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

(57) The present application provides an atomization assembly, an atomizer, and an atomizing device, relates to the technical field of atomizing devices. The atomization assembly includes a heating element, a cotton-wrapped layer, and a support member. The heating element is provided with a first pin and a second pin, one or more cotton-wrapped layers are provided and are sleeved on an outer side of the heating element along a radial direction of the atomization assembly, and the support member is sleeved on an outer side of the cotton-wrapped layer, a material of the support member is a corrosion-resistant material to prevent the support member from chemically reacting with an aerosol matrix in an atomizer. By configuring the support member in the atomizing core to be made of a corrosion-resistant material that prevents chemical reactions with the aerosol matrix, which can minimize the presence of heavy metals in the aerosol generated by the atomization assembly and prevent the presence of heavy metals in the aerosol from affecting its taste, thereby improving the safety of the atomizer.

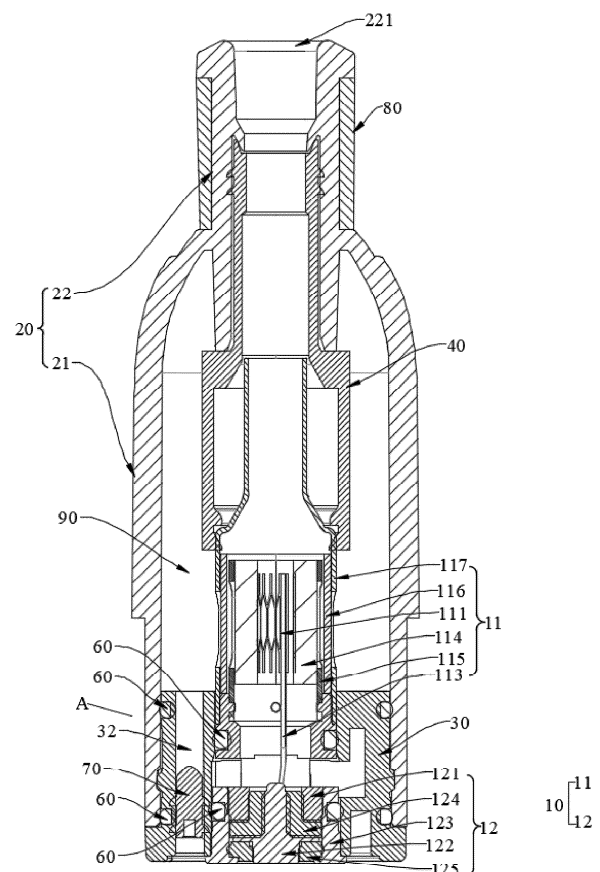


FIG. 3

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Description

TECHNICAL FIELD

[0001] The present application relates to the technical field of atomizing devices, and more particularly to an atomization assembly, an atomizer, and an atomizing device.

BACKGROUND

[0002] The atomizing devices are devices used to heat an aerosol matrix to atomize the matrix and form an aerosol. An atomizing device includes an atomization assembly, which operates by heating a heating element within the atomization assembly to heat the aerosol matrix. In existing atomization assemblies, the atomizing core outer cover and the inner bracket are made of brass. The outer peripheral surfaces of the atomizing core outer cover and the inner bracket are electroplated with a protective layer. However, the protective layer typically contains micropores, through which the aerosol matrix penetrates and chemically reacts with the brass, resulting in the inclusion of heavy metals in the aerosol of the atomizing device.

SUMMARY

[0003] The embodiments of the present application provide an atomization assembly, an atomizer, and an atomizing device to address the technical problem in the prior art where the atomizing core outer cover and the inner bracket in the atomization assembly are made of a brass, which may result in the inclusion of heavy metals in the aerosol of the atomizing device.

[0004] In order to achieve the above objectives, the present application adopts the following technical solutions:

In a first aspect, the present application provides an atomization assembly, including:

a heating element, and the heating element is provided with a first pin and a second pin;
a cotton-wrapped layer, and one or more cotton-wrapped layers are provided and are sleeved on an outer side of the heating element along a radial direction of the atomization assembly; and
a support member, and the support member is sleeved on an outer side of the cotton-wrapped layer, a material of the support member is a corrosion-resistant material to prevent the support member from chemically reacting with an aerosol matrix in an atomizer.

[0005] In one embodiment, the material of the support member is a stainless steel material, and a passivation layer is formed on an outer surface of the support member; and/or,

In one embodiment, the support member is a stamped member.

[0006] In one embodiment, two cotton-wrapped layers are provided, and the two cotton-wrapped layers are respectively an inner wrapped cotton and an outer wrapped cotton; two support members are provided, and the two support members are respectively an inner bracket and an outer cover; the inner wrapped cotton, the inner bracket, the outer wrapped cotton, and the outer cover are sequentially arranged from an inside to an outside; and the heating element is arranged on an inner side of the inner wrapped cotton.

[0007] In one embodiment, the atomization assembly further includes an atomization bracket, a first electrode portion, and a second electrode portion, wherein the atomization bracket is arranged on a side of the outer cover along the axial direction, and the second electrode portion is sleeved on an outer periphery of the atomization bracket, and a mounting hole is formed in the atomization bracket, and the first electrode portion is mounted in the mounting hole, an end of the first pin is in contact with the first electrode portion, and an end of the second pin is squeezed between the atomization bracket and the second electrode portion.

[0008] In one embodiment, the atomization bracket is injection molded on the inner bracket.

[0009] In one embodiment, a side avoidance groove is provided on an outer peripheral surface of the atomization bracket and/or on an inner side surface of the second electrode portion, and an end of the second pin is located in the side avoidance groove.

[0010] In one embodiment, the atomization assembly further includes a first insulating member, the first insulating member is inserted into the mounting hole, the first electrode portion is inserted into the first insulating member, and an end of the first pin is squeezed between the first insulating member and the first electrode portion.

[0011] In one embodiment, the second pin includes a first section, a second section, and a third section; the third section is located in the side avoidance groove, the second section is located on a side of the atomization bracket away from the outer cover, an end of the second section is connected to the third section, another end of the second section is connected to an end of the first section extending between the first insulating member and the atomization bracket, and another end of the first section is connected to the heating element.

[0012] In one embodiment, an end avoidance groove is provided on an end surface of the atomization bracket away from the outer cover, and the second section is located at the end avoidance groove.

[0013] In one embodiment, the first pin includes a pin body portion and a pin bending portion, an end of the pin body portion is connected to the heating element, and another end of the pin body portion is connected to the pin bending portion, and the pin bending

portion is located on a side of the first insulating member away from the outer cover.

[0014] In one embodiment, the first electrode portion includes an electrode body and an electrode connection portion, and the electrode connection portion is connected to a circumferential side surface of the electrode body; the atomization assembly further includes a second insulating member, the second insulating member and the first insulating member are arranged on two sides of the electrode connection portion along an axis direction of the electrode body, and the two ends of the electrode body are respectively inserted into the first insulating member and the second insulating member; and the electrode connection portion is provided with an avoidance notch, and the pin bending portion is located in the avoidance notch and is limited between the first insulating member and the second insulating member.

[0015] In a second aspect, the present application provides an atomizer, which includes a support base, a liquid storage tank, and the atomization assembly; an end of the atomization assembly is fixed in the liquid storage tank via the support base.

[0016] In one embodiment, the atomizer further includes a protective sleeve and a connecting rod, the protective sleeve is fixedly connected to an end of the support base, and the protective sleeve covers the atomization assembly, and an end of the protective sleeve away from the support base is sealed with the liquid storage tank, and the connecting rod is connected to an end of the protective sleeve away from the support base, and the connecting rod extends out through a nozzle on the liquid storage tank; when a force is applied to the connecting rod in a direction away from the support base, the protective sleeve is capable of separating from the support base and the protective sleeve is capable of being pulled to a target position.

[0017] In one embodiment, the support base and the protective sleeve are an integrally formed structure; and/or the protective sleeve and the connecting rod are an integrally formed structure.

[0018] In one embodiment, the protective sleeve includes a first sleeve, a second sleeve, and a connecting sleeve, the first sleeve is sleeved on the support base, the connecting sleeve is located between the first sleeve and the second sleeve, the connecting sleeve connects the first sleeve and the second sleeve, and the connecting sleeve is a thin-walled structure to form a breakable portion.

[0019] In one embodiment, the first sleeve includes an end surface portion and a circumferential portion, the end surface portion is arranged at an end of the support base close to the second sleeve, the end surface portion is connected to the connecting sleeve, the circumferential portion is arranged on an outer peripheral surface of the support base, the end surface portion is connected to the circumferential portion, and an outer peripheral surface of the circumferential portion is

formed with a first annular protrusion for sealingly cooperating with the liquid storage tank.

[0020] In one embodiment, an easy-to-cut portion is formed on the protective sleeve, the easy-to-cut portion is connected to an outer peripheral surface of the connecting rod, and a thickness of the connecting rod connected to the easy-to-cut portion is less than a predetermined thickness value along an axial direction of the connecting rod.

[0021] In one embodiment, an end of the connecting rod is inserted into the protective sleeve, and the end of the connecting rod located in the protective sleeve is formed with a first region and a second region, the first region and the second region are arranged in sequence along a direction in which the connecting rod extends into the protective sleeve, the first region is connected to an inner side surface of the protective sleeve, a gap is existed between the second region and the inner side surface of the protective sleeve, and a portion of the protective sleeve connected to the first region forms the easy-to-cut portion.

[0022] In one embodiment, a cutting portion is formed on an inner side surface of the liquid storage tank, and when the protective sleeve is in the target position and applies a force to the connecting rod in a direction away from the support base, and the easy-to-cut portion is capable of being cut off by the cutting portion.

[0023] In one embodiment, the cutting portion includes a first cutting surface and a second cutting surface; the first cutting surface and the second cutting surface are connected to form a cutting end, the first cutting surface is closer to the connecting rod relative to the second cutting surface, and the second cutting surface is inclined in a direction away from the connecting rod from a direction closer to the cutting end to a direction away from the cutting end.

[0024] In one embodiment, the liquid storage tank includes a liquid storage tank body and a nozzle portion, an end of the nozzle portion extends from the liquid storage tank body and the nozzle portion and the liquid storage tank body are connected, an end of the nozzle portion located outside the liquid storage tank body forms a nozzle opening, an end of the protective sleeve away from the support base extends into the nozzle portion and seals with an inner side surface of the nozzle portion, and the inner side surface of the nozzle portion is formed with the cutting portion.

[0025] In one embodiment, materials of the protective sleeve and the connecting rod are a silicone material; and/or a material of the support base is a plastic material.

[0026] In one embodiment, a liquid injection hole is provided on the support base, the liquid injection hole is communicated with an end opening on the protective sleeve, and a plug is provided in the liquid injection hole; and/or, the support base includes a first base portion, a second base portion, and a base connecting

plate; the first base portion and the second base portion are arranged at intervals along a distribution direction of the support base and the protective sleeve, more than one base connecting plates are provided and the base connecting plates are connected with the first base portion and the second base portion, and the first base portion is provided with a base air inlet hole.

[0027] In a second aspect, the present application provides an atomizing device, including a power supply portion and the atomizer described in any one of above technical schemes, and an end of the atomizer is connected to the power supply portion.

[0028] The beneficial effect of the present application is that the atomization assembly of the embodiments of the present application, by configuring the support member in the atomizing core to be made of a corrosion-resistant material that prevents chemical reactions with the aerosol matrix, which can minimize the presence of heavy metals in the aerosol generated by the atomization assembly and prevent the presence of heavy metals in the aerosol from affecting its taste, thereby improving the safety of the atomizer.

BRIEF DESCRIPTION OF THE DRAWINGS

[0029] In order to more clearly illustrate the technical solutions in the embodiments of the present application, the following briefly describes the figures required for use in the embodiments or prior art descriptions. Obviously, the figures described below represent only some embodiments of the present application. Those skilled in the art can derive other figures based on these figures without inventive effort.

FIG. 1 is a schematic structural diagram of an atomizer provided in an embodiment of the present application;

FIG. 2 is an exploded schematic diagram of an atomizer provided in an embodiment of the present application;

FIG. 3 is a cross-sectional schematic diagram of an atomizer provided in an embodiment of the present application;

FIG. 4 is a schematic structural diagram of an atomization assembly provided in an embodiment of the present application;

FIG. 5 is a cross-sectional schematic diagram of an atomizing core provided in an embodiment of the present application;

FIG. 6 is an exploded schematic diagram of an atomization assembly provided in an embodiment of the present application;

FIG. 7 is a cross-sectional schematic diagram of an atomization assembly provided in an embodiment of the present application;

FIG. 8 is a first schematic structural diagram of a heating element, a first pin, and a second pin provided in an embodiment of the present application;

FIG. 9 is a schematic structural diagram of the atomization bracket provided in an embodiment of the present application;

FIG. 10 is a second exploded schematic diagram of an atomization assembly provided in an embodiment of the present application;

FIG. 11 is a partial enlarged view of a part A in FIG. 10;

FIG. 12 is an exploded schematic diagram of an atomization assembly provided in an embodiment of the present application;

FIG. 13 is a partial enlarged view of a part B in FIG. 12;

FIG. 14 is a cross-sectional schematic diagram of an atomization assembly provided in an embodiment of the present application;

FIG. 15 is a second schematic diagram of a heating element, a first pin, and a second pin provided in an embodiment of the present application;

FIG. 16 is a schematic structural diagram of a first electrode portion provided in an embodiment of the present application;

FIG. 17 is a schematic structural diagram of an atomizer provided in an embodiment of the present application;

FIG. 18 is an exploded schematic diagram of an atomizer provided in an embodiment of the present application;

FIG. 19 is a first cross-sectional view of an atomizer provided in an embodiment of the present application;

FIG. 20 is a second cross-sectional view of an atomizer provided in an embodiment of the present application;

FIG. 21 is a third cross-sectional view of an atomizer provided in an embodiment of the present application;

FIG. 22 is a partial enlarged view of a part C in FIG. 19;

FIG. 23 is a partial enlarged view of a part D in FIG. 20;

FIG. 24 is a first schematic diagram of a support base, a protective cover, and a connecting rod provided in an embodiment of the present application;

FIG. 25 is a second schematic diagram of a support base, a protective cover, and a connecting rod provided in an embodiment of the present application;

FIG. 26 is an exploded schematic diagram of a support base, a protective cover, and a connecting rod provided in an embodiment of the present application;

FIG. 27 is a cross-sectional structural diagram of an atomizer in an embodiment;

FIG. 28 is an exploded structural diagram of an atomizer in an embodiment;

FIG. 29 is a schematic diagram of a temperature field distribution of the heating element in a con-

ventional solution;

FIG. 30 is a schematic diagram of a temperature field distribution of the heating element in an embodiment;

FIG. 31 is a schematic structural diagram of a heating element at one angle in an embodiment;

FIG. 32 is a schematic structural diagram of the structure of the heating element at another angle in an embodiment;

FIG. 33 is a schematic structural diagram of a heating element with a gradual change in physical structural parameters in an embodiment;

FIG. 34 is a first schematic structural diagram of an atomizing device provided in an embodiment of the present application; and

FIG. 35 is a second schematic structural diagram of an atomizing device provided in an embodiment of the present application.

[0030] Reference numerals in the FIGS. are as follows:

1000 -atomizing device;
 100 -atomizer; 200 -power Supply;
 10 - atomization assembly; 20 -liquid storage tank;
 30 -support base; 40 -protective cover; 50 -connecting rod; 60 -sealing ring; 70 -plug; 80 -nozzle cover; 90 -placement chamber; 110 - support portion; 101 -support assembly; 102 -conductive electrode;
 11 - atomizing core; 12 -atomization base;
 111 -heating element; 112 -first pin; 113 -second pin; 114 -inner wrapped cotton; 115 -inner bracket; 116 -outer wrapped cotton; 117 -outer cover; 118 -cotton-wrapped layer; 119 -support member; 1110 -heating body; 1111 -liquid storage member;
 11111 -heating area; 11112 -heat dissipation area; 11113 -connection area; 11114 - conductive area;
 1121 - pin body portion; 1122 - pin bending portion;
 1131 - first section; 1132 -second section; 1133 - third section;
 1151 -inner bracket opening; 1171 -outer cover opening; 1172 -first straight section; 1173 - middle connecting section; 1174 - second straight section;
 121 - atomization bracket; 122 -first electrode portion; 123 -second electrode portion; 124 - first insulating member; 125 - second insulating member;
 1211 - mounting hole; 1212 - communication hole; 1213 - side avoidance groove; 1214 -end avoidance groove; 1215 -first bracket section; 1216 - second bracket section; 1217 -third bracket section; 1218 -first limiting end surface; 1219 -second limiting end surface; 12110 -bracket sealing ring groove;
 12171 -insertion post;
 1221 -electrode body; 1222 -electrode connection portion; 1223 -avoidance notch; 1224 - recessed side surface;

12211 -electrode first section; 12212 - electrode second section;
 1231 -opening; 1232 - conductive inner end surface; 1233 -electrode portion sealing ring groove;
 1241 -insulating axial portion; 1242 - insulating circumferential portion;
 21 -liquid storage tank body; 22 - nozzle portion; 23 -cutting portion;
 211 -positioning hole; 221 - nozzle opening; 222 -atomizing channel;
 231 -cutting end; 232 -first cutting surface; 233 -second cutting surface;
 31 -base air inlet hole; 32 -liquid injection hole; 33 -positioning boss; 34 -snap fastener; 35 -first base portion; 36 -second base portion; 37 -base connecting plate; 38 - assembly hole; 39 -groove; 310 -air inlet boss;
 351 -first sealing ring groove; 352 -step surface;
 41 -first sleeve body; 42 -second sleeve body; 43 -connecting sleeve; 44 -broken protective sleeve; 45 -gap;
 411 - end surface portion; 412 - circumferential portion; 413 -first annular protrusion;
 4111 -end opening; 4121 -protrusion;
 421 -upper sleeve body portion; 422 -lower sleeve body portion; 423 -second annular protrusion; 424 -third annular protrusion; 425 -easy-to-cut portion; 426 -mating side surface;
 51 -mating section;
 511 - first region; 512 - second region;
 1011 -first seal member; 1012 -support base bracket; 1013 -first seal member; 1014 -liquid guide hole; 1015 -airflow hole; 1016 -electrode hole;
 W, width; H, thickness; D, chamfer diameter; A, aerosol flow path.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0031] In order to further clarify the objectives, technical solutions, and advantages of the present application, embodiments of the present application will be described in further detail below with reference to the accompanying drawings. The embodiments described with reference to the accompanying drawings are illustrative and intended to explain the present application, and should not be construed as limiting the present application.

[0032] In the description of the present application, it should be understood that terms such as "length," "width," "thickness," "top," "bottom," "inside," "outside," "upper," "lower," "left," and "right" indicate positions or locations based on the positions or locations shown in the accompanying drawings. These terms are intended solely to facilitate description and simplify the description of the present application, and do not indicate or imply that the devices or components referred to must have a specific orientation, be constructed, or operate in a specific orientation. Therefore, they should not be

construed as limiting the present application.

[0033] In order to facilitate the clear description of the technical solutions of the present application, terms such as "first" and "second" are used to distinguish between identical or similar items with substantially the same function or effect. Those skilled in the art will understand that terms such as "first" and "second" do not limit the quantity or order of execution, and do not necessarily imply differences.

[0034] In the present application, unless otherwise specified or limited, terms such as "connected" and "connecting" should be interpreted broadly. For example, they can refer to fixed, removable, or integrated connections; mechanical or electrical connections; direct or indirect connections through an intermediate medium; and internal connectivity between two components or interactions between two components. Those skilled in the art will understand the specific meanings of these terms in the present application based on the specific circumstances.

[0035] In the present application, "and/or" is simply a term used to describe the relationship between associated objects, indicating that three possible relationships exist. For example, "A and/or B" can mean: A exists alone, A and B exist simultaneously, or B exists alone. Furthermore, the character "/" in this document generally indicates that the associated objects are in an "or" relationship.

[0036] It should be noted that, in the present application, words such as "in one embodiment," "exemplarily," and "for example" are used to indicate examples, illustrations, or explanations. Any embodiment or design described in the present application as "in one embodiment," "exemplarily," or "for example" should not be construed as being preferred or advantageous over other embodiments or designs. Rather, the use of words such as "in one embodiment," "exemplarily," and "for example" is intended to present the relevant concepts in a concrete manner.

[0037] It should be noted that the structure of the atomizer 100 provided in some embodiments of the present application will be described below with reference to FIGS. 1-26.

[0038] As shown in FIGS. 1-3, FIG. 1 is a schematic structural diagram of the atomizer 100 provided in an embodiment of the present application, FIG. 2 is an exploded diagram of the atomizer 100 provided in an embodiment of the present application, and FIG. 3 is a schematic cross-sectional view of the atomizer 100 provided in an embodiment of the present application.

[0039] As shown in FIG. 1, an embodiment of the present application provides an atomizer 100 including a support base 30, a liquid storage tank 20, and an atomization assembly 10. The liquid storage tank 20 is hollow. The support base 30 is inserted into the liquid storage tank 20 from one end and is sealed therewith (see FIG. 2). A nozzle opening 221 is formed on the side of the liquid storage tank 20 away from the support

base 30.

[0040] As shown in FIG. 3, which schematically illustrates the atomization assembly 10 disposed within the liquid storage tank 20. As shown in FIG. 2, the support base 30 is provided with an assembly hole 38 through which the atomization assembly 10 can be inserted into the support base 30. An end of the atomization assembly 10 is fixed within the liquid storage tank 20 by the support base 30. The other end of the atomization assembly 10 is sealed against the inner surface of the liquid storage tank 20 by a protective cover 40, such that a placement chamber 90 for accommodating the aerosol substrate between the atomization assembly 10 and the liquid storage tank 20 is formed. As shown in FIG. 3, which schematically illustrates the placement chamber 90. When the atomization assembly 10 is in operation, it heats the aerosol matrix that has permeated into the atomization assembly 10, causing the aerosol matrix to evaporate. When a user inhales through the nozzle 221 of the liquid storage tank 20, air flows through the atomization assembly 10. The evaporated aerosol matrix condenses under the action of the airflow, forming mist, which then flows toward the nozzle 221.

[0041] It should be noted that the term "aerosol" refers to a dispersion of solid or liquid particles in a gas. As used herein, "aerosol" generally refers to a substance that has been vaporized, atomized, formed into a spray or jet, or otherwise converted from a solid or liquid form into an inhalable form containing suspended solid or liquid drug particles.

[0042] The aerosol matrix is any suitable compound or mixture of compounds that facilitates the formation of an aerosol during use. Aerosol matrix include, but are not limited to, polyols such as triethylene glycol, 1,3-butylene glycol, and glycerol; esters of polyols such as glycerol mono-, di-, or triacetate; and aliphatic esters of mono-, di-, or polycarboxylic acids such as dimethyl dodecanedioate and dimethyl tetradecanoic acid. Nicotine may also be included. Alternatively, glycerol (also known as glycerol), which has a higher boiling point than nicotine, may be included. Propylene glycol or plant-based materials may also be included.

[0043] As shown in FIGS. 2 and 3, the support base 30 is provided with a liquid injection hole 32 connected to the placement chamber 90. A plug 70 is disposed within the liquid injection hole 32. The aerosol matrix can be injected into the placement chamber 90 through the liquid injection hole 32. Once the aerosol matrix in the placement chamber 90 is fully injected, the plug 70 is inserted into the liquid injection hole 32 to seal the aerosol matrix within the placement chamber 90.

[0044] As shown in FIG. 2, the support base 30 is provided with a base air inlet hole 31. When a user inhales through the nozzle 221 of the liquid storage tank 20, air can flow through the base air inlet hole 31 on the support base 30 to the atomization assembly 10.

[0045] In one example, as shown in FIG. 2, a snap

fastener 34 is formed on the support base 30. An engagement groove is provided on the inner side surface of the liquid storage tank 20. The snap fastener 34 is located in the engagement groove, allowing the support base 30 to be attached to the liquid storage tank 20.

[0046] In one example, as shown in FIG. 2, a positioning boss 33 is formed on the support base 30. A positioning hole 211 is provided on the end surface of the liquid storage tank 20. When the support base 30 is mounted on the liquid storage tank 20, the positioning boss 33 is located in the positioning hole 211.

[0047] In one example, as shown in FIG. 3, the liquid storage tank 20 includes a liquid storage tank body 21 and a nozzle 22. One end of the nozzle portion 22 extends into the liquid storage tank body 21 and is connected to the liquid storage tank body 21. The end of the nozzle portion 22, located outside the liquid storage tank body 21, forms a nozzle opening 221. One end of the protective cover 40 extends into the nozzle portion 22, and the protective cover 40 seals with the nozzle portion 22.

[0048] In one example, as shown in FIG. 3, a nozzle cover 80 is sleeved on the nozzle portion 22 to enhance aesthetics.

[0049] As shown in FIGS. 4-5, FIG. 4 is a schematic structural diagram of the atomization assembly 10 according to an embodiment of the present application, and FIG. 5 is a schematic cross-sectional view of the atomizing core 11 according to an embodiment of the present application.

[0050] The atomization assembly 10 provided in the embodiment of the present application includes an atomizing core 11, which includes a heating element 111, a cotton-wrapped layer 118, and a support member 119.

[0051] As shown in FIG. 5, the heating element 111 is located inside the atomization assembly 10 and is provided with a first pin 112 and a second pin 113. When current flows through the heating element 111, it generates heat, which in turn heats the aerosol matrix that has penetrated the atomizing core 11.

[0052] The cotton-wrapped layer 118 is cylindrical, and there are one or more cotton-wrapped layers 118, which are disposed radially around the outer side of the heating element 111. For example, in one example, one cotton-wrapped layer 118 is provided, and the heating element 111 is disposed on the inner surface of the heating element 111. Alternatively, in other examples, two or more cotton-wrapped layers 118 are provided, each disposed sequentially along the radial direction of the atomization assembly 10. In one specific example, there are two cotton-wrapped layers 118, one for an inner wrapped cotton 114 and the another for an outer wrapped cotton 116. As shown in FIG. 5, which shows the inner wrapped cotton 114 and the outer wrapped cotton 116.

[0053] In one example, as shown in FIG. 5, a thickness of the outer wrapped cotton 116 along an radial direction is less than a thickness of the inner wrapped

cotton 114 along the radial direction.

[0054] In the embodiment of the present application, one or more support members 119 are provided, each of which is disposed outside the corresponding cotton-wrapped layer 118. When there is only one support member 119, the support member 119 forms the outermost layer of the atomizing core 11.

[0055] In one example, the number of support members 119 matches the number of cotton-wrapped layers 118, and the support member 119 is disposed outside the corresponding cotton-wrapped layer 118. For example, there are two support members 119, one for the inner bracket 115 and the another for the outer cover 117. The inner bracket 115 is positioned over the outer side of the inner wrapped cotton 114, and the another for the outer cover 117 is positioned over the outer side of the outer wrapped cotton 116. That is, the inner wrapped cotton 114, the inner bracket 115, the outer wrapped cotton 116, and the outer cover 117 are positioned sequentially from the inside to outside. The heating element 111 is positioned on the inner side surface of the inner wrapped cotton 114.

[0056] As shown in FIG. 5, a circumferential side surface of the outer cover 117 is provided with outer cover openings 1171, and a circumferential side surface of the inner bracket 115 is provided with inner bracket openings 1151. The aerosol matrix within the placement chamber can penetrate into the outer wrapped cotton 116 through the outer cover openings 1171. The aerosol matrix on the outer wrapped cotton 116 can penetrate into the inner wrapped cotton 114 through the inner bracket openings 1151. The aerosol matrix that has penetrated into the inner side surface of the inner wrapped cotton 114 can then come into contact with the heating element 111.

[0057] In one example, as shown in FIG. 5, the outer cover 117 includes a first straight section 1172, a middle connecting section 1173, and a second straight section 1174. The first straight section 1172, the middle connecting section 1173, and the second straight section 1174 are sequentially connected. The diameter of the first straight section 1172 is larger than that of the second straight section 1174. The first straight section 1172 is provided with an inner wrapped cotton 114, an inner bracket 115, and an outer wrapped cotton 116.

[0058] In one example, one end of the outer cover 117 is inserted into the support base 30.

[0059] In the embodiment of the present application, the support member 119 is made of a corrosion-resistant material to prevent chemical reactions between the support member 119 and the aerosol matrix. That is, when the atomizing core 111 includes two or more support members 119, each support member 119 is made of a corrosion-resistant material. For example, when there are two support members 119, and the two support members 119 serve as the inner bracket 115 and the outer cover 117, respectively, both the inner bracket 115 and the outer cover 117 are made of corrosion-

resistant materials.

[0060] It is worth noting that the corrosion-resistant materials mentioned in the embodiments of the present application refer to materials that do not chemically react with the aerosol matrix, or are difficult to chemically react with the aerosol matrix.

[0061] In existing atomizer assemblies, the atomizing core outer cover and the inner bracket are made of brass. The outer surfaces of the atomizing core outer cover and the inner bracket are electroplated with a protective layer. However, the protective layer often has micropores. The aerosol matrix can penetrate through these micropores and react chemically with the brass, causing heavy metals to be present in the aerosol of the atomizing device 1000.

[0062] In the embodiment of the present application, by making the support member 119 in the atomizing core 11 a corrosion-resistant material that prevents chemical reactions with the aerosol matrix, the presence of heavy metals in the aerosol generated by the atomization assembly can be minimized, preventing the presence of heavy metals in the aerosol from affecting the flavor of the aerosol, thereby improving the safety of the atomizer.

[0063] In one embodiment, the support member 119 is made of stainless steel, and a passivation layer is formed on the outer surface of the support member 119.

[0064] That is, in the embodiment of the present application, the support member 119 is made of corrosion-resistant stainless steel material. Corrosion-resistant stainless steel material refers to stainless steel with excellent resistance to various corrosive environments. Furthermore, by performing a passivation treatment on the support member 119, a passivation layer is formed on the surface of the support member 119. Passivation treatment of stainless steel involves forming a dense, stable passivation film on the stainless steel surface through a chemical reaction, which can improve the stainless steel's corrosion resistance, wear resistance, and other properties.

[0065] It is worth noting that when there are two support members 119 and the two support members 119 are the inner bracket 115 and the outer cover 117 respectively, the materials of the inner bracket 115 and the outer cover 117 are both corrosion-resistant stainless steel materials and a passivation layer is formed on the outer surfaces of the inner bracket 115 and the outer cover 117.

[0066] In one example, the inner bracket 115 and outer cover 117 are made of 316L stainless steel; in other examples, the inner bracket 115 and outer cover 117 are made of 303 stainless steel or 304 stainless steel.

[0067] In one example, the outer cover 117 and inner bracket 115 are die-stamped, meaning they are stamped parts. Die-stamping is a common metalworking process that uses a die and stamping equipment to

apply pressure to a metal sheet, causing it to plastically deform, thereby obtaining a part of the desired shape and size.

[0068] In this embodiment, by making the support member 119 of stainless steel and forming a passivation layer on the outer surface of the support member 119, this prevents chemical reactions between the support member 119 and the aerosol matrix while also reducing the cost of the atomization assembly 10. Furthermore, die-stamping of the outer cover 117 and inner bracket 115 improves molding efficiency, resulting in excellent surface quality and high dimensional accuracy.

[0069] As shown in FIGS. 6-9, FIG. 6 is an exploded schematic diagram of the atomization assembly 10 according to an embodiment of the present application. FIG. 7 is a cross-sectional schematic diagram of the atomization assembly 10 according to an embodiment of the present application. FIG. 8 is a structural schematic diagram of the heating element 111, the first pin 112, and the second pin 113 according to an embodiment of the present application. FIG. 9 is a structural schematic diagram of the atomization bracket 121 according to an embodiment of the present application.

[0070] In one embodiment, as shown in FIGS. 6 and 7, the atomization assembly 10 includes an atomization base 12, which is disposed at one end of the atomizing core 11. The atomization base 12 includes an atomization bracket 121, a first electrode portion 122, and a second electrode portion 123.

[0071] As shown in FIG. 6, the atomization bracket 121 is connected to one end of the atomizing core 11. As shown in FIG. 7, the second electrode portion 123 is sleeved around the outer periphery of the atomization bracket 121. In one example, the second electrode portion 123 is fixed to the atomization bracket 121 in an interference fit.

[0072] As shown in FIG. 7, mounting holes 1211 are formed in the atomization bracket 121. The mounting holes 1211 extend along the axis direction of the atomization bracket 121, extending through both ends of the atomization bracket 121, and one end of the first electrode portion 122 is inserted into the mounting holes 1211.

[0073] As shown in FIG. 6, one or more communication holes 1212 are provided on the circumferential side surface of the atomization bracket 121. For example, two communication holes 1212 are provided on the circumferential side surface of the atomization bracket 121. These communication holes 1212 communicate with the mounting holes 1211 of the atomization bracket 121, which in turn communicate with the base air inlet hole 31 on the support base 30. Air entering through the base air inlet hole 31 can flow into the atomization bracket 121 through the communication holes 1212. Air within the atomization bracket 121 can then flow through the atomizing core 11 to the nozzle opening 221 on the liquid storage tank 20.

[0074] In the embodiment of the present application, the second electrode portion 123 is sleeved around the outer periphery of the atomization bracket 121. In one example, as shown in FIG. 6, the atomization bracket 121 includes a first bracket section 1215. The second electrode portion 123 is cylindrical, and the first bracket section 1215 is inserted into the second electrode portion 123, thereby enabling the second electrode portion 123 to sleeve around the outer periphery of the atomization bracket 121.

[0075] In the embodiment of the present application, the end of the first pin 112 away from the heating element 111 abuts against the first electrode portion 122, that is, one end of the first pin 112 is squeezed against the first electrode portion 122 to prevent poor contact between the first pin 112 and the first electrode portion 122.

[0076] In one example, the first pin 112 is squeezed between the first bracket section 1215 of the atomization bracket 121 and the first electrode portion 122. In another example, as shown in FIG. 7, the atomization base 12 further includes a first insulating member 124, which is inserted into the mounting hole 1211 of the atomization bracket 121 and sleeved outside the first electrode portion 122. The end of the first pin 112 away from the heating element 111 can be squeezed between the first insulating member 124 and the first electrode portion 122.

[0077] In the embodiment of the present application, the end of the second pin 113 away from the heating element 111 is squeezed between the atomization bracket 121 and the second electrode portion 123. That is, one end of the second pin 113 can be squeezed between the first bracket section 1215 of the atomization bracket 121 and the second electrode portion 123. The second electrode portion 123 is made of a conductive material, and the second pin 113 is electrically connected to the second electrode portion 123.

[0078] In one example, the end of the second pin 113 away from the heating element 111 can pass through the communication hole 1212 in the atomization bracket 121 and extend between the first bracket section 1215 and the second electrode portion 123.

[0079] In one example, as shown in FIG. 8, the second pin 113 includes a first section 1131, a second section 1132, and a third section 1133. The first section 1131, the second section 1132, and the third section 1133 are sequentially connected, with the third section 1133 located between the atomization bracket 121 and the second electrode portion 123.

[0080] In one example, as shown in FIG. 8, the first section 1131 is non-linear.

[0081] In one example, as shown in FIG. 8, the second section 1132 is connected to the first section 1131 by a circular transition, and the second section 1132 is connected to the third section 1133 by a circular transition.

[0082] The atomization assembly 10 provided in the

embodiment of the present application prevents poor contact between the pins and electrodes by pressing the end of the first pin 112 away from the heating element 111 against the first electrode portion 122, and the end of the second pin 113 away from the heating element 111 between the atomization bracket 121 and the second electrode portion 123. This prevents poor contact between the pins and electrodes, thereby facilitating stable operation of the atomization assembly 10.

[0083] In one embodiment, the atomization bracket 121 is injection molded onto the inner bracket 115.

[0084] In one example, as shown in FIG. 9, the atomization bracket 121 includes a first bracket section 1215, a second bracket section 1216, and a third bracket section 1217. The first bracket section 1215, the second bracket section 1216, and the third bracket section 1217 are sequentially connected. As shown in FIG. 7, the third bracket section 1217 is disposed between the outer cover 117 and the inner bracket 115. The second bracket section 1216 is provided with a communication hole 1212, and the first bracket section 1215 is inserted into the second electrode portion 123.

[0085] In one example, as shown in FIG. 9, a first limiting end surface 1218 is formed between the first bracket section 1215 and the second bracket section 1216. This first limiting end surface 1218 prevents the second bracket section 1216 from being inserted into the second electrode portion 123. A second limiting end surface 1219 is formed between the second bracket section 1216 and the third bracket section 1217. This second limiting end surface 1219 prevents the second bracket section 1216 from being inserted into the atomizing core 11.

[0086] In one example, as shown in FIG. 9, a plurality of insertion posts 12171 are provided on the inner side of the third bracket section 1217. A plurality of insertion holes are provided on the inner bracket 115. The insertion posts 12171 are inserted into corresponding insertion holes.

[0087] In one example, the atomization bracket 121 is made of plastic or corrosion-resistant stainless steel and is injection molded onto the atomization bracket 121.

[0088] In one example, the outer cover 117 of the atomizing core 11 is in an interference fit with the atomization bracket 121.

[0089] In one example, as shown in FIG. 7, the bottom of the outer wrapped cotton 116 contacts the atomization bracket 121.

[0090] In one example, as shown in FIG. 9, a bracket sealing ring groove 12110 is provided on the outer peripheral surface of the second bracket section 1216. A sealing ring 60 for sealing the atomization bracket 121 and the support base 30 is located within the bracket sealing ring groove 12110.

[0091] In one example, as shown in FIG. 7, an electrode sealing ring groove 1233 is provided on the outer peripheral surface of the second electrode portion 123.

A sealing ring 60 for sealing the second electrode portion 123 and the support base 30 is located within the electrode sealing ring groove 1233.

[0092] In the embodiment of the present application, by injection molding the atomization bracket 121 onto the inner bracket 115, a fixed connection between the atomization bracket 121 and the inner bracket 115 can be achieved during the molding process.

[0093] As shown in FIGS. 10 and 11, FIG. 10 is a second exploded schematic diagram of the atomization assembly 10 provided in an embodiment of the present application, and FIG. 11 is a partial enlarged view of a part A in FIG. 10.

[0094] In one embodiment, a side avoidance groove 1213 is provided on the outer peripheral surface of the atomization bracket 121 and/or on the inner side surface of the second electrode portion 123, with one end of the second pin 113 positioned in the side avoidance groove 1213.

[0095] That is, in the embodiment of the present application, the side avoidance groove 1213 may be provided only on the outer peripheral surface of the atomization bracket 121; alternatively, the side avoidance groove 1213 may be provided only on the inner side surface of the second electrode portion 123; or alternatively, the side avoidance groove 1213 may be provided on both the outer peripheral surface of the atomization bracket 121 and the inner side surface of the second electrode portion 123, with the side avoidance groove 1213 on the outer peripheral surface of the atomization bracket 121 and the side avoidance groove 1213 on the inner side surface of the second electrode portion 123 being radially opposed to each other.

[0096] As shown in FIG. 11, which illustrates a side avoidance groove 1213 provided on the outer peripheral surface of the atomization bracket 121. The third section 1133 of the second pin 113 is located within the side avoidance groove 1213. The radial depth of the side avoidance groove 1213 is less than the diameter of the third section 1133, allowing the third section 1133 to be squeezed between the atomization bracket 121 and the second electrode portion 123.

[0097] In one example, the atomization bracket 121 is cast-formed, and/or the second electrode portion 123 is machined. By specifying the molding method of the atomization bracket 121 and the second electrode portion 123, the dimensional accuracy of the atomization bracket 121 and the second electrode portion 123 can be controlled, thereby facilitating the squeezing of one end of the second pin 113 between the atomization bracket 121 and the second electrode portion 123.

[0098] In this embodiment, a side avoidance groove 1213 is provided to facilitate squeezing one end of the second pin 113 between the atomization bracket 121 and the second electrode portion 123 without interfering with the assembly of the atomization bracket 121 and the second electrode portion 123.

[0099] In one embodiment, as shown in FIG. 8, the

second pin 113 includes a first section 1131, a second section 1132, and a third section 1133 (See FIGS. 10 and 11). The third section 1133 is located in the side avoidance groove 1213, while the second section 1132 is located on the side of the atomization bracket 121 away from the atomizing core 11. One end of the second section 1132 is connected to the third section 1133, and the another end of the second section 1132 is connected to one end of the first section 1131. The another end of the first section 1131 is connected to the heating element 111.

[0100] In one example, as shown in FIG. 7, the atomization base 12 further includes a first insulating member 124, which is inserted into the mounting hole 1211 of the atomization base 12. One end of the first section 1131 extends between the first insulating member 124 and the atomization bracket 121 and connects to the second section 1132.

[0101] In one example, the first insulating member 124 is made of an elastic material, such as rubber or silicone, to facilitate elastic compression of the portion of the first section 1131 located between the first insulating member 124 and the atomization bracket 121.

[0102] In one example, as shown in FIG. 11, an end avoidance groove 1214 is provided on the end surface of the atomization bracket 121 away from the atomizing core 11. The end avoidance groove 1214 communicates with the side avoidance groove 1213. The second section 1132 is located within the end avoidance groove 1214 to facilitate securing the pins to the atomization bracket 121. In other examples, the end avoidance groove 1214 is not provided on the end surface of the atomization bracket 121 away from the atomizing core 11. In other words, the end surface of the atomization bracket 121 away from the atomizing core 11 can be flat.

[0103] In one example, as shown in FIG. 7, the first insulating member 124 includes an insulating axial portion 1241 and an insulating circumferential portion 1242. The outer peripheral surface of the insulating axial portion 1241 is connected to the insulating circumferential portion 1242. The insulating axial portion 1241 is inserted into the mounting hole 1211 of the atomization bracket 121. The insulating circumferential portion 1242 engages the end of the atomization bracket 121 away from the atomizing core 11. The insulating circumferential portion 1242 contacts the second section 1132 of the second pin 113.

[0104] In one example, the depth of the end avoidance groove 1214 parallel to the axis direction of the atomizing core 11 is less than the diameter of the second section 1132 of the second pin 113.

[0105] In the embodiment of the present application, by having the second pin 113 pass through the side of the atomization bracket 121 away from the atomizing core 11, then bend upward and insert into the side avoidance groove 1213, the second pin 113 can be stably contacted with the second electrode portion 123.

[0106] As shown in FIGS. 12-16, FIG. 12 is an exploded schematic diagram of the atomization assembly 10 according to an embodiment of the present application. FIG. 13 is an enlarged partial diagram of a part B in FIG. 12. FIG. 14 is a cross-sectional view of the atomization assembly 10 according to an embodiment of the present application. FIG. 15 is a second structural diagram of the heating element 111, the first pin 112, and the second pin 113 according to an embodiment of the present application. FIG. 16 is a structural diagram of the first electrode portion 122 according to an embodiment of the present application.

[0107] In one embodiment, as shown in FIG. 14, the atomization base 12 further includes a first insulating member 124. The first insulating member 124 is inserted into the mounting hole 1211. The end of the first pin 112 away from the heating element 111 is squeezed between the first insulating member 124 and the first electrode portion 122.

[0108] In one example, the first insulating member 124 is made of an elastic material, such as rubber or silicone, to facilitate elastic compression of one end of the first pin 112.

[0109] In the embodiment of the present application, one end of the first pin 112 is squeezed between the first insulating member 124 and the first electrode portion 122 to facilitate compression of the first pin 112 against the first electrode portion 122, facilitating stable contact between the first pin 112 and the first electrode portion 122.

[0110] In one embodiment, as shown in FIG. 15, the first pin 112 includes a pin main portion 1121 and a pin bending portion 1122. One end of the pin main portion 1121 is connected to the heating element 111, and the other end of the pin main portion 1121 is connected to the pin bending portion 1122. The pin bending portion 1122 is located on the side of the first insulating member 124 away from the atomizing core 11. FIGS. 12 and 13 illustrate the pin bending portion 1122 being located on the side of the first insulating member 124 away from the atomizing core 11.

[0111] In one example, as shown in FIG. 15, the pin main portion 1121 and the pin bending portion 1122 are arranged perpendicularly.

[0112] In one example, as shown in FIG. 15, the pin main portion 1121 is non-linear.

[0113] In this embodiment, by positioning the pin bending portion 1122 on the side of the first insulating member 124 away from the atomizing core 11, the first pin 112 can be further positioned by compressing the pin bending portion 1122, thereby facilitating a stable electrical connection between the first pin 112 and the first electrode portion 122.

[0114] In one embodiment, as shown in FIG. 14, the first electrode portion 122 includes an electrode body 1221 and an electrode connection portion 1222, which is connected to the circumferential side surface of the electrode body 1221. As shown in FIG. 14, the atomi-

zation base 12 also includes a second insulating member 125. The second insulating member 125 and the first insulating member 124 are disposed on either side of the electrode connection portion 1222 along the axis direction of the electrode body 1221. The two ends of the electrode body 1221 are inserted into the first insulating member 124 and the second insulating member 125, respectively.

[0115] In one example, as shown in FIG. 14, an opening 1231 is formed in the second electrode portion 123. The end of the atomization bracket 121 away from the atomizing core 11, i.e., the first bracket section 1215, is inserted into the opening 1231. Furthermore, the second insulating member 125 and the first insulating member 124 are positioned along the axis direction of the electrode body 1221 between the end of the atomization bracket 121 away from the atomizing core 11 and the inner end surface of the second electrode portion 123, i.e., the conductive inner end surface 1232 in FIG. 13.

[0116] In one example, as shown in FIG. 14, the first insulating member 124 includes an insulating axial portion 1241 and an insulating circumferential portion 1242. The outer peripheral surface of the insulating axial portion 1241 is connected to the insulating circumferential portion 1242. The insulating axial portion 1241 is inserted into the mounting hole 1211 of the atomization bracket 121. The insulating circumferential portion 1242 engages the end of the atomization bracket 121 away from the atomizing core 11. The electrode connection portion 1222 is disposed between the insulating circumferential portion 1242 and the second insulating member 125. The second insulating member 125 contacts the conductive inner end surface 1232.

[0117] In one example, the first insulating member 124 and the second insulating member 125 are made of an elastic material, such as rubber or silicone. The insulating axial portion 1241 of the first insulating member 124 can be configured to have an interference fit with the atomization bracket 121, while the second insulating member 125 can be configured to have an interference fit with the second electrode portion 123.

[0118] In one example, the pin bending portion 1122 is located between the electrode connection portion 1222 and the insulating circumferential portion 1242 of the first insulating member 124.

[0119] In one example, as shown in FIG. 16, the electrode connection portion 1222 is thin and sheet-shaped.

[0120] In one example, as shown in FIG. 16, the electrode body 1221 includes a first electrode section 12211 and a second electrode section 12212. One end of the first electrode section 12211 is connected to the second electrode section 12212. The electrode connection portion 1222 is sleeved over and connected to the first electrode section 12211. The first electrode section 12211 is inserted into the first insulating member 124, and the second electrode section 12212 is

inserted into the second insulating member 125. The diameter of the first electrode section 12211 is smaller than that of the second electrode section 12212.

[0121] In this embodiment, the first electrode portion 122 includes an electrode body 1221 and an electrode connection portion 1222, and the first insulating member 124 and the second insulating member 125 are positioned relative to the first electrode portion 122, thereby facilitating mounting of the first electrode portion 122 on the second electrode portion 123.

[0122] In one embodiment, as shown in FIGS. 13 and 16, the electrode connection portion 1222 is provided with a avoidance notch 1223 (see FIG. 13). The pin bending portion 1122 is located within the avoidance notch 1223 (see FIG. 14). The pin bending portion 1122 is positioned between the first insulating member 124 and the second insulating member 125.

[0123] The first pin 112 includes a pin main portion 1121 and a pin bending portion 1122. One end of the pin main portion 1121 is connected to the heating element 111, and the another end is connected to the pin bending portion 1122. In this embodiment, the pin main portion 1121 is inserted between the insulating axial portion 1241 of the first insulating member 124 and the first electrode portion 122. The end of the pin main portion 1121 connected to the pin bending portion 1122 is inserted into the avoidance notch 1223 on the electrode connection portion 1222, thereby positioning the pin bending portion 1122 within the avoidance notch 1223.

[0124] In one example, a portion of the circumferential edge of the electrode connection portion 1222 is recessed inward to form the avoidance notch 1223. As shown in FIG. 16, which illustrates the inwardly recessed side surface 1224 of the electrode connection portion 1222.

[0125] In one example, as shown in FIG. 16, the recessed side surface 1224 is curved.

[0126] In the embodiment of the present application, an avoidance notch 1223 is provided on the electrode connection portion 1222 to retain the pin bending portion 1122 between the insulating circumferential portion 1242 of the first insulating member 124 and the second insulating member 125, while maintaining the assembly of the first electrode portion 122 between the first insulating member 124 and the second insulating member 125.

[0127] It is worth noting that the above embodiment describes a configuration in which one end of the pin main body 1121 extends between the insulating axial portion 1241 of the first insulating member 124 and the first electrode portion 122, and the pin bending portion 1122 is retained between the insulating circumferential portion 1242 of the first insulating member 124 and the second insulating member 125. In other embodiments, the first pin 112 may include only the pin main body 1121, with one end of the lead body 1121 extending between the insulating axial portion 1241 of the first insulating member 124 and the first electrode portion

122.

[0128] As shown in FIGS. 17-21 (FIG. 17 is a schematic structural diagram of the atomizer 100 provided in an embodiment of the present application, FIG. 18 is an exploded schematic diagram of the atomizer 100 provided in an embodiment of the present application, FIG. 19 is a first cross-sectional view of the atomizer 100 provided in an embodiment of the present application, FIG. 20 is a second cross-sectional view of the atomizer 100 provided in an embodiment of the present application, and FIG. 21 is a third cross-sectional view of the atomizer 100 provided in an embodiment of the present application) are provided.

[0129] In one embodiment, the atomizer 100 further includes a protective cover 40 and a connecting rod 50. The protective cover 40 is fixedly connected to the support base 30 along a circumferential direction, and the connecting rod 50 is connected to the end of the protective cover 40 away from the support base 30.

[0130] As shown in FIG. 19, the support base 30 is inserted into the liquid storage tank 20, to seal against the liquid storage tank 20. The atomization assembly 10 is inserted into the support base 30 and supported within the liquid storage tank 20 by the support base 30. As shown in FIG. 19, a protective cover 40 covers the outside of the atomization assembly 10. The protective cover 40 is made of an elastic material. The end of the protective cover 40 away from the support base 30 seals against the liquid storage tank 20. The connecting rod 50 extends through the nozzle opening 221 on the liquid storage tank 20.

[0131] It is worth noting that the cross-sectional view of the atomizer 100 shown in FIG. 19 shows the atomizer 100 in an unused state, i.e., the state of the atomizer 100 after leaving the factory. In this state, the protective cover 40 is circumferentially fixedly connected to the support base 30. Because the end of the protective cover 40 away from the support base 30 is in sealed engagement with the liquid storage tank 20, and because the support base 30 and the liquid storage tank 20 are in sealed engagement, the placement chamber 90 for the aerosol substrate is formed between the protective cover 40 and the liquid storage tank 20 (see FIG. 19). Because the atomization assembly 10 is sheathed inside the protective cover 40 and circumferentially fixedly connected to the support base 30, the protective cover 40 isolates the aerosol substrate in the placement chamber 90 from the atomization assembly 10, preventing the aerosol substrate in the placement chamber 90 from flowing into the atomization assembly 10. This prevents the aerosol substrate in the placement chamber 90 from entering the atomization assembly 10 when the atomizer 10 is in an unused state, such as during transportation or sales.

[0132] In the embodiment of the present application, the protective cover 40 is formed with a breakable portion, and the connection strength at the breakable portion is weaker than the connection strength between

the connecting rod 50 and the protective cover 40. Applying force to the connecting rod 50 in a direction away from the support base 30 can cause the protective cover 40 to break at the breakable portion.

[0133] Specifically, when the atomizer 100 provided in the embodiment of the present application is to be used, force is applied to the connecting rod 50 in a direction away from the support base 30, causing the protective cover 40 to break at the breakable portion and then move the broken protective cover 40 to a desired location. FIG. 20 illustrates a broken protective sleeve 44 positioned in the desired location. At this point, the broken protective sleeve 44 is in sealed engagement with the atomization assembly 10 and the liquid storage tank 20. The placement chamber 90 for holding the aerosol substrate is formed within the broken protective sleeve 44, the atomization assembly 10, the support base 30, and the liquid storage tank 20. The aerosol substrate within the placement chamber 90 contacts the atomization assembly 10, allowing the aerosol substrate to penetrate the atomization assembly 10.

[0134] As shown in FIG. 20, the connecting rod 50 is connected to one end of the broken protective sleeve 44. When the broken protective sleeve 44 is in the target position, the connecting rod 50 needs to be separated from the broken protective sleeve 44. As shown in FIG. 21, the connecting rod 50 is not shown in FIG. 21. That is, after the connecting rod 50 is separated from the broken protective sleeve 44, the atomizer 100 can be used normally.

[0135] In the embodiment of the present application, the atomization assembly 10 can be sheathed inside the protective cover 40, and the protective cover 40 is fixedly connected to the support base 30 along the circumferential direction. Thus, the protective cover 40 isolates the aerosol matrix within the atomizer 100 from the atomization assembly 10, thereby preventing the aerosol matrix from entering the atomization assembly 10 when the atomizer 100 is not in use, such as during transportation or sales. In the embodiment of the present application, a breakable portion is formed on the protective cover 40, and because the connection strength of the breakable portion is less than the connection strength between the connecting rod 50 and the protective cover 40, when force is applied to the connecting rod 50 in a direction away from the support base 30, the protective cover 40 breaks at the breakable portion. The broken protective cover 40 can then be moved to the target location, allowing the aerosol matrix to penetrate into the atomization assembly 10.

[0136] In one embodiment, as shown in FIG. 19, the protective cover 40 includes a first sleeve body 41, a second sleeve body 42, and a connecting sleeve 43. The first sleeve body 41 is mounted on the support base 30, and the connecting sleeve 43 is located between the first sleeve body 41 and the second sleeve body 42. The connecting sleeve 43 connects the first

sleeve body 41 and the second sleeve body 42. The connecting sleeve 43 is thin-walled, forming a breakable portion on the protective cover 40.

[0137] As shown in FIG. 22, which is an enlarged view of a part C in FIG. 19. As can be seen, the connecting sleeve 43 is thin-walled along the radial direction of the protective cover 40. When force is applied to the connecting rod 50 away from the support base 30, the protective cover 40 can be broken at the connecting sleeve 43. As shown in FIG. 20, where the first sleeve body 41 is connected to the support base 30, and the second sleeve body 42 forms a broken protective sleeve 44.

[0138] In one example, the thickness of the connecting sleeve 43 along the radial direction of the protective cover 40 ranges from 0.1 to 2 mm. For example, the thickness of the connecting sleeve 43 along the radial direction of the protective cover 40 is 0.1-0.4 mm, 0.4-0.8 mm, 0.8-1.2 mm, 1.2-1.6 mm, or 1.6-2 mm.

[0139] In one example, the first sleeve body 41 is tightly fitted with the support base 30, and the first sleeve body 41, the connecting sleeve 43, and the second sleeve body 42 are integrally formed. Alternatively, in another example, the support base 30 and the protective cover 40 are integrally formed.

[0140] In one example, the protective cover 40 and the connecting rod 50 are integrally formed.

[0141] In one example, the protective cover 40 and the connecting rod 50 are made of silicone or rubber, while the support base 30 is made of plastic. For example, the protective cover 40 and connecting rod 50 are made of silicone, while the support base 30 is made of plastic. In this example, when the support base 30, the protective cover 40, and the connecting rod 50 are integrally molded, they can be molded using a dual-material injection molding process. Dual-material injection molding involves injecting two different materials into the same mold to create a part composed of two materials.

[0142] In one example, the first sleeve body 41 is sealed with the liquid storage tank 20; alternatively, in other examples, the first sleeve body 41 and the liquid storage tank 20 are not sealed, and the liquid storage tank 20 uses a different sealing ring 60 for sealing.

[0143] In the embodiment of the present application, by configuring the protective cover 40 to include a first sleeve body 41, a second sleeve body 42, and a connecting sleeve 43, not only is a breakable portion formed on the protective cover 40, but also the fixing connection between the protective cover 40 and the support base 30 is facilitated.

[0144] It is worth noting that the above embodiment describes the protective cover 40 as including the first sleeve body 41, the second sleeve body 42, and the connecting sleeve 43, with the first sleeve body 41 being sleeved on the support base 30. In other embodiments, for example, the protective cover 40 does not include the first sleeve body 41, that is, the protective

cover 40 only includes the second sleeve body 42 and the connecting sleeve 43, with the connecting sleeve 43 connecting the second sleeve body 42 and the support base 30. In this case, in this embodiment, the protective cover 40 and the support base 30 can be integrally formed. In this embodiment, the protective cover 40 and the connecting rod 50 can be made of silicone, while the support base 30 can be made of plastic.

[0145] In one embodiment, as shown in FIG. 22, the first sleeve body 41 includes an end surface portion 411 and a circumferential portion 412. The end surface portion 411 is disposed on the end of the support base 30 proximal to the second sleeve body 42 and is connected to the connecting sleeve 43. The circumferential portion 412 is disposed on the outer peripheral surface of the support base 30 and is connected to the end surface portion 411 and the circumferential portion 412. A first annular protrusion 413 is formed on the outer peripheral surface of the circumferential portion 412, which seals against the liquid storage tank 20. It is worth noting that FIG. 22 illustrates the state in which the first annular protrusion 413 has not undergone elastic deformation.

[0146] In one embodiment, there may be more than one first annular protrusion 413, for example, one, two, or three first annular protrusions 413 are provided. FIG. 22 illustrates two first annular protrusions 413 formed on the outer peripheral surface of the circumferential portion 412.

[0147] In one example, as shown in FIG. 22, a groove 39 is formed on the outer peripheral surface of the support base 30, and a protrusion 4121 is formed on the inner circumferential surface of the circumferential portion 412. The protrusion 4121 extends into the groove 39 on the support base 30 to enhance the connection strength between the support base 30 and the first sleeve body 41.

[0148] In one example, the groove 39 on the circumferential side surface of the support base 30 is annular, and the protrusion 4121 is formed on the inner circumferential surface of the circumferential portion 412.

[0149] In one example, as shown in FIG. 22, the support base 30 is provided with a liquid injection hole 32, and the end surface portion 411 is provided with an end opening 4111 that communicates with the liquid injection hole 32.

[0150] In one example, the inner side surface of the end surface portion 411 is sealingly engaged with the outer cover 117 of the atomizing core 11.

[0151] In this embodiment, the first sleeve body 41 includes an end surface portion 411 and a circumferential portion 412, facilitating stable connection of the first sleeve body 41 to the support base 30. A first annular protrusion 413 is formed on the outer peripheral surface of the circumferential portion 412, ensuring a sealed fit between the support base 30 and the liquid storage tank 20.

[0152] In one embodiment, as shown in FIG. 19, the

second sleeve body 42 includes an upper sleeve body portion 421 and a lower sleeve body portion 422. One end of the upper sleeve body portion 421 is connected to the lower sleeve body portion 422, which is connected to the connecting sleeve 43. The diameter of the lower sleeve body portion 422 is larger than that of the upper sleeve body portion 421. FIGS. 24 and 25 illustrate the schematic structural diagram of the support base 30, the protective cover 40, and the connecting rod 50 according to this embodiment. FIGS. 24 and 25 illustrate the upper sleeve body portion 421 and the lower sleeve body portion 422.

[0153] As shown in FIG. 19, the inner surface of the lower sleeve body portion 422 is provided with a second annular protrusion 423 for sealingly engaging with the atomization assembly 10. The outer peripheral surface of the upper sleeve body portion 421 is provided with a third annular protrusion 424 for sealingly engaging with the liquid storage tank 20.

[0154] In one example, there are more than one second annular protrusion 423, for example, one, two, or three second annular protrusions 423 are provided. FIG. 21 illustrates two second annular protrusions 423 formed on the inner circumferential surface of the lower sleeve body portion 422.

[0155] In one example, there are more than one third annular protrusion 424, for example, one, two, or three third annular protrusions 424 are provided. FIG. 21 illustrates two third annular protrusions 424 formed on the outer peripheral surface of the upper sleeve body portion 421.

[0156] In one example, as shown in FIG. 19, the shapes of the internal cavities of the upper sleeve body portion 421 and the lower sleeve body portion 422 match the shape of the atomization assembly 10.

[0157] In one example, as shown in FIG. 20, the liquid storage tank 20 includes a liquid storage tank body 21 and a nozzle portion 22. One end of the nozzle portion 22 extends into the liquid storage tank body 21 and the nozzle portion 22 and the liquid storage tank body 21 are connected. For example, the liquid storage tank body 21 and nozzle portion 22 may be integrally formed, with the nozzle portion 22 located outside the liquid storage tank body 21 forming the nozzle opening 221. One end of the upper sleeve body portion 421 extends into the nozzle portion 22 and is sealingly engaged with the inner surface of the nozzle portion 22 through a third annular protrusion 424.

[0158] In one example, as shown in FIG. 20, when the second sleeve body 42 is in the target position, as illustrated in FIG. 20, the end surface between the upper sleeve body portion 421 and the lower sleeve body portion 422 is approaching to or in contact with the inner end surface of the nozzle portion 22.

[0159] In one example, the first sleeve body 41 and the connecting sleeve 43 are made of an elastic material, such as silicone or rubber. The upper sleeve body portion 421 and the lower sleeve body portion 422 are

made of plastic or a plastic material. The second annular protrusion 423 and the third annular protrusion 424 are made of an elastic material, such as silicone or rubber.

[0160] In this embodiment, by configuring the second sleeve body 42 to include the upper sleeve body portion 421 and the lower sleeve body portion 422, and by configuring the lower sleeve body portion 422 to have a larger diameter than the upper sleeve body portion 421, the upper sleeve body portion 421 can be inserted into the nozzle portion 22 of the liquid storage tank 20 to conform to the shape of the liquid storage tank 20. The second annular protrusion 423 and the third annular protrusion 424 facilitate a sealed fit between the second sleeve body 42 and the atomizing core assembly and the nozzle portion 22 of the liquid storage tank 20.

[0161] In one embodiment, as shown in FIG. 23, which is a partial enlarged view of a part B in FIG. 20, the protective cover 40 is formed with an easy-to-cut portion 425, which can be cut to separate the connecting rod 50 from the protective cover 40.

[0162] In one example, as shown in FIG. 23, a cutting portion 23 is formed on the inner side surface of the liquid storage tank 20. When the broken protective sleeve 44 is in the target position and a force is applied to the connecting rod 50 in a direction away from the support base 30, the cutting portion 23 can break the connection position, i.e., the easy-to-cut portion 425, between the protective cover 40 and the connecting rod 50. In other examples, when the broken protective sleeve 44 is in the target position, the easy-to-cut portion 425 can be cut with a tool to separate the connecting rod 50 from the protective cover 40.

[0163] In one example, as shown in FIG. 23, the easy-to-cut portion 425 is connected to the outer peripheral surface of the connecting rod 50, and the thickness of the connection between the connecting rod 50 and the easy-to-cut portion 425 along the axis direction of the connecting rod 50 is less than a predetermined thickness. Alternatively, in another example, a thin sheet layer is formed on the end surface of the protective cover 40, one end of the connecting rod 50 is connected to the thin sheet layer, and the connecting rod 50 can be separated from the protective cover 40 by cutting the thin sheet layer.

[0164] In the embodiment of the present application, by forming the easy-to-cut portion 425 on the protective cover 40, the connection strength of the easy-to-cut portion on the protective cover 40 is less than the connection strength between the connecting rod 50 and the protective cover 40. The broken protective sleeve 44 can be separated from the protective cover 40 by cutting the easy-to-cut portion 425, allowing normal use of the atomizer 100.

[0165] In one embodiment, as shown in FIG. 23, the section of the connecting rod 50 that is inserted into the protective cover 40 and located within the protective cover 40 is called the mating section 51. The mating

section 51 includes a first region 511 and a second region 512, which are arranged sequentially along the direction in which the connecting rod 50 extends into the protective cover 40. The first region 511 is connected to the inner side surface of the protective cover 40, and a gap 45 is formed between the second region 512 and inner side surface of the protective cover 40. The portion of the protective cover 40 connected to the first region 511 forms the easy-to-cut portion 425.

[0166] As shown in FIG. 23, which illustrates the cutting portion 23 extending into the gap 45 between the mating section 51 and the protective cover 40. When the broken protective sleeve 44 is in the target position, the cutting portion 23 extends into the gap 45 between the mating section 51 and the protective cover 40. At this point, a force is applied to the connecting rod 50 away from the support base 30 can cut the easy-to-cut portion 425 through the cutting portion 23.

[0167] In one example, the thickness of the connecting rod 50 along the axis direction of the connecting rod 50 where it connects to the first region 511 is less than a predetermined thickness, where the predetermined thickness is no less than 1 mm. For example, the thickness of the connecting rod 50 along the axis direction of the connecting rod 50 where it connects to the first region 511 is 1-1.5 mm, 1.5-2 mm, or 2.5-3 mm, etc.

[0168] The side surface of the protective cover 40 opposite to the second region 512 of the mating section 51 is the mating side surface 426. As shown in FIG. 23, which shows the mating side surface 426. In one example, the mating side surface 426 is flared, that is, it slopes away from the central axis of the connecting rod 50 from the first region 511 to the second region 512, to facilitate alignment with the shape of the cutting portion 23, allowing the cutting portion 23 to extend into the gap 45 between the mating section 51 and the protective cover 40.

[0169] In this embodiment, the gap 45 is formed between the second region 512 of the mating section 51 and the inner side surface of the protective cover 40, facilitating the cutting portion 23 to insert into the gap 45 to cut the portion of the protective cover 40 connected to the first region 511.

[0170] In one embodiment, as shown in FIG. 23, the cutting portion 23 includes a first cutting surface 232 and a second cutting surface 233, the first cutting surface 232 and the second cutting surface 233 are connected to form a cutting end 231. The first cutting surface 232 is closer to the connecting rod 50 than the second cutting surface 233, while the second cutting surface 233 tilts away from the connecting rod 50 from an end closer to the cutting end 231 to an end away from the cutting end 231. As shown in FIG. 23, when the broken protective sleeve 44 is in the target position, the cutting end 231 of the cutting portion 23 extends into the gap 45 between the mating section 51 and the protective cover 40. At this point, when a force is applied to the connecting rod 50 away from the support

base 30, the cutting end 231 of the cutting portion 23 can cut the connection position between the protective cover 40 and the connecting rod 50.

[0171] In one example, as shown in FIG. 21, the liquid storage tank 20 includes a liquid storage tank body 21 and a nozzle portion 22. One end of the nozzle portion 22 extends into and connects the liquid storage tank body 21. The end of the nozzle portion 22, located outside the liquid storage tank body 21, forms a nozzle opening 221. A cutting portion 23 is formed on the inner side of the nozzle portion 22.

[0172] In one example, the cutting portion 23 is annular; in other embodiments, a plurality of cutting portions 23 are provided, which are evenly spaced along the circumference of the inner side surface of the nozzle portion 22.

[0173] In this embodiment, the cutting portion 23 includes a first cutting surface 232 and a second cutting surface 233, thereby forming a cutting end 231 on the cutting portion 23, which facilitates cutting the connection position between the protective cover 40 and the connecting rod 50.

[0174] In one embodiment, as shown in FIG. 26, the support base 30 includes a first base portion 35, a second base portion 36, and a base connecting plate 37. The first base portion 35 and the second base portion 36 are spaced apart along the distribution direction of the support base 30 and the protective cover 40. There is more than one base connecting plate 37, which connects the first base portion 35 and the second base portion 36. The first base portion 35 is provided with a base air inlet hole 31. FIGS. 24 and 25 illustrate the first sleeve body 41 being fitted over the second base portion 36, and the first base portion 35 is provided with the base air inlet hole 31.

[0175] In one example, as shown in FIG. 26, the first base portion 35 is provided with a first sealing ring groove 351 for mounting a sealing ring 60 within the first base portion 35. Specifically, the sealing ring 60 is provided between the first base portion 35 and the liquid storage tank 20 to achieve a sealed fit between the first base portion 35 and the liquid storage tank 20.

[0176] In one example, the first base portion 35 and the atomization assembly 10 are sealed together via the sealing ring 60, and/or the second base portion 36 and the atomization assembly 10 are sealed together via the sealing ring 60.

[0177] In one example, as shown in FIG. 26, an air inlet boss 310 is formed on the side surface of the first base portion 35 facing the second base portion 36, and the base air inlet hole 31 extends through the air inlet boss 310.

[0178] In one example, one or more air inlet bosses 310 are formed on the side surface of the first base portion 35 facing the second base portion 36. When there are two or more air inlet bosses 310, the air inlet bosses 310 are evenly spaced along the circumference of the first base portion 35, and the base air inlet holes

31 extend through each corresponding air inlet boss 310.

[0179] In one example, as shown in FIG. 24, a snap fastener 34 is formed on the support base 30. An engagement groove is provided on the inner side surface of the liquid storage tank 20. The snap fastener 34 is positioned in the engagement groove to secure the support base 30 to the liquid storage tank 20.

[0180] In one example, as shown in FIG. 24, the snap fastener 34 is formed on the base connecting plate 37.

[0181] In one example, there are two base connecting plates 37, which are positioned opposite each other and each of which is provided with a snap fastener 34.

[0182] In one example, as shown in FIG. 25, a positioning boss 33 is formed on the first base portion 35. As shown in FIG. 18, a positioning hole 211 is provided on the end surface of the liquid storage tank 20. When the support base 30 is mounted on the liquid storage tank 20, the positioning boss 33 is positioned in the positioning hole 211. In this example, the positioning boss 33 cooperates with the positioning hole 211 to facilitate the positioning and mounting of the support base 30 and the liquid storage tank 20.

[0183] In one example, as shown in FIG. 25, a stepped surface 352 is formed on the first base portion 35, and the positioning boss 33 is disposed on the stepped surface 352.

[0184] In one example, as shown in FIG. 25, two positioning bosses 33 are disposed on the stepped surface 352 of the first base portion 35. The two positioning bosses 33 are arranged opposite each other and are respectively inserted into the positioning holes 211 on the liquid storage tank 20.

[0185] In the embodiment of the present application, the support base 30 includes a first base portion 35, a second base portion 36, and a base connecting plate 37. This allows the support base 30 to not only support the atomization assembly 10 but also facilitates fixing the protective cover 40 to the support base 30.

[0186] It should be noted that the structure of another atomizer 100 provided in some embodiments of the present application is described below in conjunction with FIGS. 27-33.

[0187] As shown in FIG. 27, the atomizer 100 includes a support portion 110 and an atomization assembly 10. The support portion 110 defines a placement chamber 90 and an atomizing channel 222. The placement chamber 90 is used to store atomized matrix. A fluid channel is provided between the placement chamber 90 and the atomizing channel 222 to allow the atomized matrix in the placement chamber 90 to be transferred into the atomizing channel 222 along the fluid channel. The atomization assembly 10 is disposed within the atomizing channel 222 to heat the atomized matrix to generate an aerosol. The atomizing channel 222 defines an aerosol flow path A, allowing the aerosol to flow along the atomizing channel 222 to a user

(e.g., the user's mouth or nose).

[0188] As further shown in FIG. 27, the support portion 110 also includes a support assembly 101. The support assembly 101 is provided with the aforementioned fluid channel communicating the atomizing channel 222 and the placement chamber 90. The support assembly 101 is used to mount the atomization assembly 10 within the support portion 110, thereby restraining and fixing the atomization assembly 10.

[0189] As shown in FIG. 28, in some embodiments, the support portion 110 includes a liquid storage tank 20 and a support base 30. The support base 30 is positioned at one end of the liquid storage tank 20 to enclose the placement chamber 90. In order to ensure a tight seal after connection and prevent leakage, the support base 30 can be inserted into the liquid storage tank 20, with a sealing member positioned between the support base 30 and the liquid storage tank 20.

[0190] Further, as shown in FIG. 28, the support assembly 101 includes a first seal member 1011, a support bracket 1012, and a second seal member 1013. These components are arranged sequentially from downstream to upstream along the aerosol flow path A. A space is provided inside the support bracket 1012 to facilitate assembly of the atomization assembly 10, and this space forms a part of the atomizing channel 222. Liquid guide holes 1014 are provided at both ends of the first seal member 1011 and the support bracket 1012 to form a liquid channel. Airflow holes 1015 are provided in the second seal member 1013 and the support base 30 to form an airflow channel, which communicates with the atomizing channel 222. When the atomizer 100 is in use, ambient air enters the atomizing channel 222 along this airflow channel, mixes with the aerosol within the atomizing channel 222, and then exits out of the atomizer 100 along the aerosol flow path A.

[0191] The atomizer 100 also includes a conductive electrode 102. The second seal member 1013 and the support bracket 1012 are provided with mounting holes. The conductive electrode 102 is mounted within the mounting holes and electrically connected to the atomization assembly 10. When the atomizer 100 is connected to the power supply assembly 200, the conductive electrode 102 can be electrically connected to the power supply assembly 200, enabling the power supply assembly 200 to supply power to the atomization assembly 10. The first seal member 1011 and the second seal member 1013 can be made of silicone material, which offers high-temperature resistance, good sealing, and ease of processing, preventing leakage of liquid and air within the atomizer 100.

[0192] As shown in FIG. 28, the atomization assembly 10 includes a heating body 1110 and a liquid storage member 1111. The heating body 1110 is positioned in contact with the liquid storage member 1111. The liquid storage member 1111 is used to guide and store atomized matrix. When powered, the heating

body 1110 heats the atomized matrix in the liquid storage member 1111.

[0193] In some embodiments, the liquid storage member 1111 can be made of a porous material, for example, a porous fiber material or a porous ceramic material. The porous structure of the liquid storage member 1111 can utilize the capillary effect to guide and store the atomized matrix, effectively ensuring a sufficient supply of atomized matrix and preventing the occurrence of wick sticking caused by insufficient atomized matrix.

[0194] In some embodiments, the heating body 1110 has a plurality of temperature adjustment portions that are sequentially arranged along the aerosol flow path A. Along the aerosol flow path A, the physical structural parameters of the temperature adjustment portions are configured to gradually change so that the temperature upstream of the heating body 1110 is greater than that downstream.

[0195] It should be noted that the "physical structural parameters" herein include at least one of geometric dimensions, thermal conductivity, or resistivity.

[0196] It should be further clarified that the terms "upstream" and "downstream" are spatial locations determined based on the aerosol flow direction. "Upstream" refers to the location where the aerosol initially flows, and "downstream" refers to the location where the aerosol ultimately flows. The direction indicated by the dashed arrow in FIG. 27 is from upstream to downstream.

[0197] Since the aerosol passes through a part of the heating body 1110 during its flow from upstream to downstream, it is repeatedly heated, which can alter the physical or chemical properties of the aerosol and, consequently, the flavor of the aerosol (e.g., a bitter taste), impacting the user experience. The present application creatively improves the physical structural parameters of the temperature adjustment portions of the heating body 1110, lowering the temperature downstream of the heating body 1110. This effectively prevents the downstream aerosol from being repeatedly heated upstream during its flow, resolving the issue of the flavor of the aerosol changes and significantly improving the user experience.

[0198] In some embodiments, the geometric dimensions include at least one of a width W, a thickness H, and a chamfer diameter D. In other words, to ensure that the temperature of the heating body 1110 decreases gradually, one of the width W, the thickness H, and the chamfer diameter D of the heating body 1110 can be selected for gradient setting. Alternatively, any two of these parameters can be combined to achieve gradient setting, or all three parameters can be selected for gradient setting.

[0199] In some embodiments, unlike the temperature field in conventional solutions (as shown in FIG. 29), the temperature of the heating body 1110 decreases gradually along the aerosol flow path A, thereby estab-

lishing a gradient temperature field along the aerosol flow path A (as shown in FIG. 30). The temperature of the heating body 1110 decreases as it moves downstream, reaching as low as 178°C, while the temperature of the heating body 1110 upstream reaches as high as 229°C. In some specific embodiments, the physical structural parameters of the temperature adjustment portion vary in an arithmetic progression, thereby achieving a gradient temperature decrease of the heating body 1110.

[0200] It should be noted that the colors in the vertical direction in FIG. 29 and FIG. 30 represent the temperature distribution, with different colors corresponding to different temperature ranges. The low-temperature areas in the figures are mapped in blue. As the temperature increases, the color gradually changes to green, yellow, orange, and finally red, indicating the high-temperature areas.

[0201] In some embodiments, the physical structural parameters are geometric dimensions, and the tolerance of the arithmetic progression ranges from 0.01 mm to 0.03 mm. For example, the tolerance of the arithmetic progression can be 0.01, 0.02, or 0.03, or any value between any two of these values. Preferably, the tolerance of the arithmetic progression is 0.02, so that the heating body 1110 decreases gradually along the aerosol flow path A, preventing the temperature from decreasing too quickly or fluctuating, thereby effectively preventing the occurrence of repeated heating of the aerosol.

[0202] As shown in FIGS. 31 and 32, in some embodiments, the heating body 1110 includes a plurality of heating areas 11111, a plurality of heat dissipation areas 11112 and a plurality of connection areas 11113. The plurality of heating areas 11111 are arranged in sequence along the aerosol flow path A for generating heat behind the channel. The connection areas 11113 are arranged between two adjacent heating areas 11111 for achieving conductive connection and heat transfer between the two adjacent heating areas 11111; the heat dissipation areas 11112 are relatively arranged at both ends of the heating area 11111 along a direction perpendicular to the aerosol flow path A for reducing the temperature of the heating areas 11111. The temperature adjustment portion includes at least one of the heating area 11111, the heat dissipation area 11112, and the connection area 11113. In other words, the physical structural parameters of any one, two, or three of these areas are gradually adjusted to achieve a higher upstream temperature than downstream temperature for the heating body 1110. Furthermore, the temperature of the heating body 1110 can be gradually reduced along the aerosol flow path A, as desired. The number of heating areas 11111, the heat dissipation areas 11112, and connection areas 11113 can be at least two, four, six, or more, which is not limited herein.

[0203] In some embodiments, the heating body 1110 further includes two conductive areas 11114, the two

conductive areas 11114 are electrically connected to the upstream and downstream heating areas 11111, respectively. The plurality of heating areas 11111 are connected in series, and each conductive area 11114 is in contact with and electrically connected to the two conductive electrodes 102. The plurality of heating areas 11111 can also be connected in parallel to reduce the difficulty of adjusting the temperature of the heating body 1110 by adjusting the physical structural parameters of the heating wires in the heating areas 11111.

[0204] Furthermore, the contact between the conductive area 11114 and the conductive electrode 102 can include direct contact or indirect contact. When the conductive area 11114 and the conductive electrode 102 are in direct contact, the connection can be an elastic connection, a plug-in connection, or an adhesive connection. When the conductive area 11114 and the conductive electrode 102 are elastically connected, the conductive electrode 102 includes conductive spring pins to enhance the connection stability between the conductive area 11114 and the conductive electrode 102, thereby ensuring a stable current flow in the heating body 1110.

[0205] In a specific embodiment, when the temperature adjustment portion is the heating area 11111, the physical structural parameters of the heating area 11111 vary in an arithmetic progression along the aerosol flow path A. This variation pattern includes increasing or decreasing values in an arithmetic progression. Different physical structural parameters have different effects on heating efficiency.

[0206] Based on the internal structure of the atomization assembly 10, the heating body 1110 is a sheet structure. Since the heating body 1110 is arranged in contact with the liquid storage member 1111, in order to ensure that the heating body 1110 is in uniform and sufficient contact with the atomized matrix to ensure the atomization effect, the overall thickness H of the heating body 1110 should be uniform, that is, the thickness H values of the heating area 11111, the heat dissipation area 11112, and the connection area 11113 of the heating body 1110 are the same. Specifically, the thickness H of the heating body 1110 ranges from 0.05mm to 0.12mm. Based on this, the design method of the physical structural parameters such as the geometric dimensions, the resistivity and the thermal conductivity of the heating body 1110 except the thickness H will be specifically introduced below.

[0207] Furthermore, the heating area 11111 includes a plurality of heating wires, which are connected in sequence to form a polygonal structure with a hollowed-out center. The transitions between adjacent heating wires are rounded to form a chamfer. This polygonal structure can be a quadrilateral or a hexagon, which is not limited herein. In order to ensure uniform temperature within each heating area 11111, the heating areas 11111 are symmetrical in both the direction of the aerosol flow path A and in a direction perpendicular to the

flow path. Since heating wires are generally made of conductive materials, their heating efficiency is related to their resistance. In a series circuit, greater resistance increases heating efficiency, while in a parallel circuit, smaller resistance increases heating efficiency. The resistance is related to the geometric dimensions and resistivity of the heating wire, and the following relationship formula is: $R = \rho \cdot L / S$. Here, ρ is the resistivity, which depends on the material of the resistance wire, L is the conductor length, and S is the cross-sectional area of the conductor. Given a constant thickness H , the cross-sectional area S is proportional to the width W . Therefore, the corresponding temperature changes can be achieved by designing the geometric dimensions of the heating wire or selecting resistance materials with different resistivities as the heating wire.

[0208] As further shown in FIGS. 31 and 32, the plurality of heating areas 11111 are connected in series. When designing the width W of the geometric dimensions of the heating wire, along the aerosol flow path A, the width W of the heating wire increases in an arithmetic progression. If the the plurality of heating wires in each heating area 11111 are made of the same material and have the same thickness H and width W , the heating wires in two adjacent heating areas 11111 can be configured with different widths W . This follows the principle that the widths W of the heating wires corresponding to each heating area 11111 increase in an arithmetic progression along the aerosol flow path A, resulting in a gradient decrease in heating efficiency and, therefore, a gradient decreasing in temperature is achieved. If each heating area 11111 has at least two heating wires sequentially arranged along the aerosol flow path A, the heating wires arranged along the aerosol flow path A in the same heating area 11111 can also be configured with different widths W , thereby causing the widths W of all heating wires arranged along the aerosol flow path A in the heating area 11111 to also increase in an arithmetic progression. In other embodiments, the geometric dimensions are not limited to the width W described above, but may also include thickness H . The design principles for thickness H are consistent with the width W of the heating wire and will not be further repeated herein.

[0209] When designing the resistivity of the heating wire, along the aerosol flow path A, the resistivity of the heating wire decreases in an arithmetic progression. Since a lower resistivity leads to a lower resistance value, a lower heating efficiency and a lower temperature, and reducing the resistivity of the heating wire can lower the temperature of the heating wire. Similarly, the decrease in resistivity of heating wires in an arithmetic progression can include designing heating wires in the same heating area 11111 with the same resistivity, and designing the resistivity of the plurality of heating areas 11111 arranged along the aerosol flow path A to decrease in an arithmetic progression. It can also be included that when heating wires are sequentially ar-

ranged along the aerosol flow path A in each heating area 11111, the heating wires in each heating area 11111 also show a decreasing trend in the arithmetic progression along the aerosol flow path A. All heating wires arranged along the aerosol flow path A in heating area 11111 also show a decreasing trend in the arithmetic progression.

[0210] When the plurality of heating areas 11111 are connected in parallel, the corresponding temperature change can be achieved by designing physical structural parameters such as resistivity, width, and thickness, based on the inverse proportionality between heating efficiency and resistance. This design method can be referenced by the aforementioned principles for connecting the plurality of heating areas 11111 in series, which will not be further repeated here.

[0211] Regarding the chamfer design of the heating wire geometry, whether in series or parallel, the diameter of the chamfer increases in an arithmetic progression along the aerosol flow path A. A larger chamfer diameter increases the hollow area of the heating area 11111, reduces the effective heat generation area, and thus reduces the corresponding temperature. The diameter of the upstream chamfer can range from 0.05mm to 0.1mm. Exemplary, the diameter D of the chamfer at upstream can be 0.05mm, 0.06mm, 0.07mm, 0.08mm, 0.09mm, or 0.1mm, or any value between any two of the above mentioned values. Preferably, the diameter D of the chamfer at upstream is 0.08mm, and the chamfer of the other heating areas 11111 can be reduced in an arithmetic progression based on this value with a tolerance of 0.01mm-0.03mm. In this embodiment, the width W of the heating wire can be maintained within the range of 0.06mm-0.14mm, with all heating wires having the same width W .

[0212] When the temperature adjustment portion includes a heat dissipation area 11112, the physical structural parameters of the heat dissipation area 11112 vary in an arithmetic progression along the aerosol flow path A. Specifically, the physical structural parameters of the heat dissipation area 11112 include geometric dimensions such as width W and thickness H , as well as thermal conductivity. By designing at least one of the width W , the thickness H , and the thermal conductivity, the temperature of the heating body 1110 at upstream of the aerosol flow path A is greater than that of at downstream, or even exhibits a gradient distribution pattern that gradually decreases. Since the heat dissipation areas 11112 are symmetrically located at both ends of the heating area 11111, in order to ensure this objective, the heat dissipation efficiency of the heat dissipation areas 11112 should increase gradually along the aerosol flow path A.

[0213] When the width W of the heat dissipation area 11112 is varied, provided that the heat dissipation areas 11112 are made of the same material to ensure the same thermal conductivity and have the same thick-

ness H, the width W increases in an arithmetic progression along the aerosol flow path A. The width W of the heat dissipation area 11112 at upstream ranges from 0.1 mm to 0.14 mm. Exemplary widths W of the heat dissipation area 11112 at upstream range from 0.1 mm to 0.14 mm, with values of 0.1 mm, 0.11 mm, 0.12 mm, 0.13 mm, or 0.14 mm, or any value between any two of these values. Preferably, the width W of the heat dissipation area 11112 is 0.12 mm, and the widths of the other heat dissipation areas 11112 can increase in an arithmetic progression based on this width.

[0214] When the thermal conductivity of the heat dissipation area 11112 is varied, a higher thermal conductivity results in faster heat dissipation and a corresponding lower temperature. Consequently, the thermal conductivity increases along the aerosol flow path A in an arithmetic progression, with a tolerance of 0.01-0.03.

[0215] When the temperature adjustment portion includes the connection area 11113, the physical structural parameters of the connection area 11113 change along the aerosol flow path A in an arithmetic progression. Because the connection area 11113 is positioned between two adjacent heating areas 11111, its thermal conductivity can decrease gradually along the aerosol flow path A, thereby preventing excessive heat transfer from upstream to downstream, which could lead to heat accumulation and temperature rise downstream and affect the temperature regulation effect.

[0216] The physical structural parameters of the connection area 11113 include geometric dimensions such as width W and thickness H, as well as thermal conductivity. By designing at least one of the width W, the thickness H, and the thermal conductivity, the temperature of the heating body 1110 can be adjusted to be higher upstream than downstream along the aerosol flow path A, or even to exhibit a gradient distribution pattern that gradually decreases. When the width W is varied, the width W decreases in an arithmetic progression along the aerosol flow path A. When thermal conductivity is varied, the physical structural parameters of the connection area 11113, including the thermal conductivity, decrease in an arithmetic progression along the aerosol flow path A.

[0217] In other embodiments, the connection area 11113 may only function as an electrical conductor without conducting heat, thereby preventing heat transfer between the plurality of heating areas 11111. This facilitates temperature adjustment by varying the physical structural parameters of the heat dissipation area 11112 and the heating area 11111.

[0218] As shown in FIGS. 31 and 8, in a specific embodiment, along the aerosol flow path A, the temperature adjustment portion includes a heating area 11111 and a heat dissipation area 11112. The physical structural parameters of the heating area 11111 include the diameter of the chamfer, and the physical structural parameters of the heat dissipation area 11112 include

the width W. There are five heating areas 11111, and the heat dissipation areas 11112 are symmetrically arranged at both ends of the heating areas 11111, i.e., there are ten heat dissipation areas 11112. There are six connection areas 11113, two of which are used to achieve conductive connection between the heating areas 11111 and the conductive areas 11114. By synchronously and gradually varying the chamfer diameter of the heating area 11111 and the width W of the heat dissipation area 11112, the heating areas 11111 and the heat dissipation areas 11112 work together to ensure that the temperature of the heating body 1110 has the temperature field distribution shown in FIG. 30. It should be noted that the temperature values in FIG. 30 are merely illustrative of a specific embodiment, to facilitate understanding of the temperature gradient, and do not necessarily require the temperature of the heating body 1110 to be maintained at this value during each application.

[0219] As shown in FIGS. 34-35, FIG. 34 is a first simplified structural diagram of an atomizing device 1000 provided in some embodiments of the present application. FIG. 35 is a simplified structural diagram of an atomizing device 1000 provided in some embodiments of the present application.

[0220] As shown in FIGS. 34-35, an embodiment of the present application provides an atomizing device 1000 including a power supply portion 200 and an atomizer 100 provided in any of the above embodiments. One end of the atomizer 100 is connected to the power supply portion 200, which can power the atomization assembly 10 of the atomizer 100.

[0221] The specific structure of the atomizer 100 has been described above and will not be further repeated here. The power supply portion 200 and the atomizer 100 can be detachably connected or non-detachably connected.

[0222] Specifically, the atomizing device 1000 also includes a housing, which can be understood as a collection of multiple structural components. The housing defines at least one mounting space for mounting the power supply portion 200 and/or the atomizer 100. In some specific embodiments, the power supply portion 200 and the atomizer 100 can be integrated into one device, housed together within the housing. In other specific embodiments, the housing includes a first housing and a second housing that are detachably connected. The first housing is the liquid storage tank 20 or the support portion 110 described above. The first housing is used to mount other components of the atomizer 100, while the second housing is used to mount other components of the power supply portion 200. This allows for detachable connection between the power supply portion 200 and the atomizer 100, facilitating separate replacement and maintenance of the power supply portion 200 or the atomizer 100.

[0223] The above description is only a preferred embodiment of the present application and is not intended

to limit the present application. Any modifications, equivalent replacements and improvements made within the spirit and principles of the present application should be included in the scope of protection of the present application.

Claims

1. An atomization assembly, **characterized by** comprising:

a heating element (111), wherein the heating element (111) is provided with a first pin (112) and a second pin (113);
a cotton-wrapped layer (118), wherein one or more cotton-wrapped layers (118) are provided and are sleeved on an outer side of the heating element (111) along a radial direction of the atomization assembly (10); and
a support member (119), wherein the support member (119) is sleeved on an outer side of the cotton-wrapped layer (118), a material of the support member (119) is a corrosion-resistant material to prevent the support member (119) from chemically reacting with an aerosol matrix in an atomizer (100).

2. The atomization assembly according to claim 1, **characterized in that** the material of the support member (119) is a stainless steel material, and a passivation layer is formed on an outer surface of the support member (119); and/or, the support member (119) is a stamped member.

3. The atomization assembly according to claim 1 or 2, **characterized in that** two cotton-wrapped layers (118) are provided, and the two cotton-wrapped layers (118) are respectively an inner wrapped cotton (114) and an outer wrapped cotton (116); two support members (119) are provided, and the two support members (119) are respectively an inner bracket (115) and an outer cover (117); the inner wrapped cotton (114), the inner bracket (115), the outer wrapped cotton (116), and the outer cover (117) are sequentially arranged from an inside to outside; and the heating element (111) is arranged on an inner side of the inner wrapped cotton (114).

4. The atomization assembly according to claim 3, **characterized in that** the atomization assembly (10) further comprises an atomization bracket (121), a first electrode portion (122), and a second electrode portion (123), wherein the atomization bracket (121) is arranged on a side of the outer cover (117) along the axial direction, and the second electrode portion (123) is sleeved on an outer

periphery of the atomization bracket (121), and a mounting hole (1211) is formed in the atomization bracket (121), and the first electrode portion (122) is mounted in the mounting hole (1211), an end of the first pin (112) is in contact with the first electrode portion (122), and an end of the second pin (113) is squeezed between the atomization bracket (121) and the second electrode portion (123).

5. The atomization assembly according to claim 4, **characterized in that** the atomization bracket (121) is injection molded on the inner bracket (115).

6. The atomization assembly according to claim 4, **characterized in that** a side avoidance groove (1213) is provided on an outer peripheral surface of the atomization bracket (121) and/or on an inner side surface of the second electrode portion (123), and an end of the second pin (113) is located in the side avoidance groove (1213).

7. The atomization assembly according to claim 6, **characterized in that** the atomization assembly (10) further comprises a first insulating member (124), the first insulating member (124) is inserted into the mounting hole (1211), the first electrode portion (122) is inserted into the first insulating member (124), and an end of the first pin (112) is squeezed between the first insulating member (124) and the first electrode portion (122).

8. The atomization assembly according to claim 7, **characterized in that** the second pin (113) comprises a first section (1131), a second section (1132), and a third section (1133); the third section (1133) is located in the side avoidance groove (1213), the second section (1132) is located on a side of the atomization bracket (121) away from the outer cover (117), an end of the second section (1132) is connected to the third section (1133), another end of the second section (1132) is connected to an end of the first section (1131) extending between the first insulating member (124) and the atomization bracket (121), and another end of the first section (1131) is connected to the heating element (111).

9. The atomization assembly according to claim 8, **characterized in that** an end avoidance groove (1214) is provided on an end surface of the atomization bracket (121) away from the outer cover (117), and the second section (1132) is located at the end avoidance groove (1214).

10. The atomization assembly according to claim 7, **characterized in that** the first pin (112) comprises a pin body portion (1121) and a pin bending portion

(1122), an end of the pin body portion (1121) is connected to the heating element (111), and another end of the pin body portion (1121) is connected to the pin bending portion (1122), and the pin bending portion (1122) is located on a side of the first insulating member (124) away from the outer cover (117).

11. The atomization assembly according to claim 10, **characterized in that** the first electrode portion (122) comprises an electrode body (1221) and an electrode connection portion (1222), and the electrode connection portion (1222) is connected to a circumferential side surface of the electrode body (1221);

the atomization assembly (10) further comprises a second insulating member (125), the second insulating member (125) and the first insulating member (124) are arranged on two sides of the electrode connection portion (1222) along an axis direction of the electrode body (1221), and the two ends of the electrode body (1221) are respectively inserted into the first insulating member (124) and the second insulating member (125); and

the electrode connection portion (1222) is provided with an avoidance notch (1223), and the pin bending portion (1122) is located in the avoidance notch (1223) and is limited between the first insulating member (124) and the second insulating member (125).

12. An atomizer, **characterized by** comprising a support base (30), a liquid storage tank (20), and the atomization assembly (10) according to any one of claims 1 to 11, wherein an end of the atomization assembly (10) is fixed in the liquid storage tank (20) via the support base (30).

13. The atomizer according to claim 12, **characterized in that** the atomizer (100) further comprises a protective sleeve (40) and a connecting rod (50), the protective sleeve (40) is fixedly connected to an end of the support base (30), and the protective sleeve (40) covers the atomization assembly (10), and an end of the protective sleeve (40) away from the support base (30) is sealed with the liquid storage tank (20), and the connecting rod (50) is connected to an end of the protective sleeve (40) away from the support base (30), and the connecting rod (50) extends out through a nozzle (221) on the liquid storage tank (20); when a force is applied to the connecting rod (50) in a direction away from the support base (30), the protective sleeve (40) is capable of separating from the support base (30) and the protective sleeve (40) is capable of being pulled to a target position.

14. The atomizer according to claim 13, **characterized in that** the support base (30) and the protective sleeve (40) are an integrally formed structure; and/or the protective sleeve (40) and the connecting rod (50) are an integrally formed structure.

15. The atomizer according to claim 13, **characterized in that** the protective sleeve (40) comprises a first sleeve (41), a second sleeve (42), and a connecting sleeve (43), the first sleeve (41) is sleeved on the support base (30), the connecting sleeve (43) is located between the first sleeve (41) and the second sleeve (42), the connecting sleeve (43) connects the first sleeve (41) and the second sleeve (42), and the connecting sleeve (43) is a thin-walled structure to form a breakable portion.

16. The atomizer according to claim 15, **characterized in that** the first sleeve (41) comprises an end surface portion (411) and a circumferential portion (412), the end surface portion (411) is arranged at an end of the support base (30) close to the second sleeve (42), the end surface portion (411) is connected to the connecting sleeve (43), the circumferential portion (412) is arranged on an outer peripheral surface of the support base (30), the end surface portion (411) is connected to the circumferential portion (412), and an outer peripheral surface of the circumferential portion (412) is formed with a first annular protrusion (413) for sealingly cooperating with the liquid storage tank (20).

17. The atomizer according to claim 13, **characterized in that** an easy-to-cut portion (425) is formed on the protective sleeve (40), the easy-to-cut portion (425) is connected to an outer peripheral surface of the connecting rod (50), and a thickness of the connecting rod (50) connected to the easy-to-cut portion (425) is less than a predetermined thickness value along an axial direction of the connecting rod (50).

18. The atomizer according to claim 17, **characterized in that** an end of the connecting rod (50) is inserted into the protective sleeve (40), and the end of the connecting rod (50) located in the protective sleeve (40) is formed with a first region (511) and a second region (512), the first region (511) and the second region (512) are arranged in sequence along a direction in which the connecting rod (50) extends into the protective sleeve (40), the first region (511) is connected to an inner side surface of the protective sleeve (40), a gap (45) is existed between the second region (512) and the inner side surface of the protective sleeve (40), and a portion of the protective sleeve (40) connected to the first region (511) forms the easy-to-cut portion (425).

19. The atomizer according to claim 17, **characterized in that** a cutting portion (23) is formed on an inner side surface of the liquid storage tank (20), and when the protective sleeve (40) is in the target position and applies a force to the connecting rod (50) in a direction away from the support base (30), and the easy-to-cut portion (425) is capable of being cut off by the cutting portion (23). 5
20. The atomizer according to claim 19, **characterized in that** the cutting portion (23) comprises a first cutting surface (232) and a second cutting surface (233); the first cutting surface (232) and the second cutting surface (233) are connected to form a cutting end (231), the first cutting surface (232) is closer to the connecting rod (50) relative to the second cutting surface (233), and the second cutting surface (233) is inclined in a direction away from the connecting rod (50) from a direction closer to the cutting end (231) to a direction away from the cutting end (231). 10 15 20
21. The atomizer according to claim 19, **characterized in that** the liquid storage tank (20) comprises a liquid storage tank body (21) and a nozzle portion (22), an end of the nozzle portion (22) extends from the liquid storage tank body (21), the nozzle portion (22) and the liquid storage tank body (21) are connected, an end of the nozzle portion (22) located outside the liquid storage tank body (21) forms a nozzle opening (221), an end of the protective sleeve (40) away from the support base (30) extends into the nozzle portion (22) and seals with an inner side surface of the nozzle portion (22), and the inner side surface of the nozzle portion (22) is formed with the cutting portion (23). 25 30 35
22. The atomizer according to claim 13, **characterized in that** materials of the protective sleeve (40) and the connecting rod (50) are a silicone material; and/or a material of the support base (30) is a plastic material. 40
23. The atomizer according to claim 13, **characterized in that** a liquid injection hole (32) is provided on the support base (30), the liquid injection hole (32) is communicated with an end opening (4111) on the protective sleeve (40), and a plug (70) is provided in the liquid injection hole (32); and/or, the support base (30) comprises a first base portion (35), a second base portion (36), and a base connecting plate (37); the first base portion (35) and the second base portion (36) are arranged at intervals along a distribution direction of the support base (30) and the protective sleeve (40), more than one base connecting plates (37) are provided and the base connecting plates (37) are connected with the first base portion (35) and the second base portion (36), and the first base portion (35) is provided with a base air inlet hole (31). 45 50 55
24. An atomizing device, **characterized by** comprising a power supply portion (200) and the atomizer (100) according to any one of claims 12 to 23, wherein an end of the atomizer (100) is connected to the power supply portion (200).

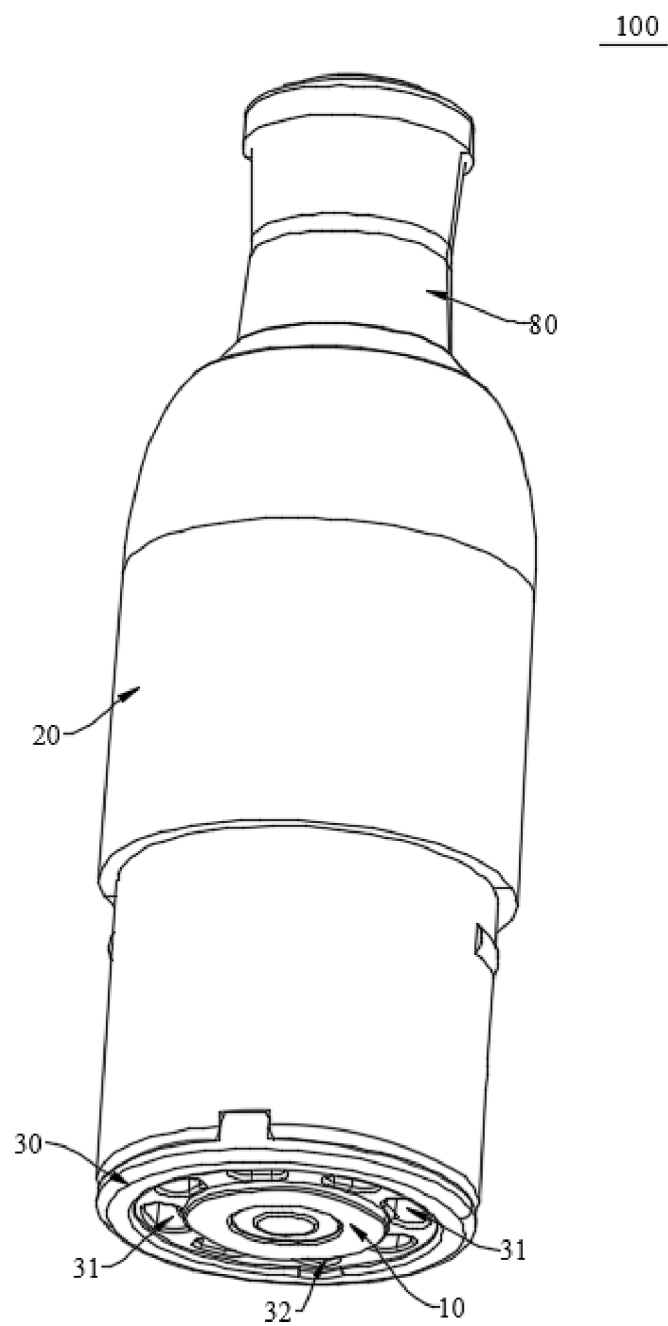


FIG. 1

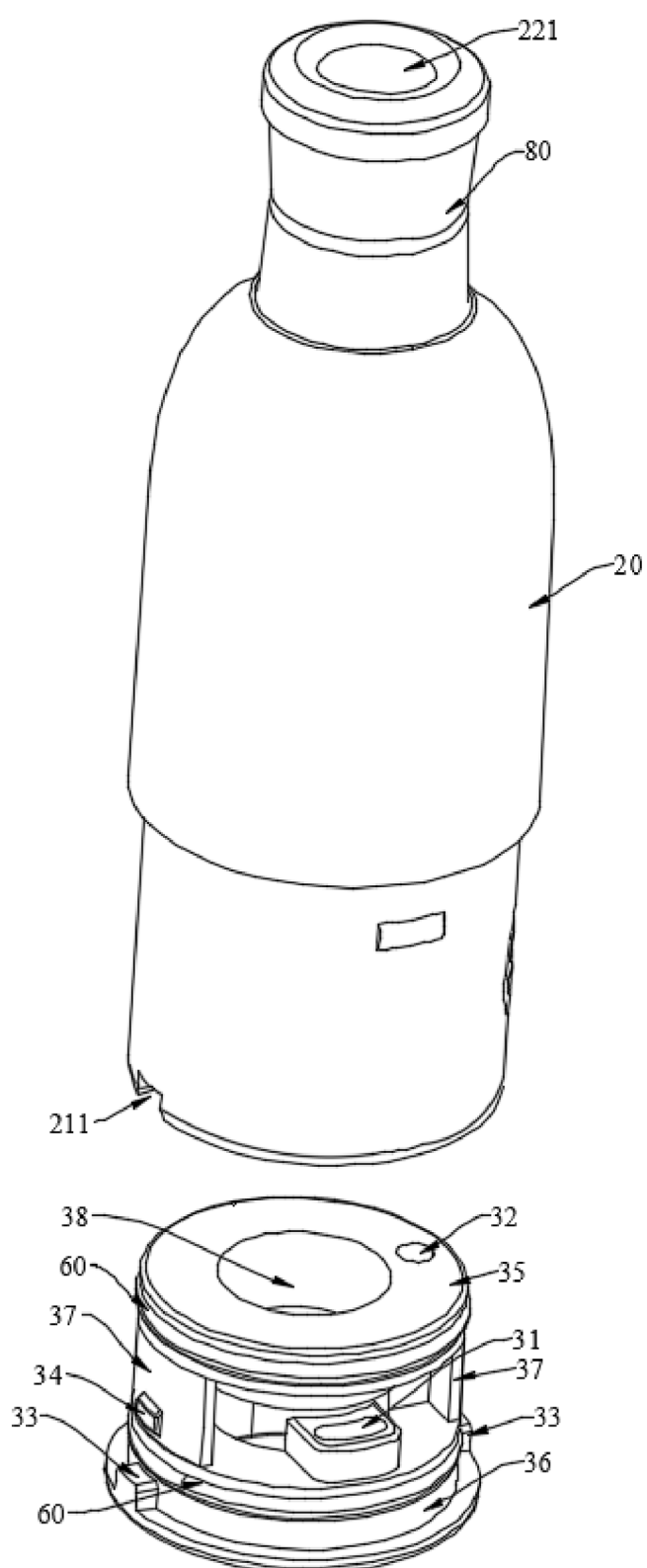


FIG. 2

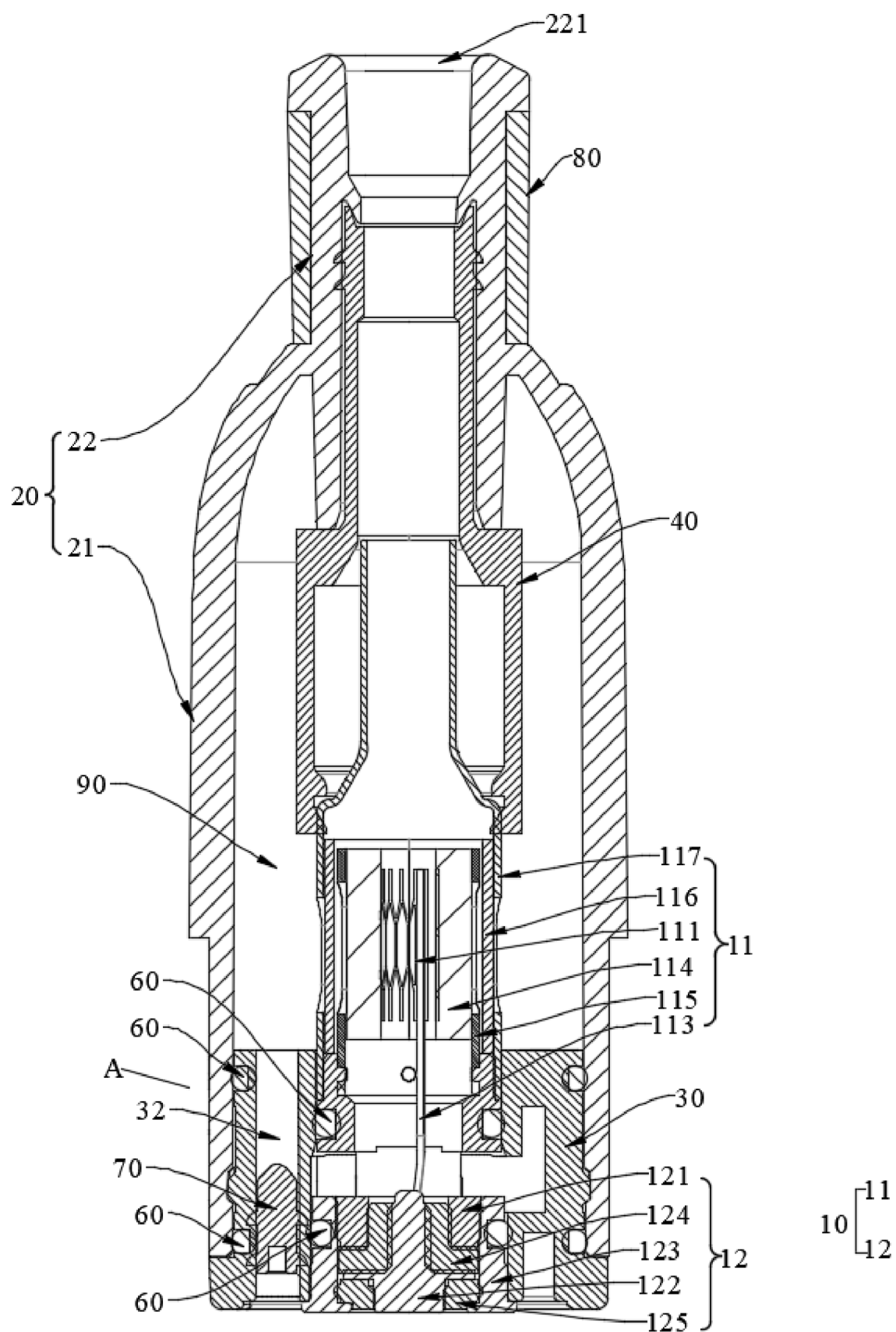


FIG. 3

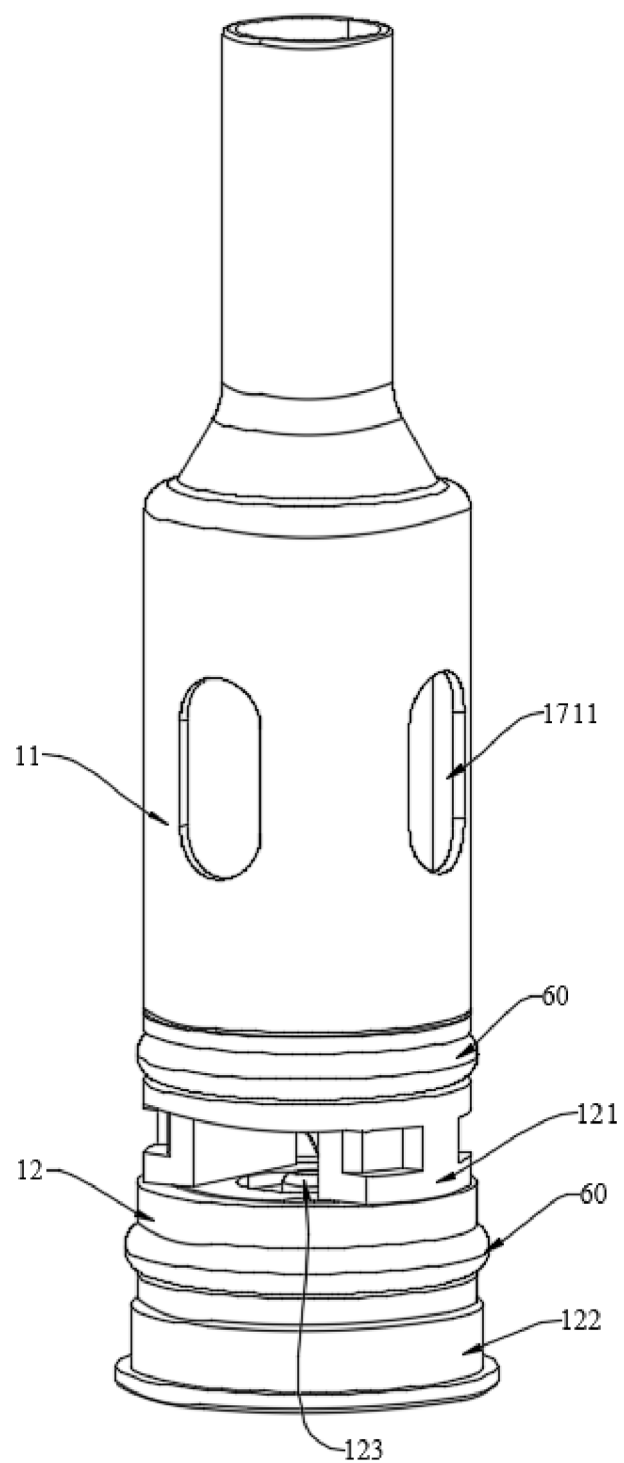


FIG. 4

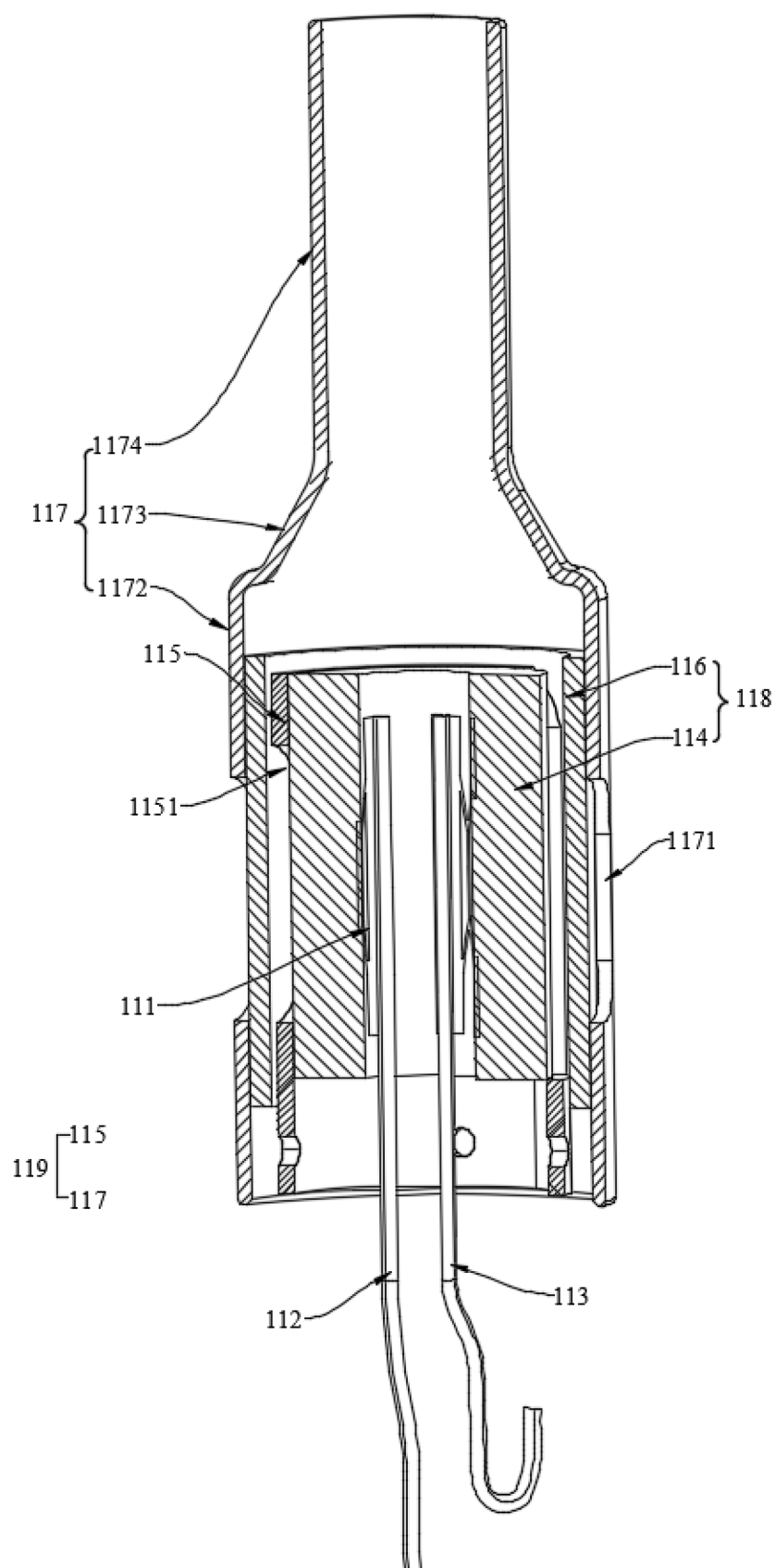


FIG. 5

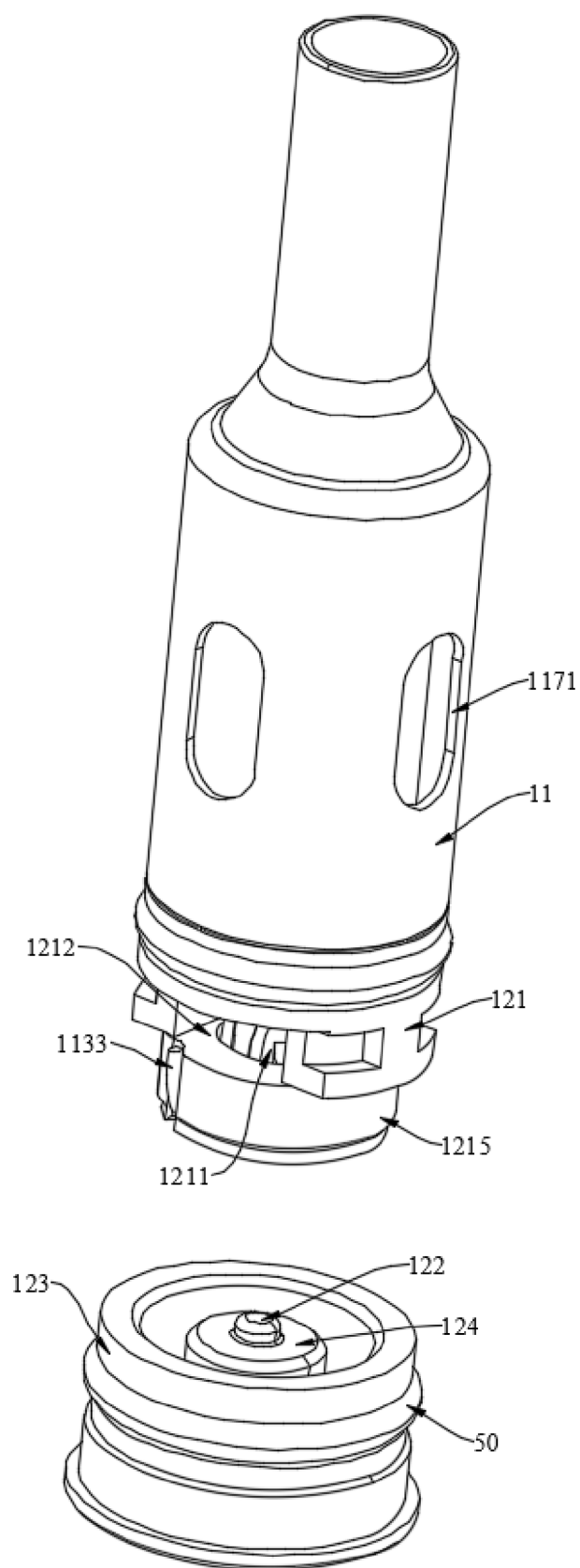


FIG. 6

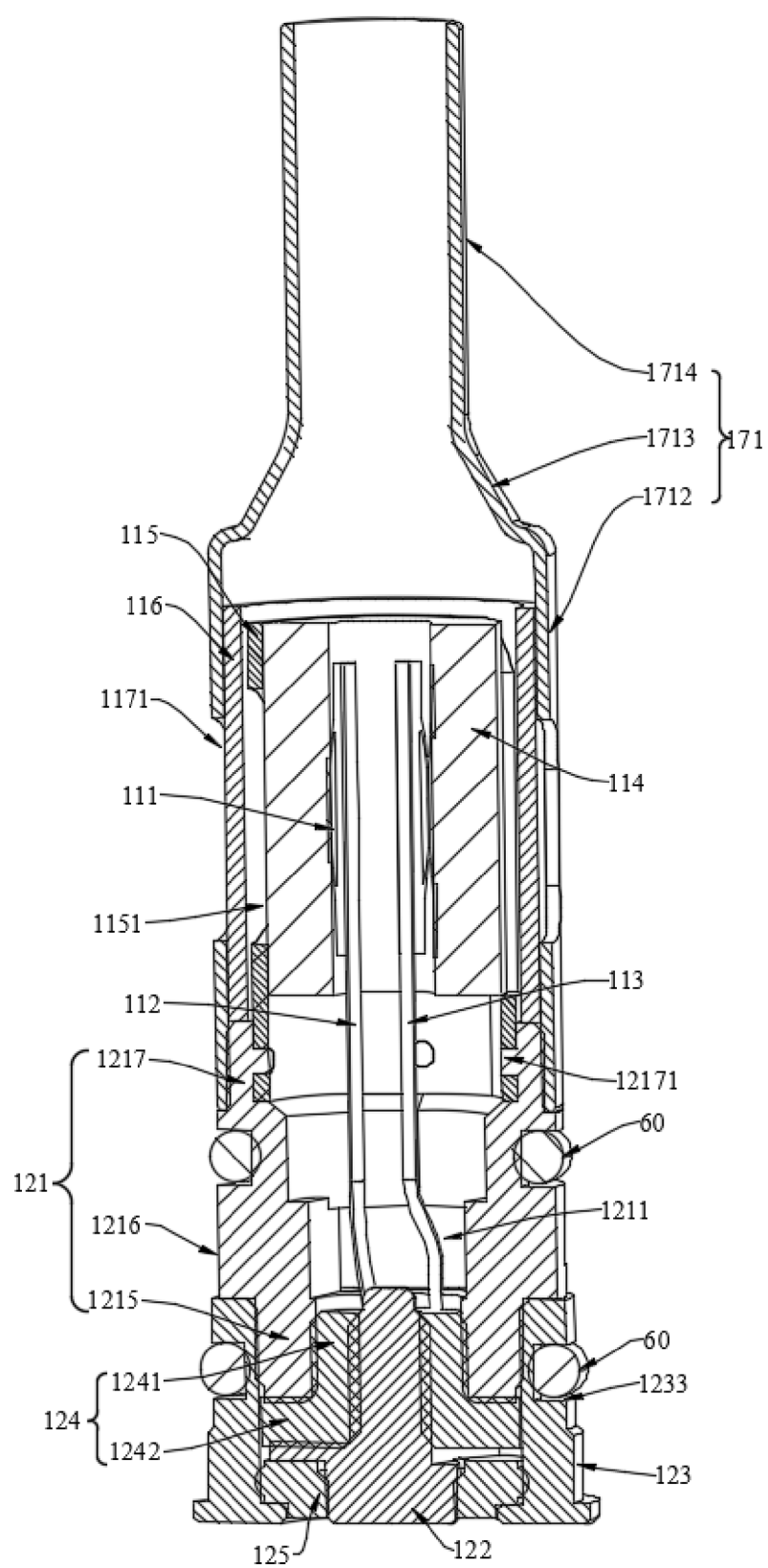


FIG. 7

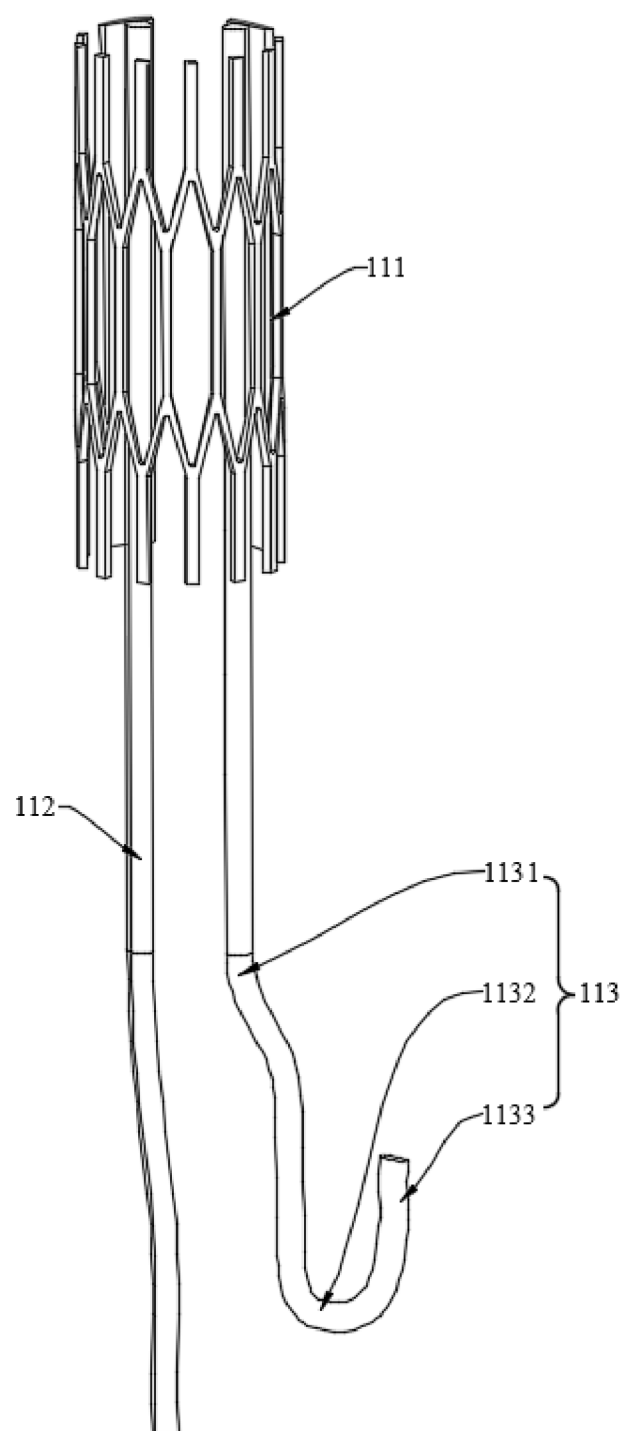


FIG. 8

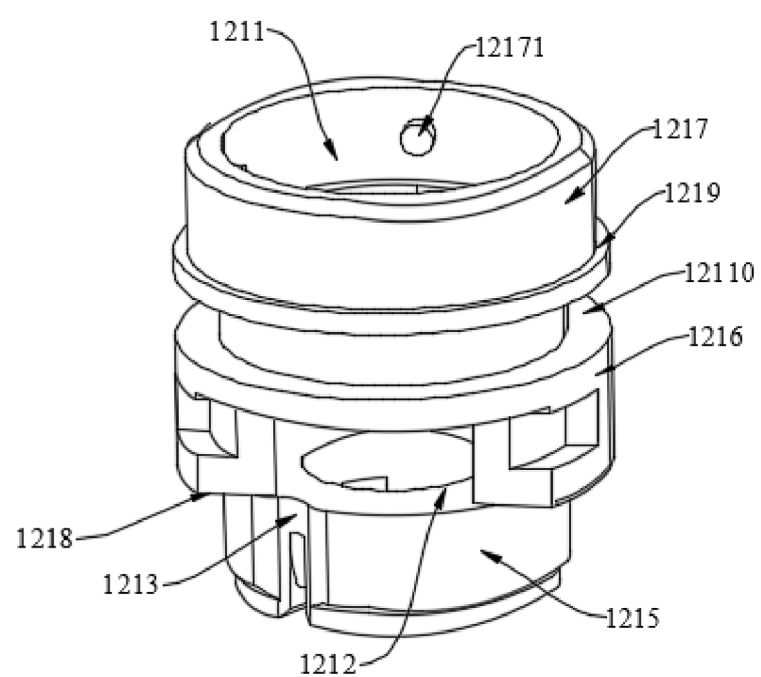


FIG. 9

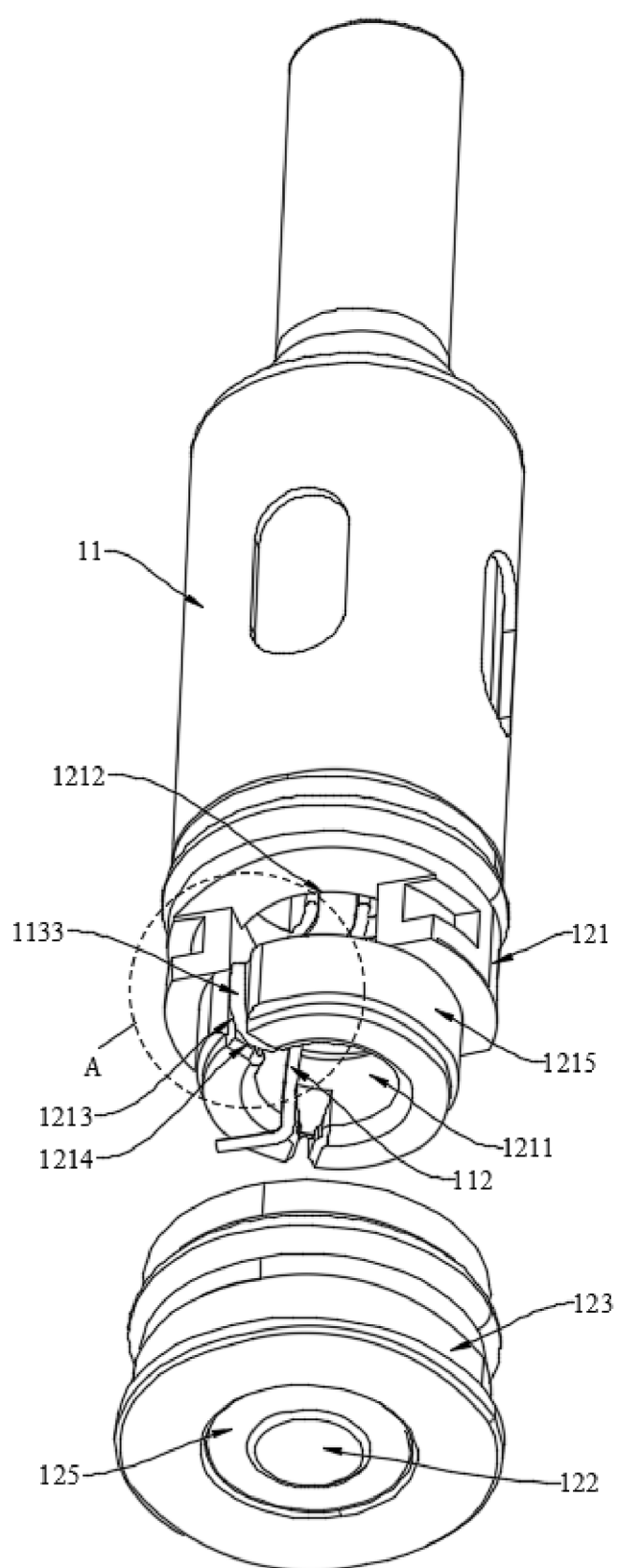


FIG. 10

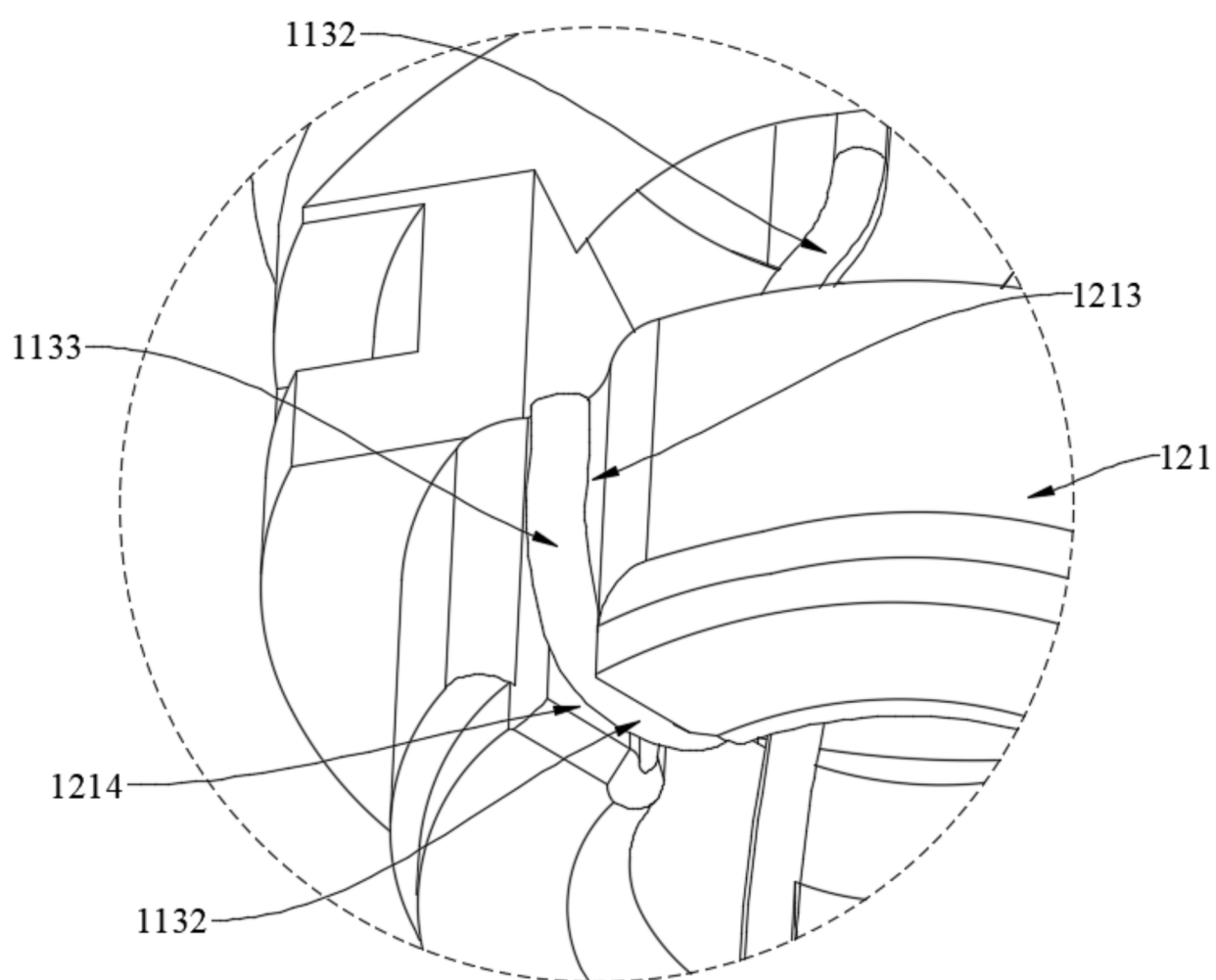


FIG. 11

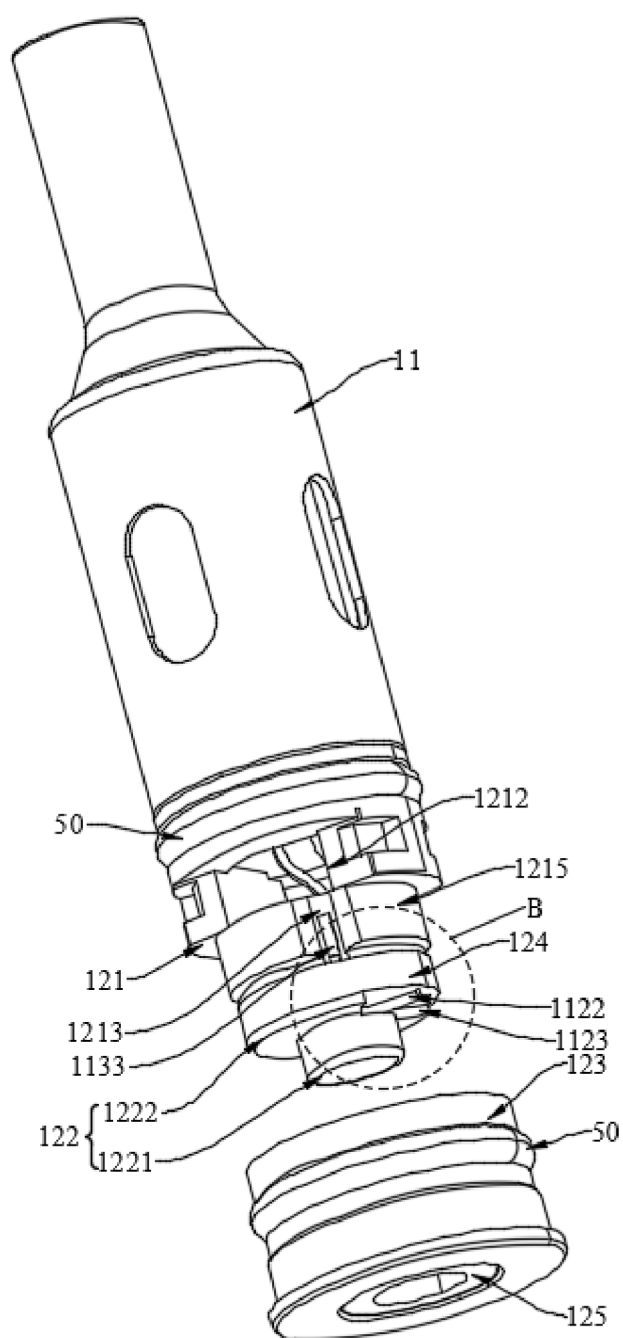


FIG. 12

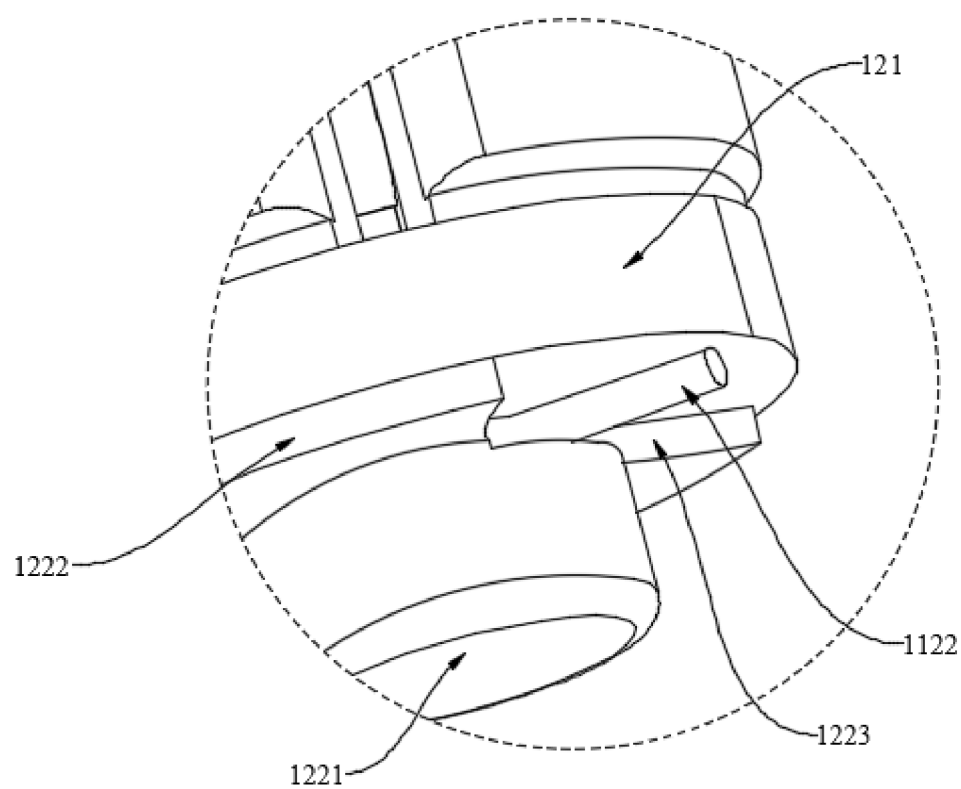


FIG. 13

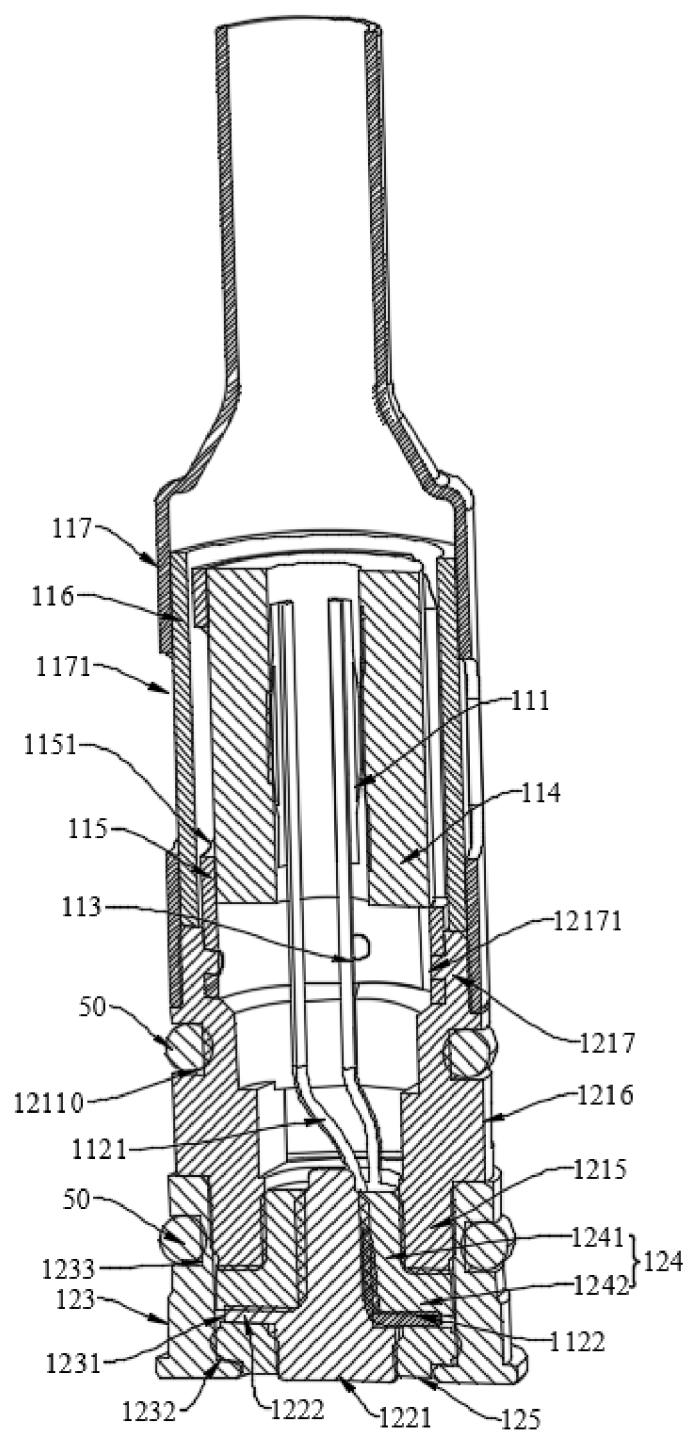


FIG. 14

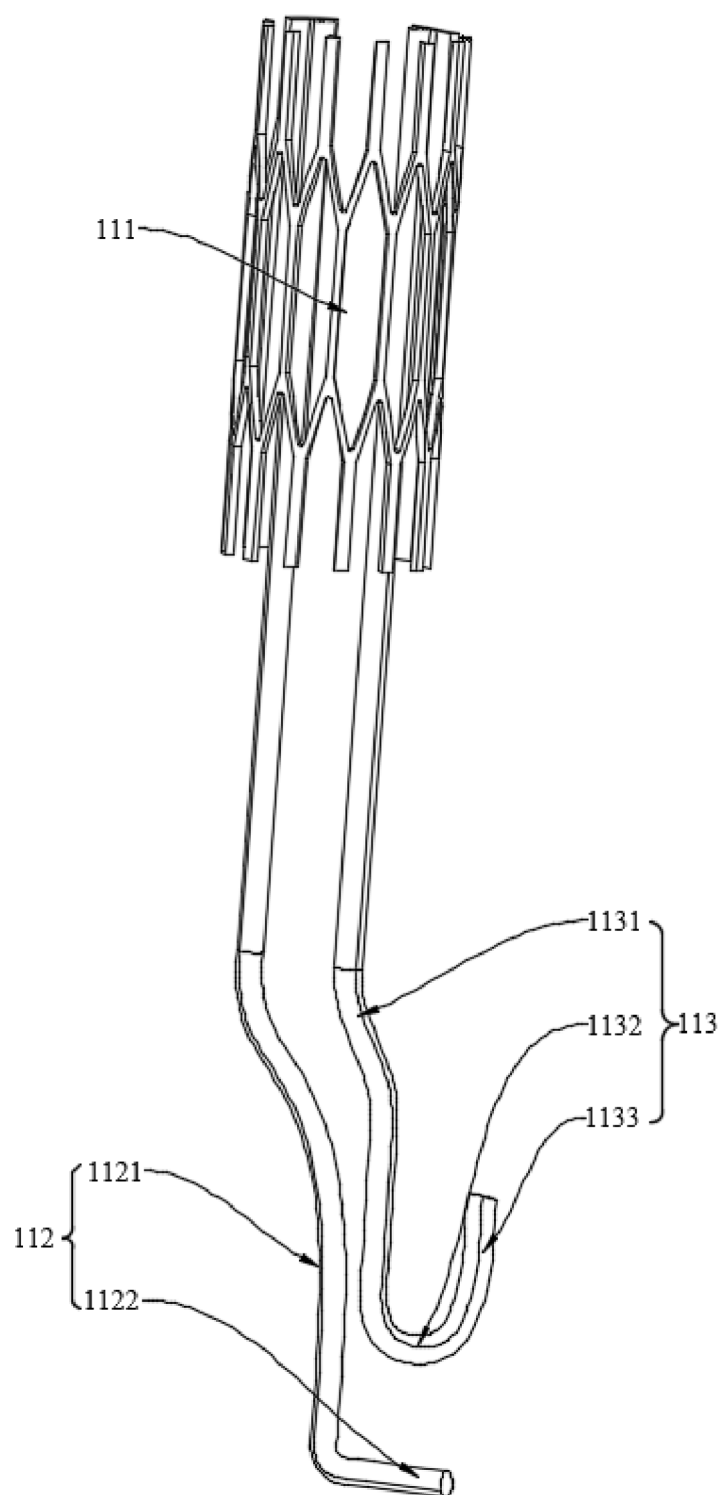


FIG. 15

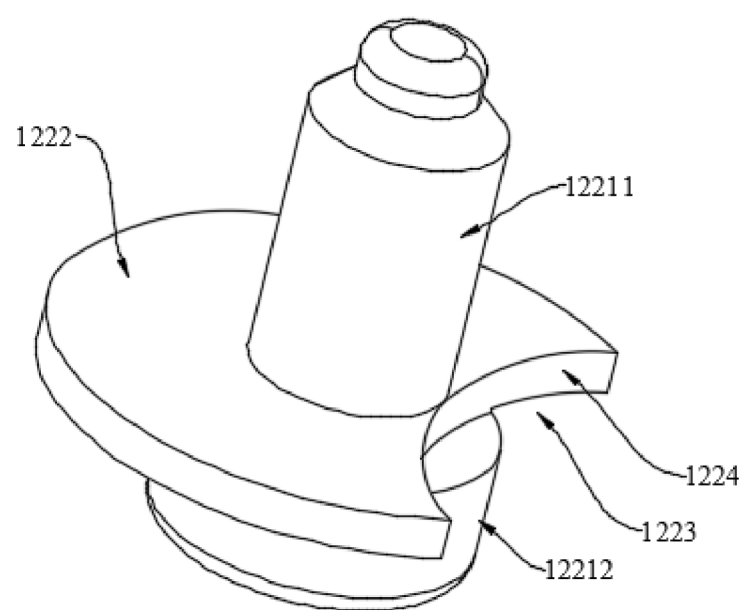


FIG. 16

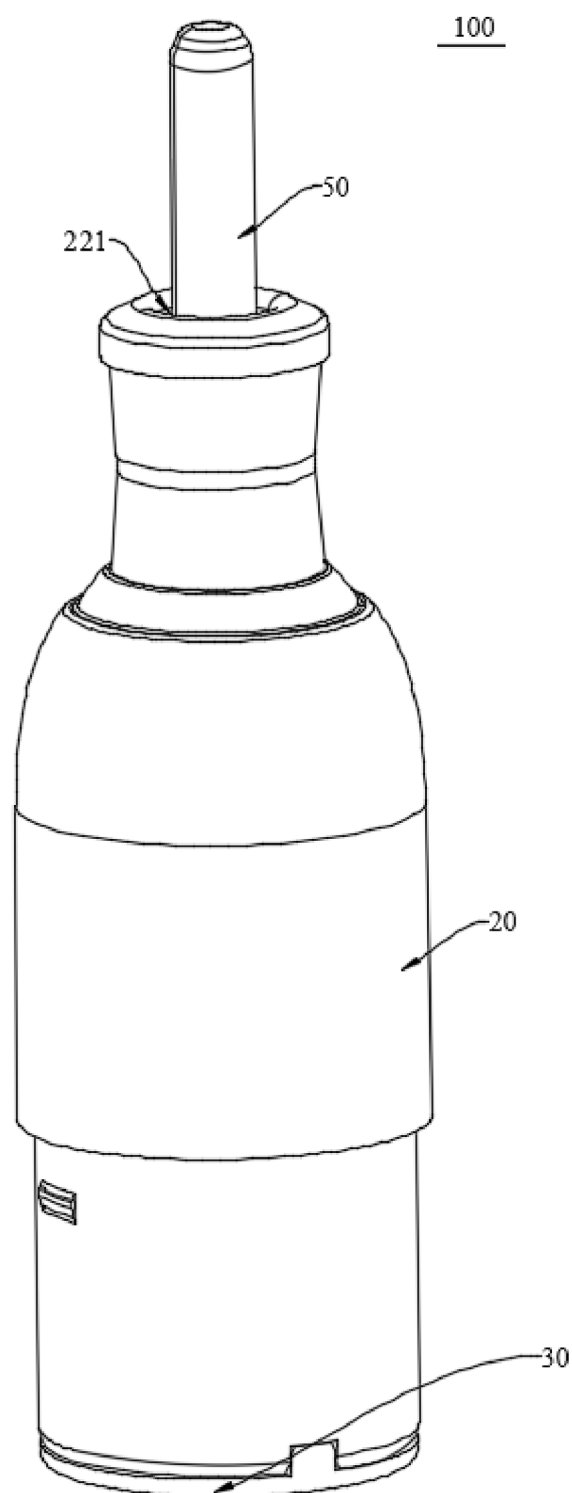


FIG. 17

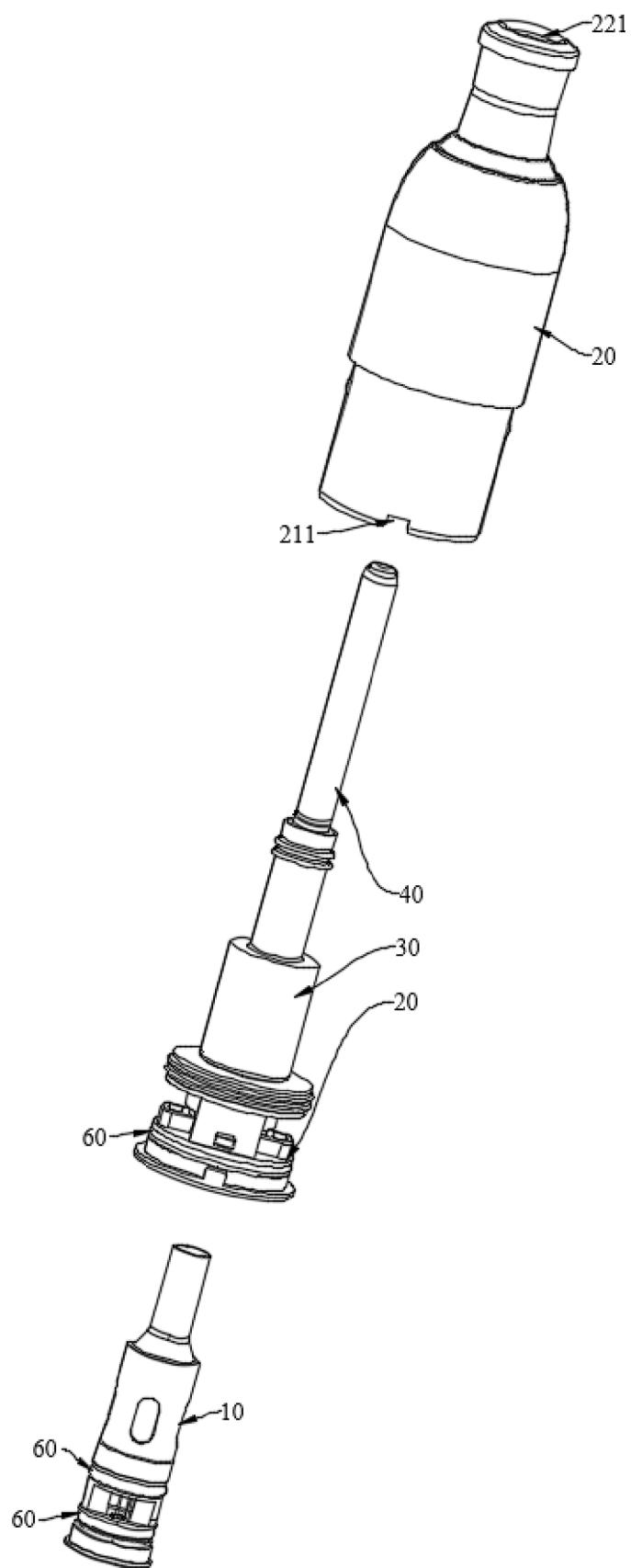


FIG. 18

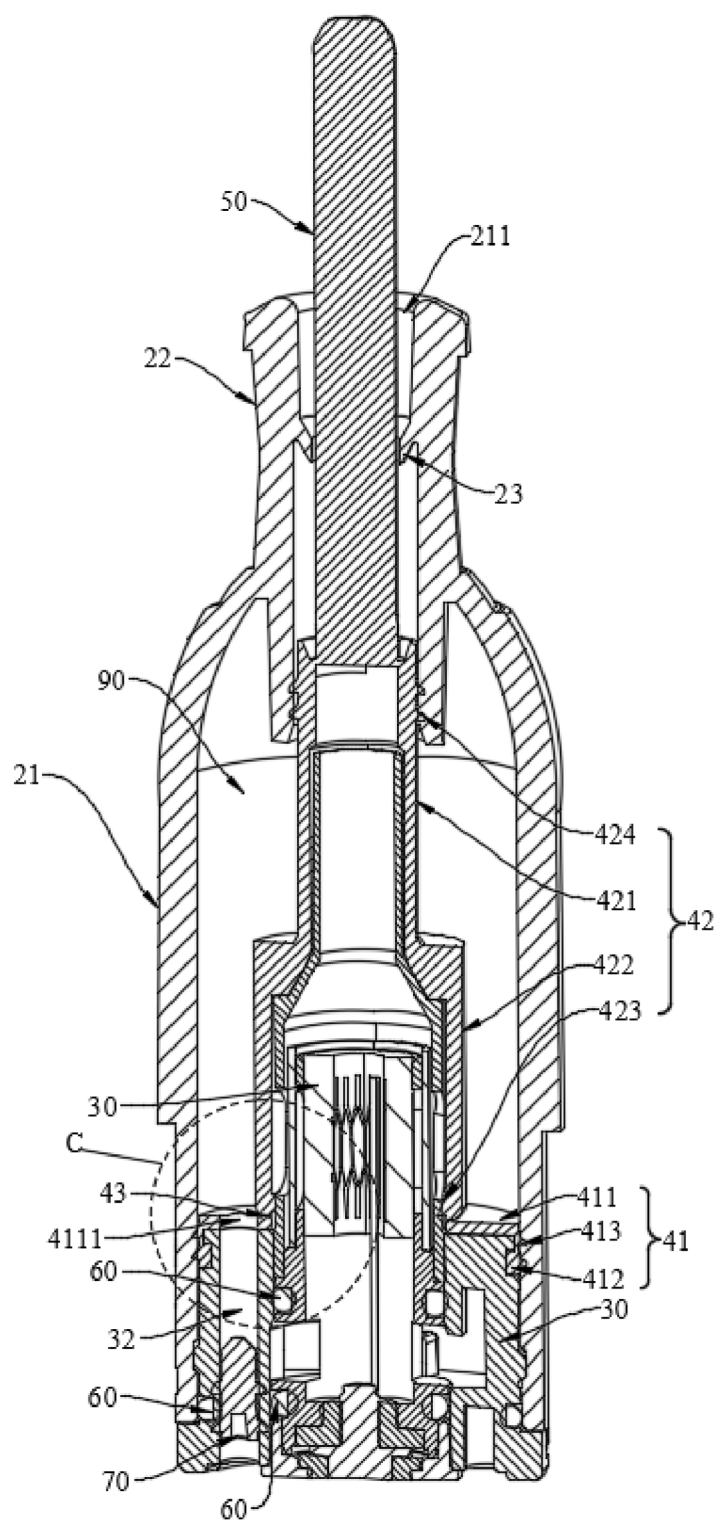


FIG. 19

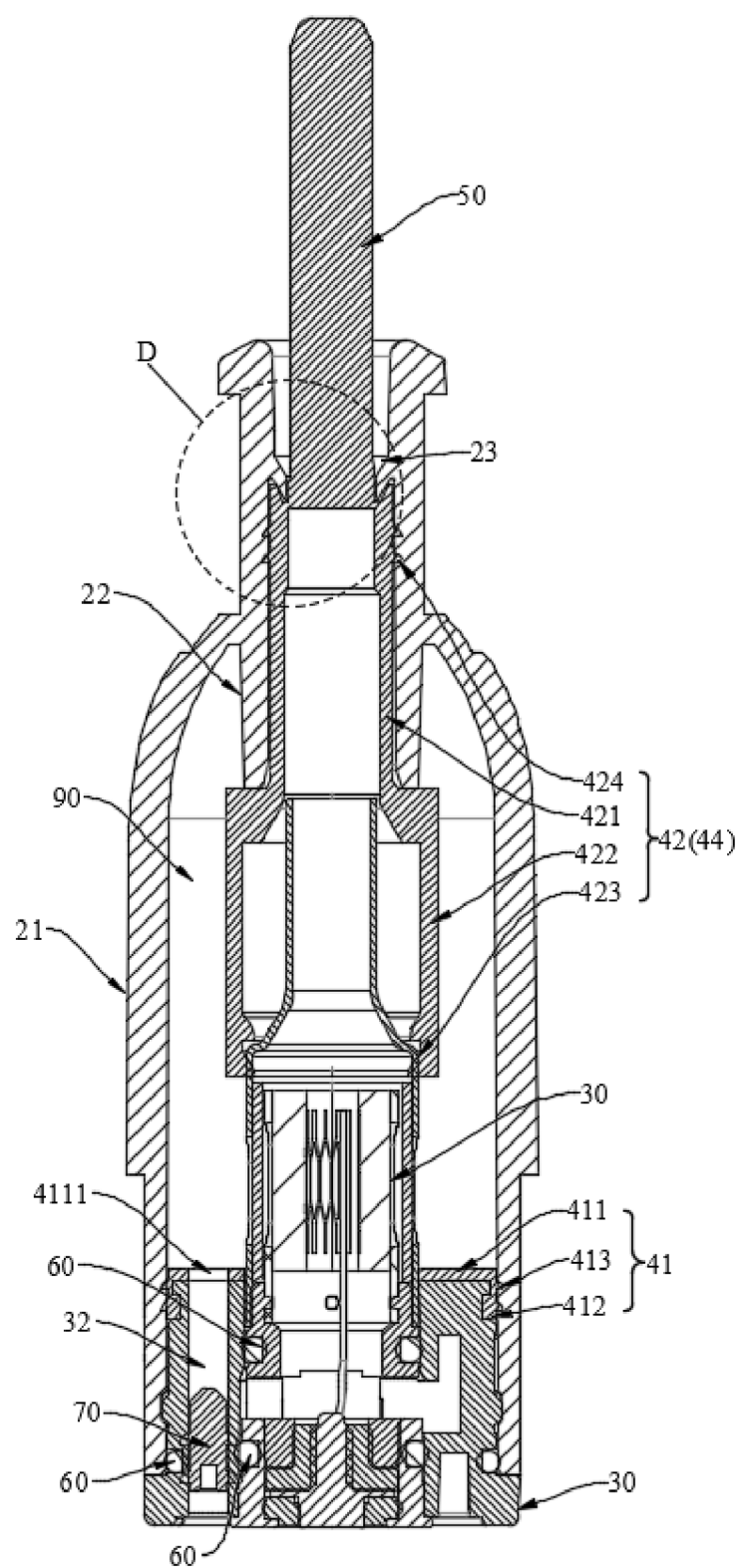


FIG. 20

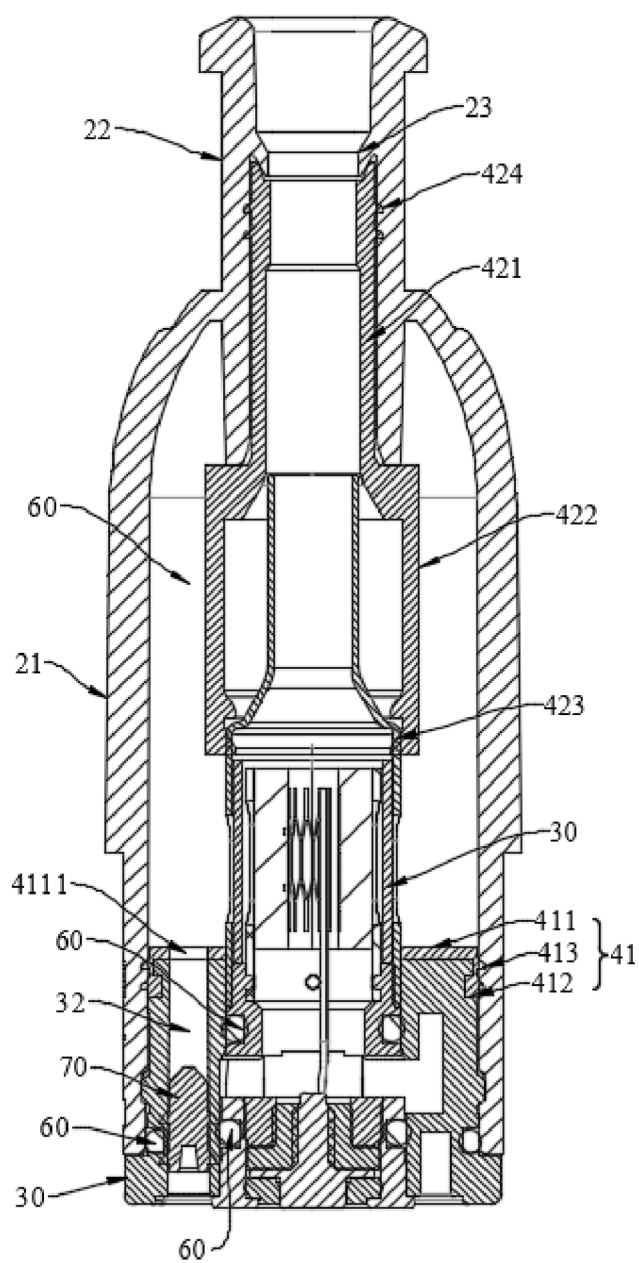


FIG. 21

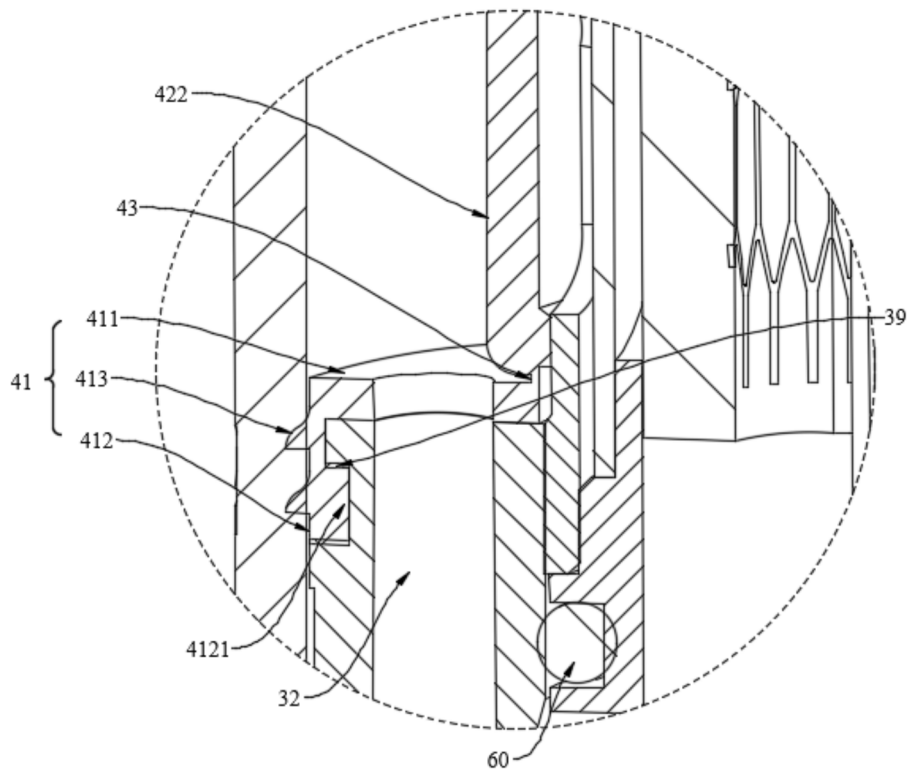


FIG. 22

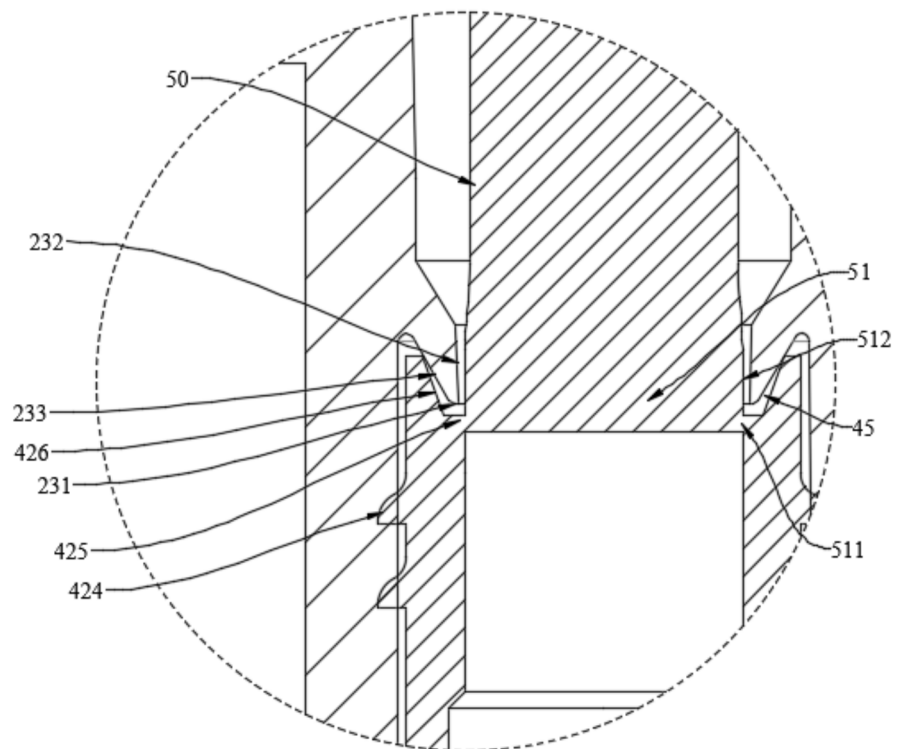


FIG. 23

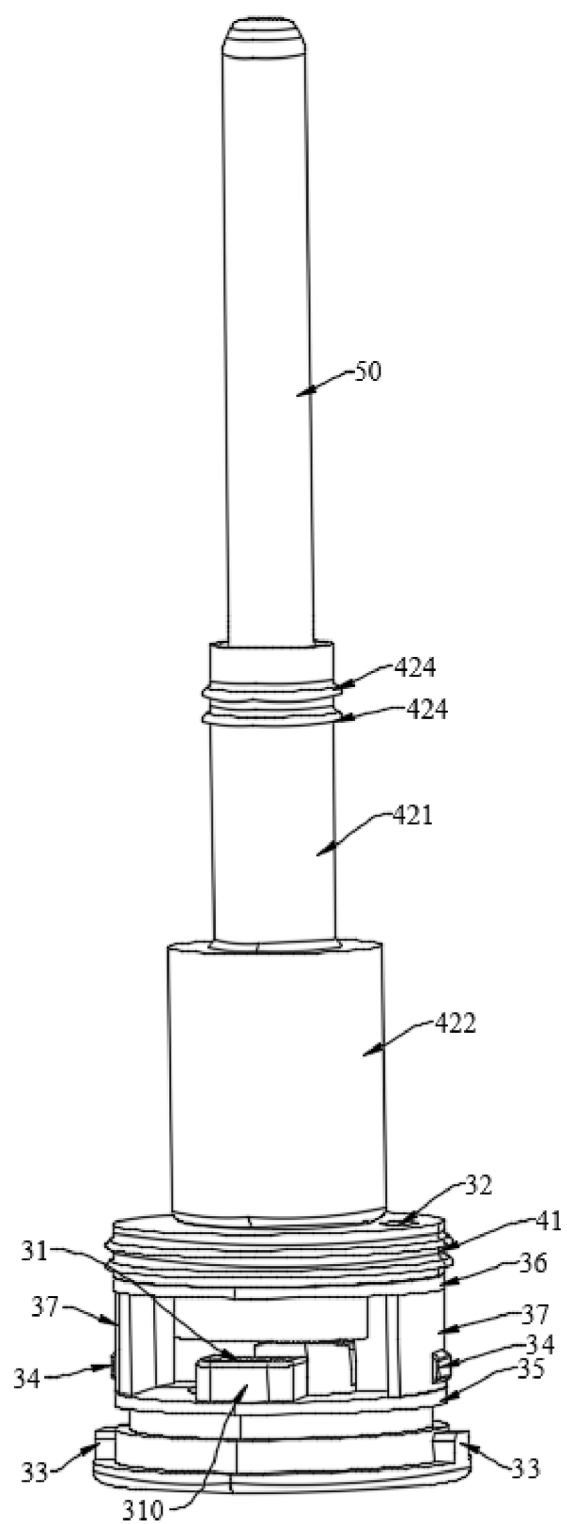


FIG. 24

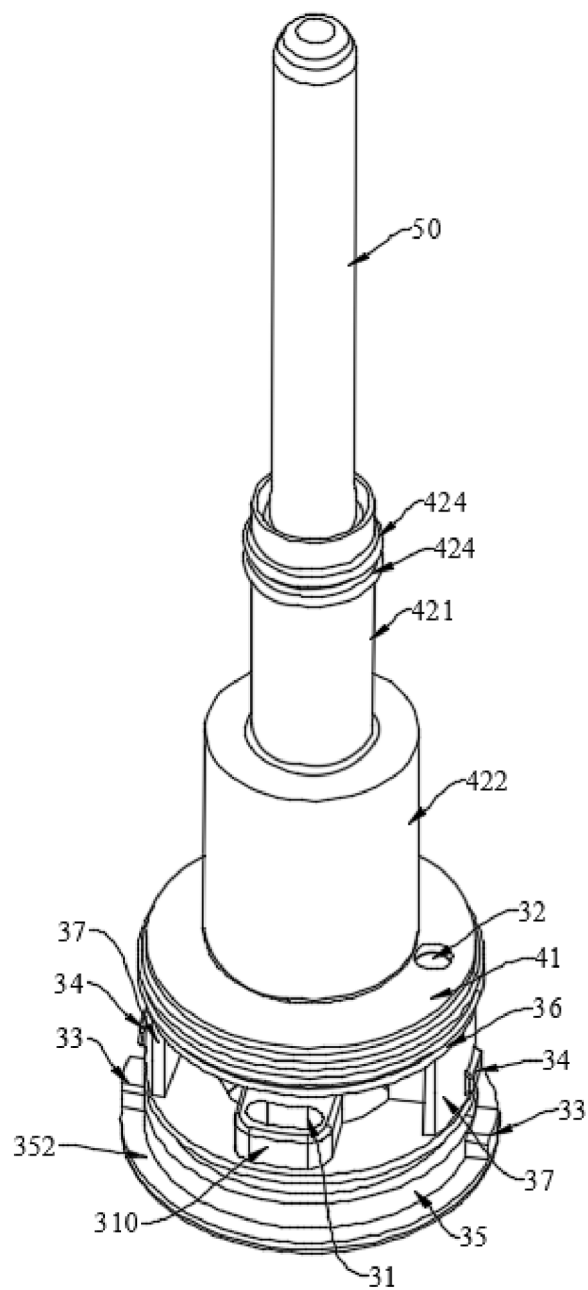


FIG. 25

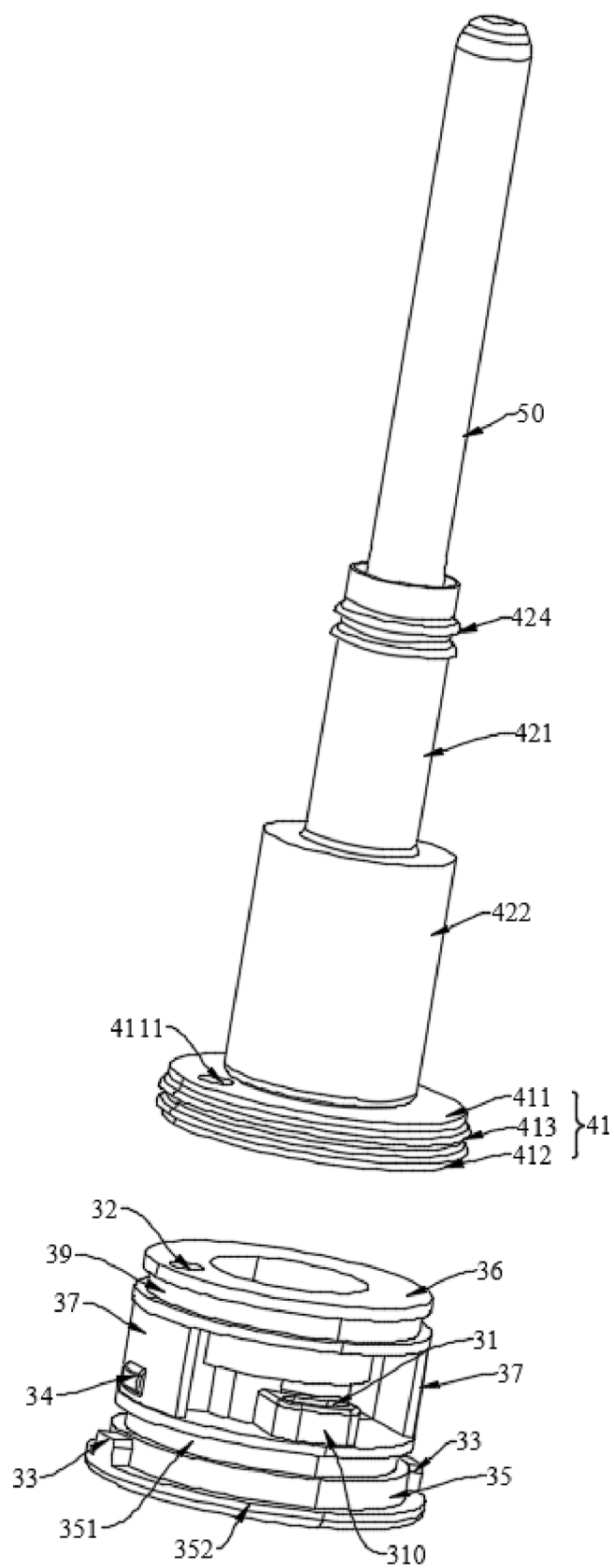


FIG. 26

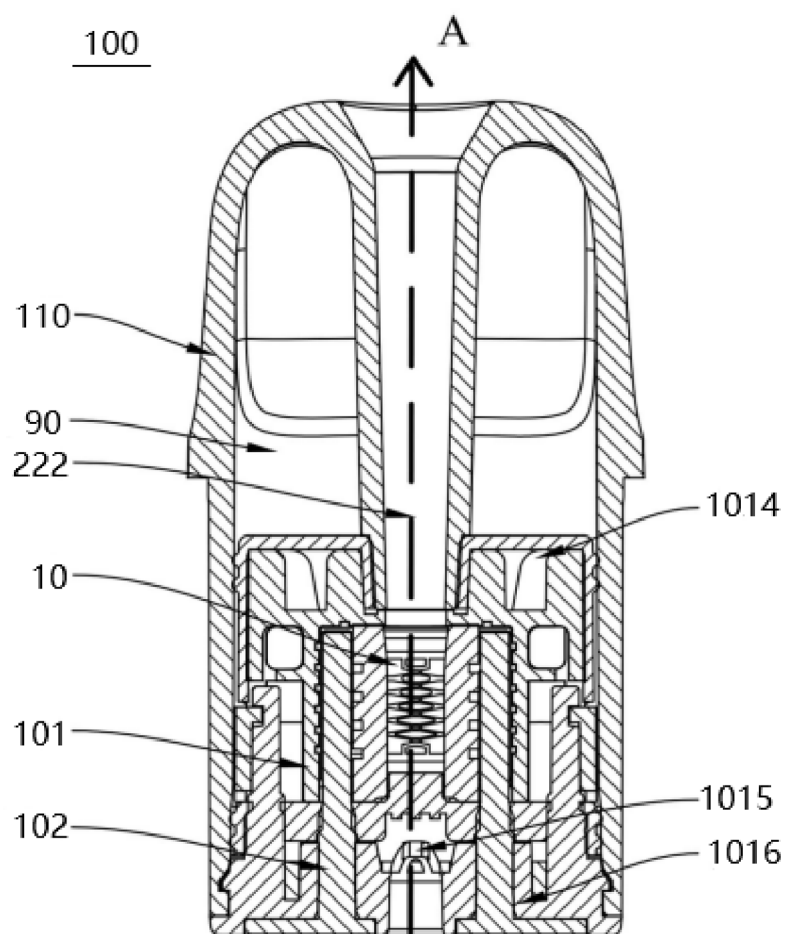


FIG. 27

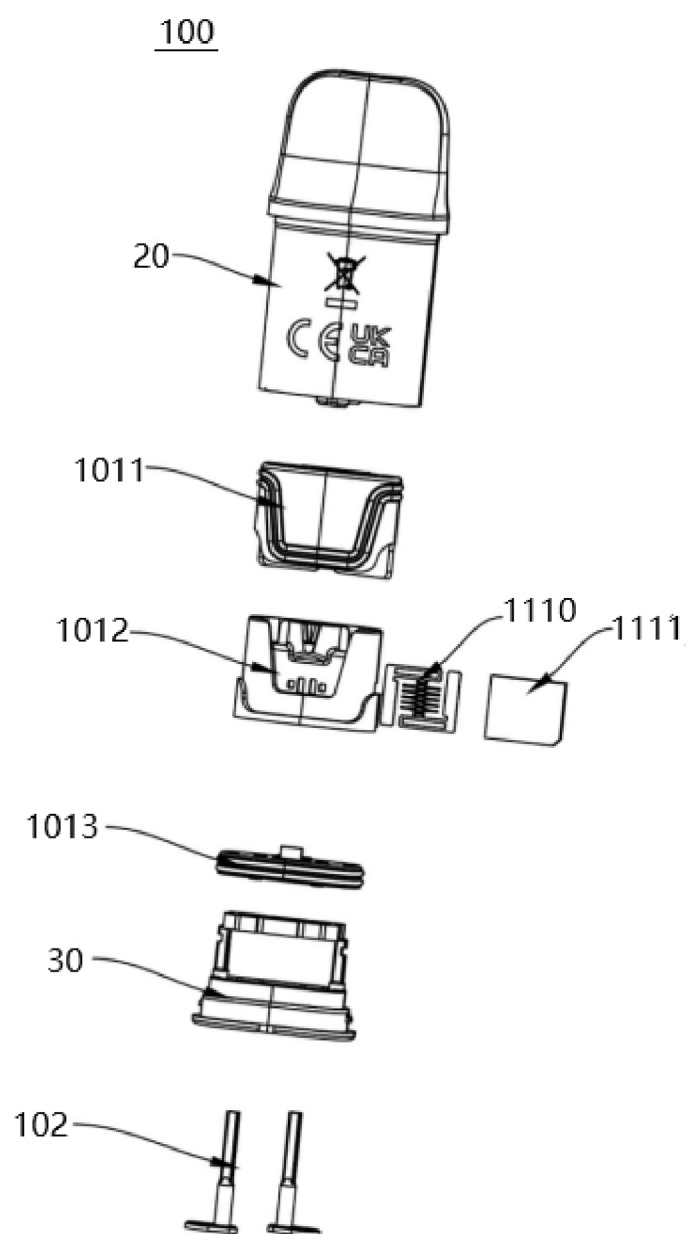


FIG. 28

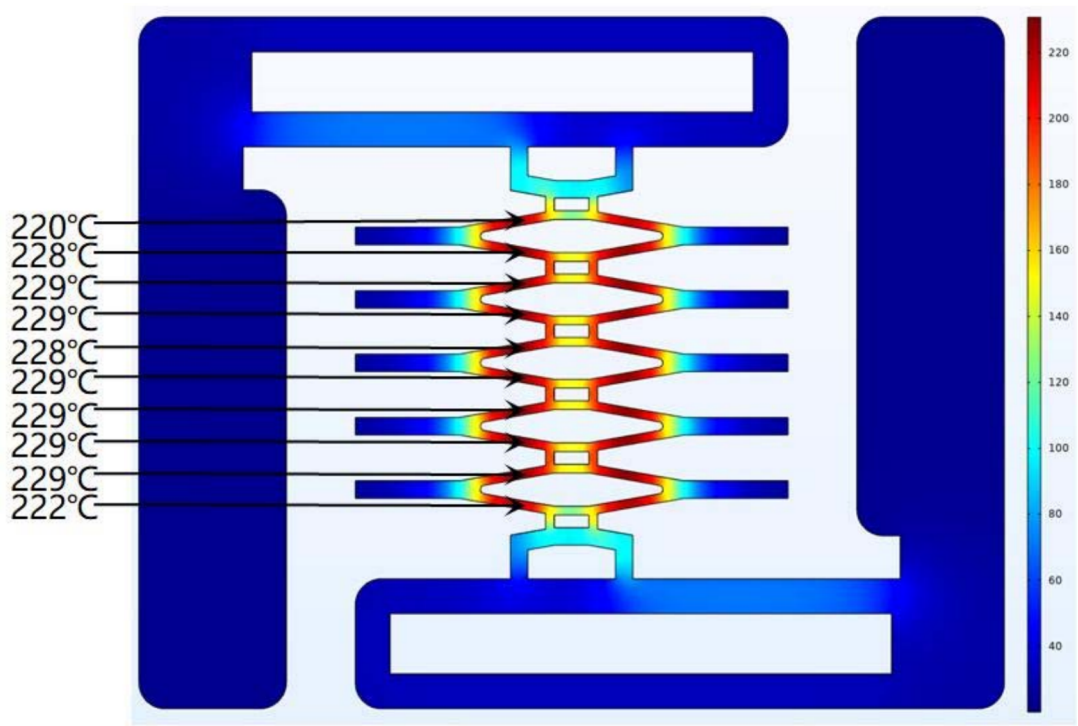


FIG. 29

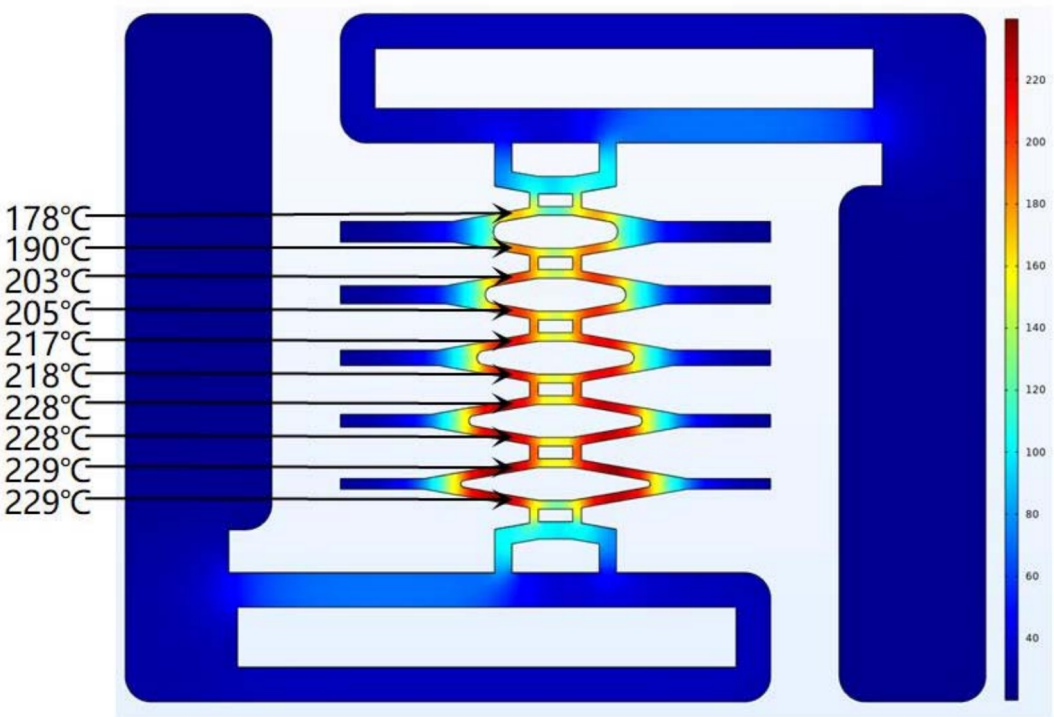


FIG. 30

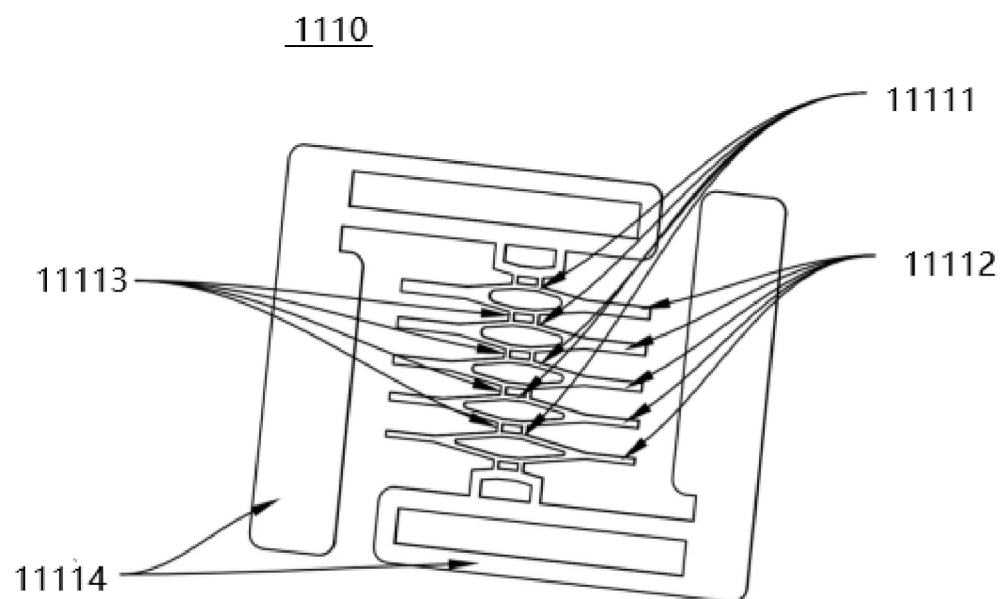


FIG. 31

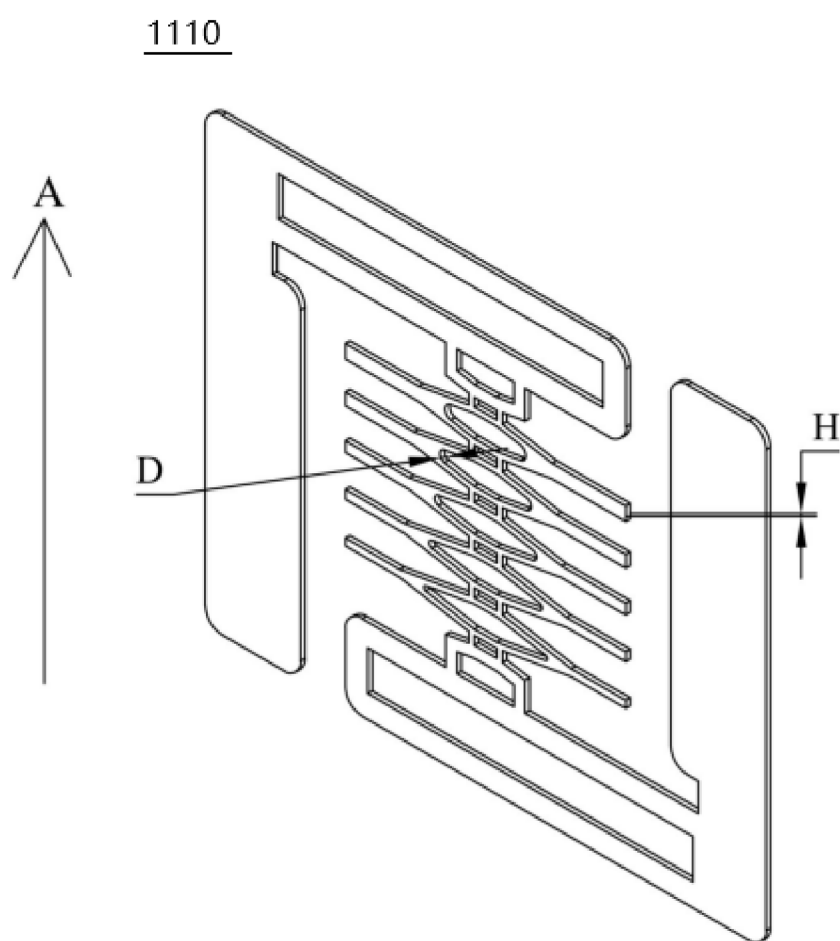


FIG. 32

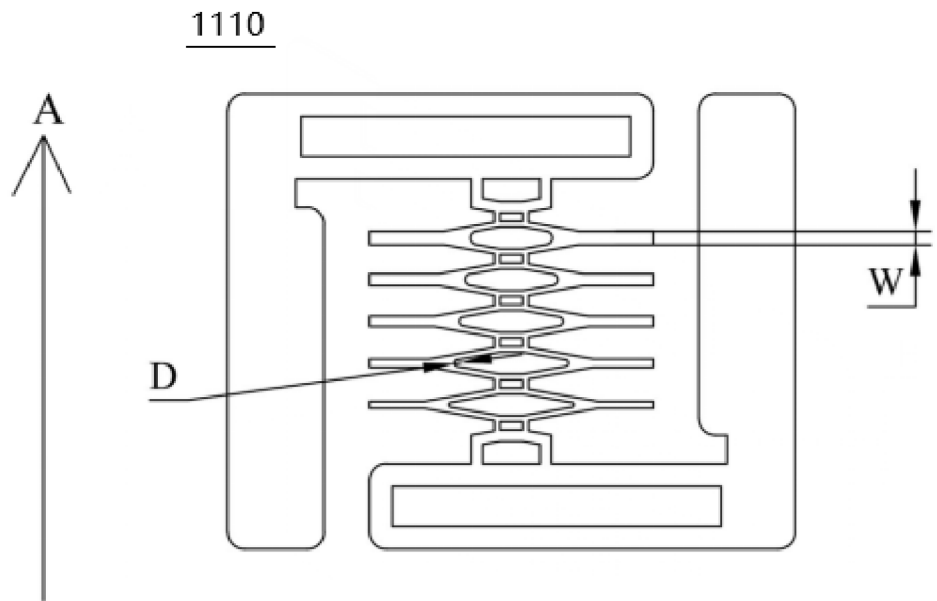


FIG. 33

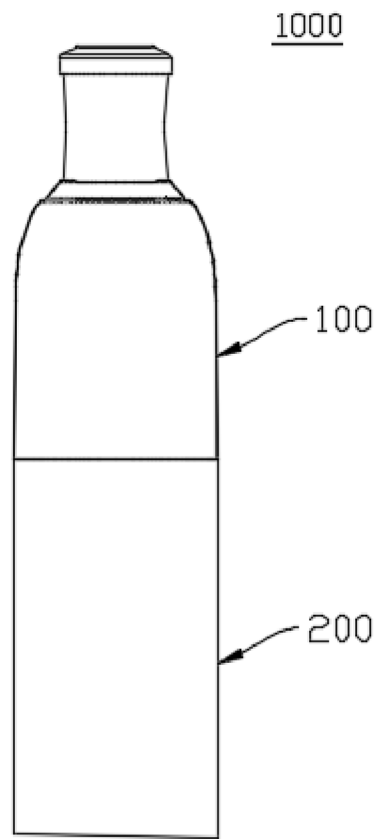


FIG. 34

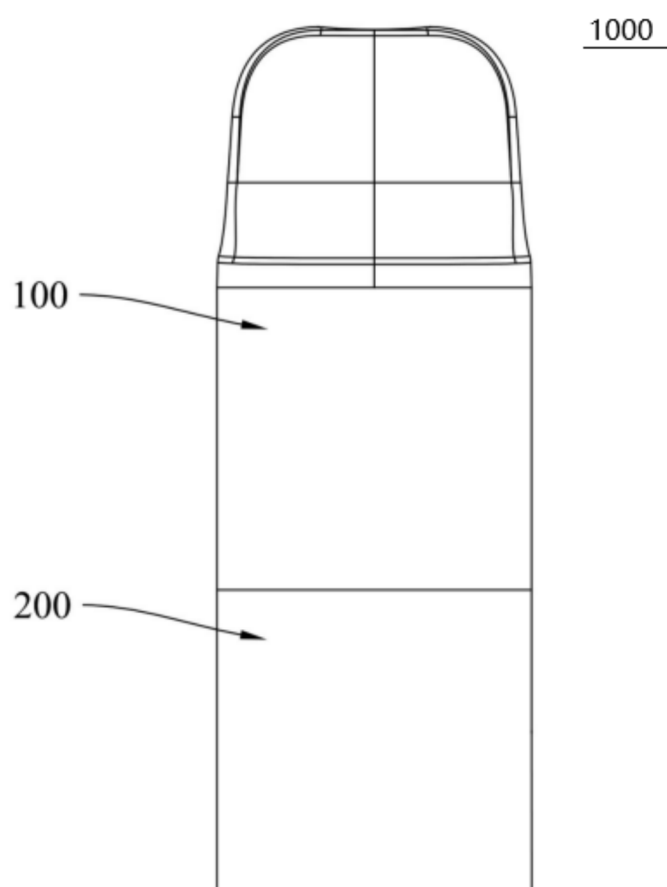


FIG. 35



EUROPEAN SEARCH REPORT

Application Number

EP 25 21 9487

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DOCUMENTS CONSIDERED TO BE RELEVANT			
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X	CN 222 466 045 U (SHENZHEN FIRST UNION TECH CO) 14 February 2025 (2025-02-14) * abstract; figures 8,11 * * cotton, stainless steel; paragraph [0168] - paragraph [0171] * * grooves; paragraph [0251] - paragraph [0253] * * pin in side groove; figures 21,22 * * wire separation element; paragraph [0226] * -----	1-12,24	INV. A24F40/42 A24F40/46 ADD. A24F40/10
A	KR 2025 0044131 A (SHENZHEN HUACHENGDA PREC INDUSTRY CO LTD [CN]) 31 March 2025 (2025-03-31) * abstract; figure 3 * * stainless steel ppipe 12; paragraph [0059] * -----	1-12,24	TECHNICAL FIELDS SEARCHED (IPC) A24F
A	US 12 168 091 B2 (SHENZHEN SMOORE TECHNOLOGY LTD [CN]) 17 December 2024 (2024-12-17) * abstract * * atomizer construction; column 6, line 46 - line 59 * -----	1-12,24	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 9 June 2026	Examiner Schnitzhofer, Markus
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P24C01)



Application Number

EP 25 21 9487

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-12(completely); 24(partially)

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

EP 25 21 9487

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-12(completely); 24(partially)

atomizing assembly with particular construction

2. claims: 13-23(completely); 24(partially)

atomizer with particular constructional details

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 25 21 9487

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

09-06-2026

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			16-12-2021

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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82