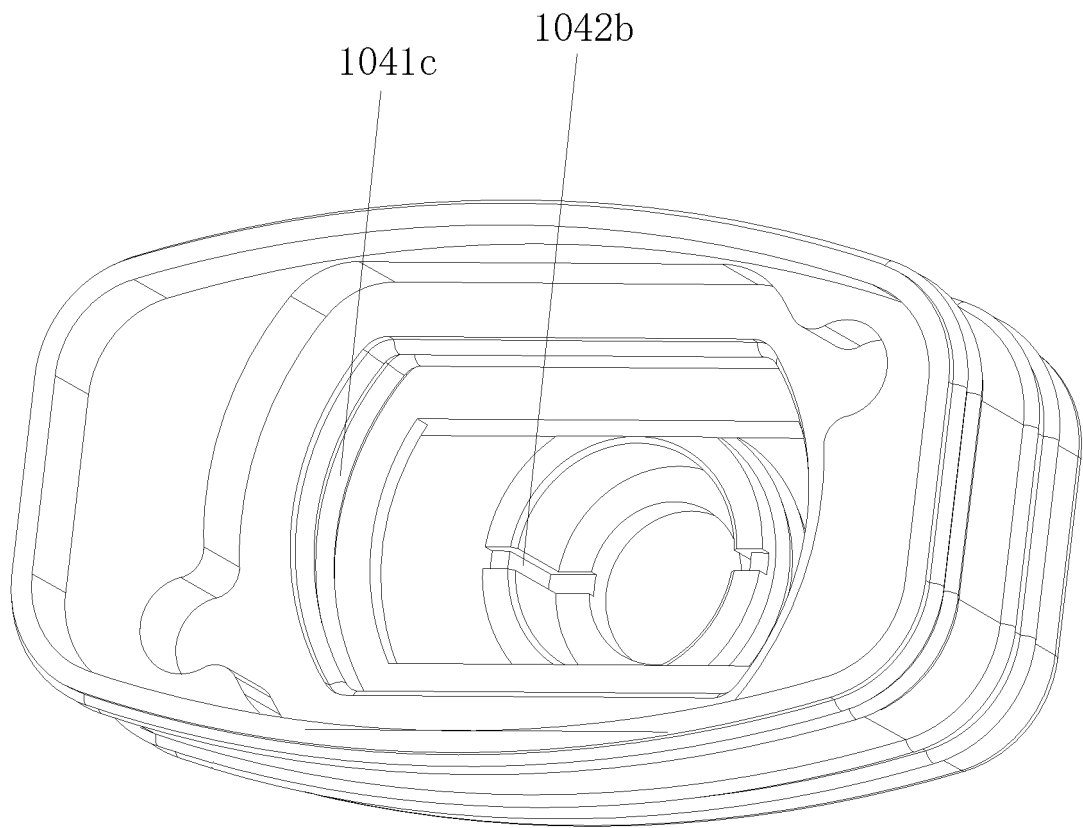


FIG. 11

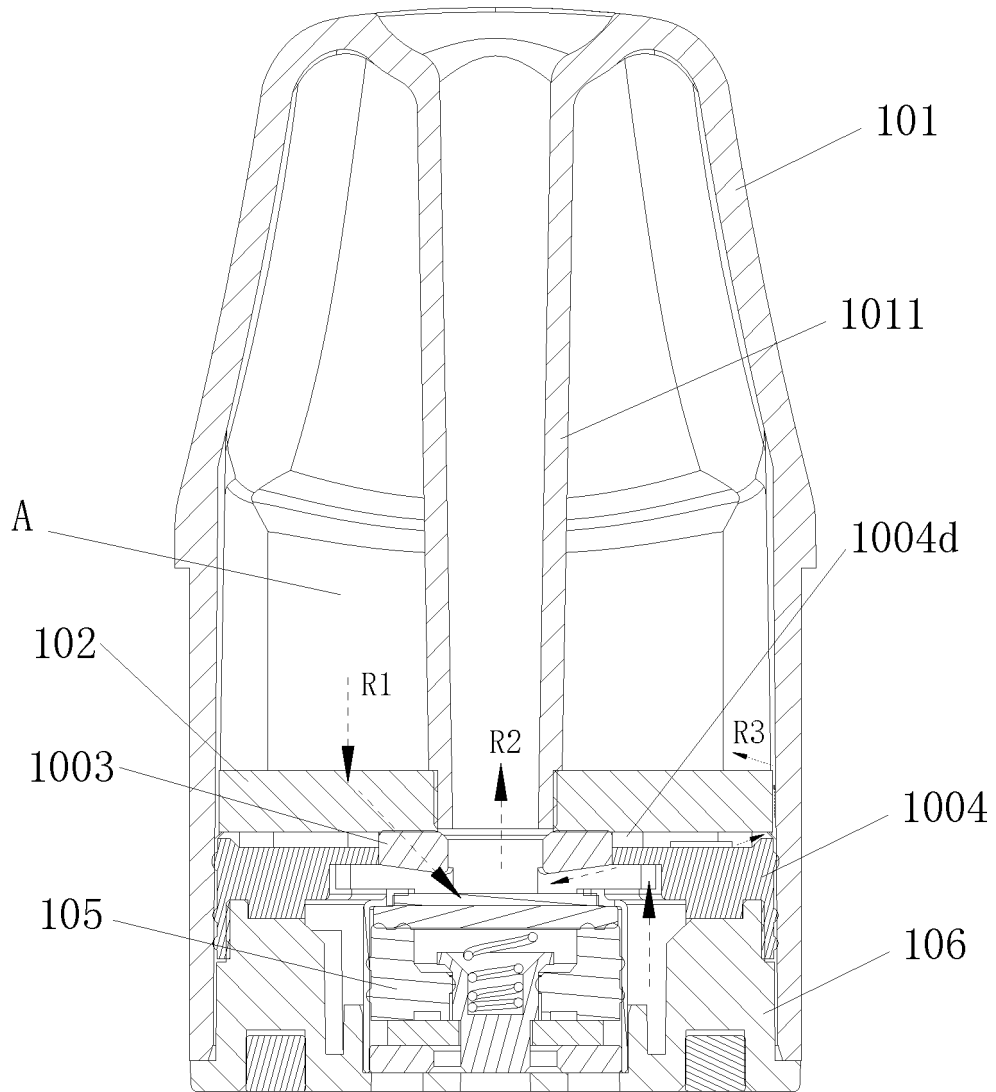


FIG. 12

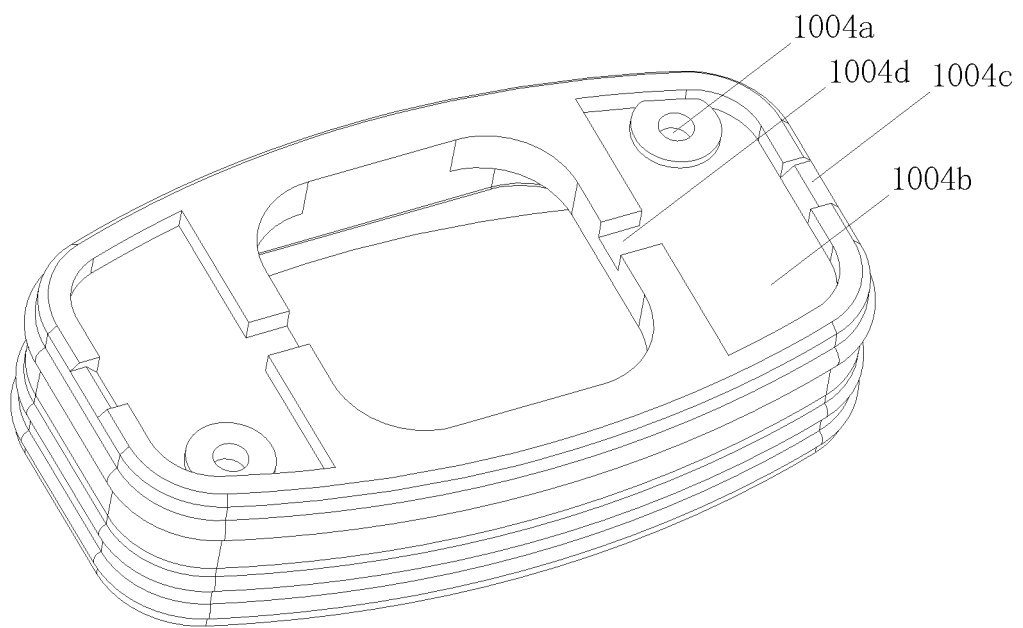


FIG. 13

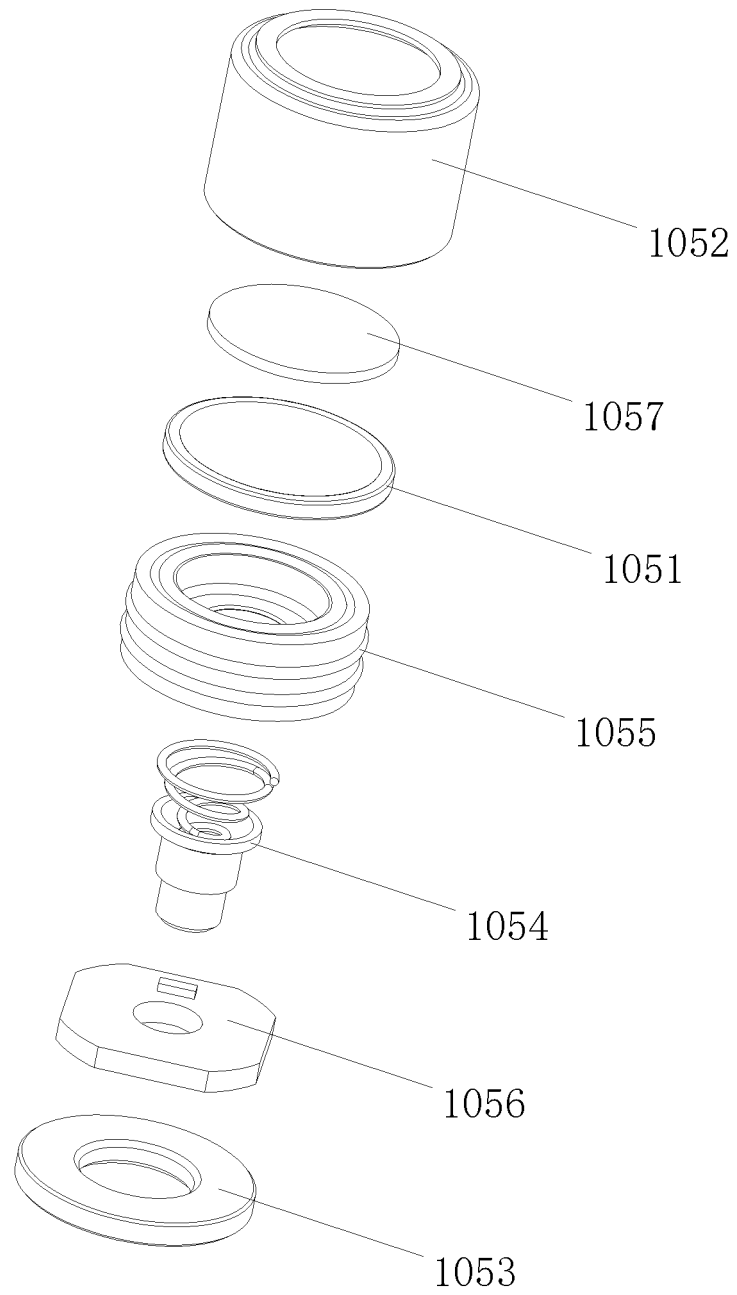


FIG. 14

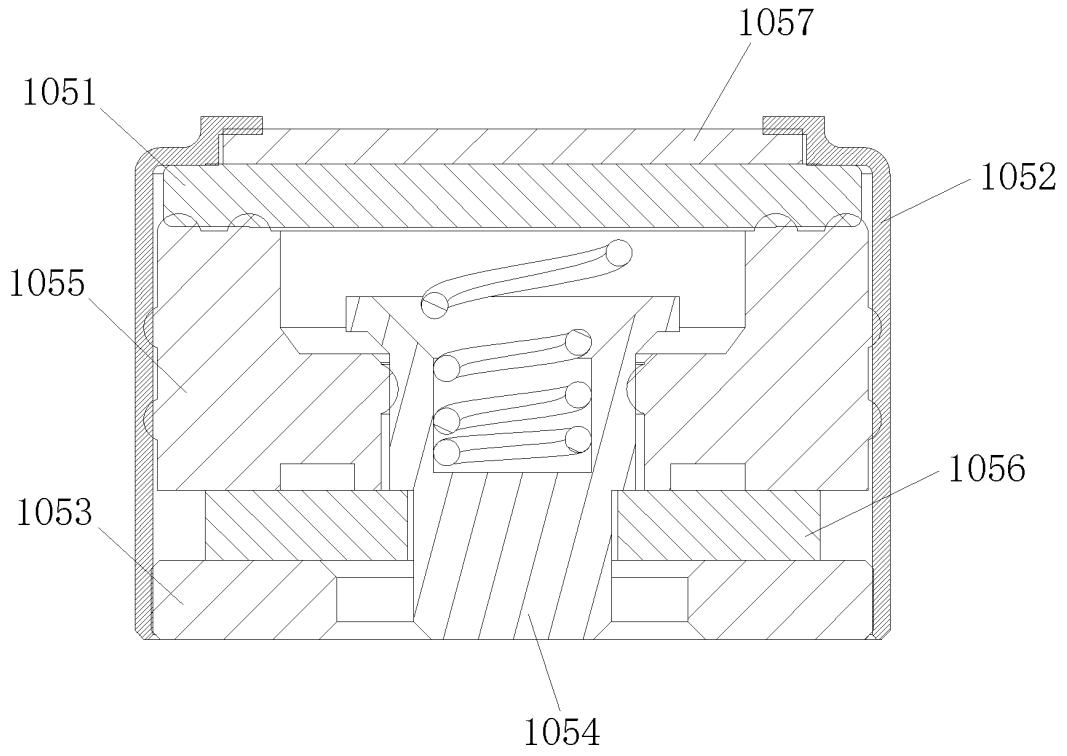


FIG. 15

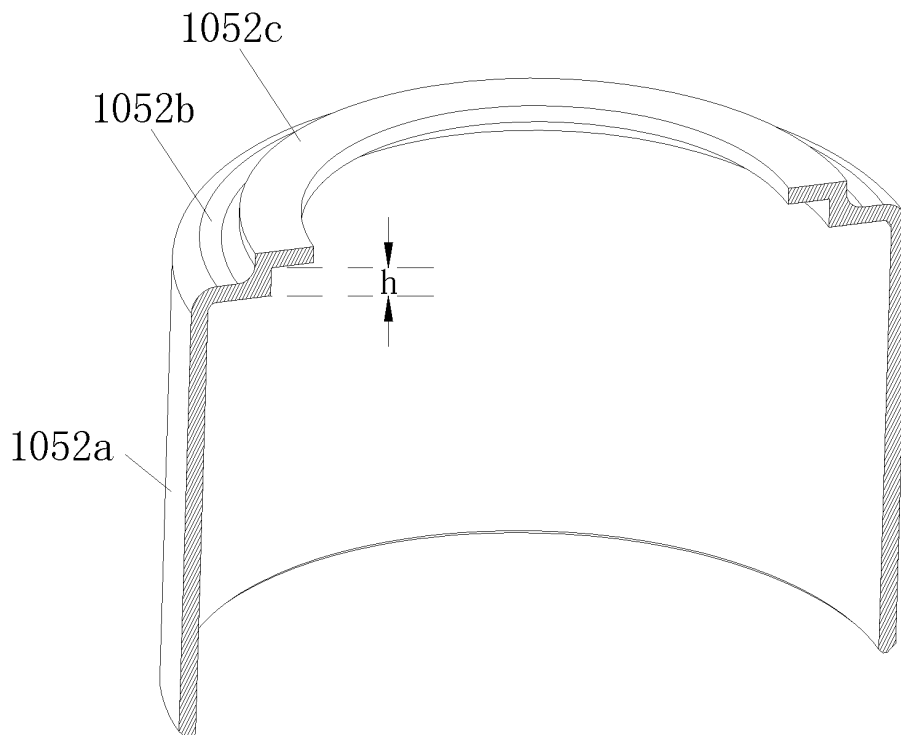


FIG. 16

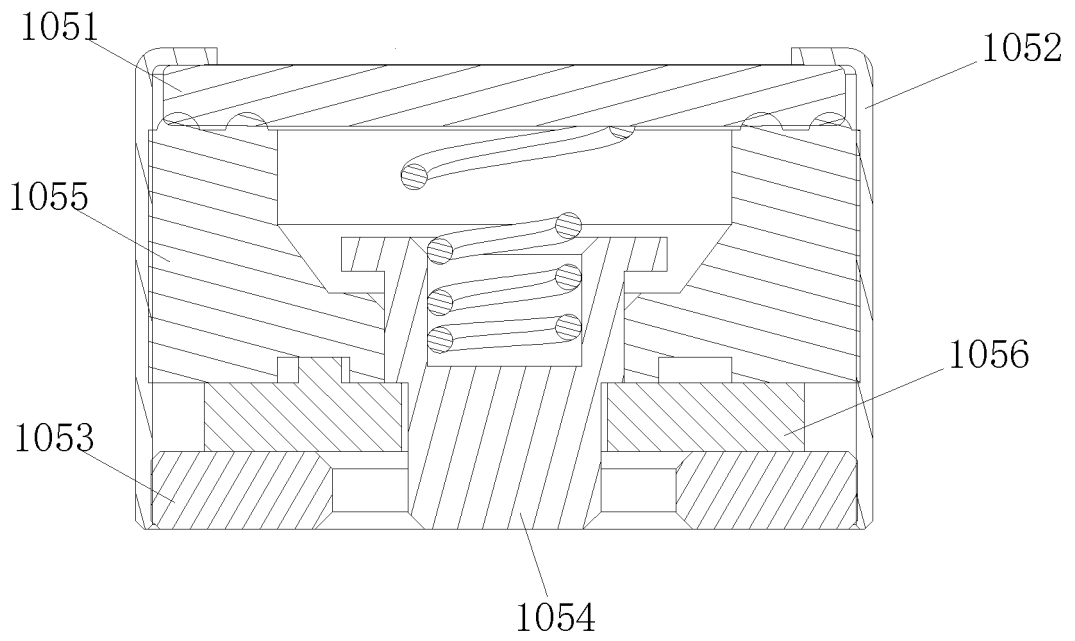


FIG. 17

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/136644

5	A. CLASSIFICATION OF SUBJECT MATTER A24F40/10(2020.01)i;A24F40/42(2020.01)i;A24F40/46(2020.01)i;A24F40/50(2020.01)i;A24F40/40(2020.01)i	
	According to International Patent Classification (IPC) or to both national classification and IPC	
10	B. FIELDS SEARCHED	
	Minimum documentation searched (classification system followed by classification symbols) A24F	
	Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched	
15	Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) CNTXT, ENTXT, VEN, ENTXT: 雾化, 加热, 板, 导液, 导油, 多孔, 凹, 槽, 缓冲, 缓存, 存, 储, 油, 液, 基质, heat+, atomiz+, plate?, sheet?, board?, drain+, guid+, porous, hole?, groove?, concave, slot?, suffer, keep+, stort+, oil, liquid	
20	C. DOCUMENTS CONSIDERED TO BE RELEVANT	
	Category*	Citation of document, with indication, where appropriate, of the relevant passages
		Relevant to claim No.
	PX	CN 216983568 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 19 July 2022 (2022-07-19) description, paragraphs 53-120, and figures 1-17
25	X	CN 205962833 U (CHINA TOBACCO HUNAN INDUSTRIAL CO., LTD.) 22 February 2017 (2017-02-22) description, paragraphs 22-44, and figures 1-7
	X	CN 105559151 A (CHINA TOBACCO HUNAN INDUSTRIAL CO., LTD.) 11 May 2016 (2016-05-11) description, paragraphs 22-40, and figures 1-10
30	X	CN 212911671 U (CHANGZHOU PATENT ELECTRONIC TECHNOLOGY CO., LTD.) 09 April 2021 (2021-04-09) description, paragraphs 34-80, and figures 1-9
35	A	CN 109622259 A (SHENZHEN HUACHENGDA PRECISION INDUSTRY CO., LTD.) 16 April 2019 (2019-04-16) entire document
	<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.	
40	* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "D" document cited by the applicant in the international application "E" earlier application or patent but published on or after the international filing date "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	"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 "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 "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 "&" document member of the same patent family
	Date of the actual completion of the international search 31 January 2023	Date of mailing of the international search report 13 February 2023
50	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 Facsimile No. (86-10)62019451	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/136644

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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 214594168 U (SHENZHEN SMOORE TECHNOLOGY LTD.) 05 November 2021 (2021-11-05) entire document	1-26
A	US 2020085108 A1 (SHENZHEN SMOORE TECHNOLOGY LTD.) 19 March 2020 (2020-03-19) entire document	1-26
A	US 2021030066 A1 (SHENZHEN SMOORE TECHNOLOGY LTD.) 04 February 2021 (2021-02-04) entire document	1-26
A	US 2021112858 A1 (CHINA TOBACCO HUNAN INDUSTRIAL CO., LTD.) 22 April 2021 (2021-04-22) entire document	1-26

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2022/136644

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