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(54) **ELECTRONIC ATOMIZATION DEVICE, AND ATOMIZER AND ATOMIZATION CORE THEREOF**

(57) An electronic atomization device (40), and an atomizer (30) and an atomization core (20) thereof. The atomization core (20) comprises an e-liquid absorbing body (200) and a heating member (100) fixedly provided on the e-liquid absorbing body (200); the e-liquid absorbing body (200) has a bottom wall (210) and a side wall connected to one side of the bottom wall (210), and the bottom wall (210) has an atomization surface (20) facing away the side wall; the heating member (100) comprises heat generation members (110) and electrode portions (120) connected to the heat generation members (110); the heat generation members (110) comprise heat generation portions and first embedding portions (1101), wherein the heat generation portions and the electrode portions (120) are provided on the bottom wall (210) and are exposed to the atomization surface (201), and the first embedding portions (1101) are embedded in the bottom wall (210) and correspond to the side wall. By providing the first embedding portions (1101) of the heat generation members (110) to correspond to the side wall of the e-liquid absorbing body (200), the atomization e-liquid on the side close to the side wall of the e-liquid absorbing body (200) can be preheated.

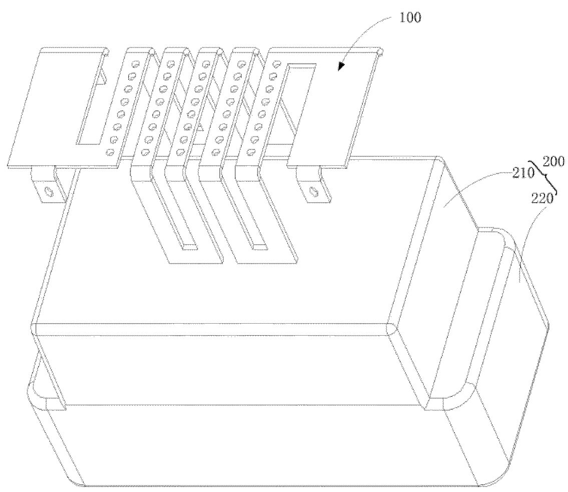

FIG. 3

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Description

TECHNICAL FIELD

[0001] This application relates to the technical field of electronic atomization apparatuses, and in particular, to an electronic atomization apparatus of the electronic atomization apparatus, an atomizer, and an atomization core of the electronic atomization apparatus.

BACKGROUND

[0002] Generally, the existing electronic atomization apparatuses are capable of atomizing atomization liquid such as E-liquid. The electronic atomization apparatus typically includes an atomization core, which includes a liquid absorber and a heater. The liquid absorber is in communication with a liquid storage space containing the atomization liquid, so that the atomization liquid in the liquid storage space is capable of seeping out from the side adjacent to the liquid absorber. The heater is disposed on the side of the liquid absorber away from the liquid storage space containing the atomization liquid, so as to heat and atomize the seeped atomization liquid.

[0003] However, when the existing atomization core heats and atomizes high-viscosity atomization liquid, since the high-viscosity atomization liquid has poor fluidity, it may not replenish itself to the liquid absorber in time, which causes dry burning phenomena occurring in the atomization core, thereby producing a burnt flavor and a peculiar flavor.

SUMMARY

[0004] This application provides an electronic atomization apparatus, an atomizer thereof, and an atomization core thereof, so as to resolve the foregoing technical problem.

[0005] In order to resolve the foregoing technical problem, a technical solution adopted by this application is to provide an atomization core, including a liquid absorber and a heater fixed to the liquid absorber. The liquid absorber includes a bottom wall and a side wall connected to one side of the bottom wall. The bottom wall defines an atomization surface on the other side of the bottom wall. The heater includes a heat generator and an electrode portion connected to the heat generator. The heat generator includes a heat generating portion and a first embedding portion. The heat generating portion and the electrode portion are disposed in the bottom wall and exposed from the atomization surface. The first embedding portion is embedded in the bottom wall and corresponds to the side wall.

[0006] In some embodiments, the side wall is an annular side wall. A liquid storage groove is formed by the bottom wall and the annular side wall. The first embedding portion passes through the bottom wall and is embedded in the annular side wall.

[0007] In some embodiments, the cross section of the annular side wall includes two opposite long edges and two opposite short edges. The first embedding portion is at least partially accommodated in a part of the annular side wall corresponding to the two opposite long edges of the annular side wall.

[0008] In some embodiments, the heat generator is bent and defines at least one first linear unit and at least two first embedding portions. The two ends of each first linear unit are respectively connected to one first embedding portion.

[0009] In some embodiments, the heat generating portion includes at least two first linear units and at least two first embedding portions. Any two adjacent first linear units are connected by the first embedding portion. In some embodiments, the at least two first linear units are disposed in the atomization surface or in a first plane parallel to the atomization surface, and an included angle between the at least two first embedding portions and the first plane is greater than or equal to 10° and less than or equal to 90°.

[0010] In some embodiments, the first embedding portions at the two ends of the first linear units are located respectively in a second plane and a third plane. The first linear units are located between the second plane and the third plane.

[0011] In some embodiments, the electrode portion includes an electrode body and a second embedding portion. The electrode body is disposed in the first plane and connected to the heat generator. The second embedding portion is connected to the edge of the electrode body, and an included angle between the second embedding portion and the first plane is greater than or equal to 10° and less than or equal to 90°.

[0012] In some embodiments, exposed surfaces of the at least two first linear units and the electrode body are flush with the outer surface of the bottom wall.

[0013] In some embodiments, the heat generator is a metal bar or a metal wire; a plurality of through holes and/or blind holes are defined in the heat generator; and the plurality of through holes and/or blind holes are spaced apart along the lengthy direction of the heat generator.

[0014] In some embodiments, a protruding portion is disposed on the inner surface of the bottom wall, and the protruding portion is connected to the annular side wall.

[0015] In some embodiments, two ends of the protruding portion are respectively connected to the annular side wall corresponding to the two opposite long edges.

[0016] In order to resolve the foregoing technical problem, another technical solution adopted by this application is to provide an atomizer, which includes an atomization sleeve, a mounting base and an atomization core as described above.

[0017] In order to resolve the foregoing technical problem, another technical solution adopted by this application is to provide an electronic atomization apparatus. The electronic atomization apparatus includes an atomizer and a body assembly. The atomizer is configured to store and atomize atomization liquid, so as to generate atomized gas that is configured to be inhaled by a user. The atomizer is the atomizer as described above. The body assembly is configured to supply power to the atomizer.

[0018] This application has the following beneficial effects. This application provides an electronic atomization apparatus, an atomizer thereof, and an atomization core thereof. By embedding the heater in the liquid absorber, the heater can be closely attached to the liquid absorber, thereby making the heat transfer of the heater more uniform. In addition, by embedding the heater in the liquid absorber, during the process of the atomization liquid entering the liquid absorber from the side of the body portion away from the bottom wall and seeping out from the outer surface of the bottom wall, the heater can preheat the atomization liquid in the liquid absorber, so as to uniformly increase the temperature of the atomization liquid, thereby improving the atomization effect of the atomization liquid. Further, by embedding the first embedding portions of the heater in the annular side wall, the atomization liquid at the side of the liquid absorbing surface can be preheated. When the viscosity of the atomization liquid is high, the atomization liquid can be preheated, thereby improving its fluidity. As such, the atomization liquid can quickly enter the liquid absorber through the liquid absorbing surface, and the rate of the atomization liquid in the liquid absorber flowing to the atomization surface can be enhanced, so as to timely replenish the atomization liquid at the side of the atomization surface, thereby avoiding the problem of dry heating of the atomization core.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] To describe the technical solutions of the embodiments of this application more clearly, the following briefly introduces the accompanying drawings required for describing the embodiments. Apparently, the accompanying drawings in the following description show only some embodiments of this application, and a person of ordinary skill in the art may still derive other drawings from these accompanying drawings without creative efforts.

FIG. 1 is a schematic structural diagram of a heater according to an embodiment of this application.

FIG. 2 is a schematic structural diagram of an atomization core according to an embodiment of this application.

FIG. 3 is an exploded diagram of the atomization core as shown in FIG. 2.

FIG. 4 is a schematic structural diagram of the atomization core as shown in FIG. 2 after a rotation of 180°.

FIG. 5 is a schematic structural diagram of the atomization core as shown in FIG. 2 from another point of view.

FIG. 6 is a cross-sectional diagram taken along a dashed line A-A' of the atomization core shown in FIG. 5.

FIG. 7 is a cross-sectional diagram taken along a dashed line B-B' of the atomization core shown in FIG. 5.

FIG. 8 is a schematic structural diagram of the atomization core as shown in FIG. 2 according to another embodiment.

FIG. 9 is a schematic structural diagram of an atomizer according to an embodiment of this application.

FIG. 10 is a cross-sectional diagram of the atomizer as shown in FIG. 9.

FIG. 11 is a partial enlarged diagram of a circle II of the atomizer shown in FIG. 9.

FIG. 12 is a schematic structural diagram of an electronic atomization apparatus according to an embodiment of this application.

DETAILED DESCRIPTION

[0020] The technical solutions in embodiments of this application are clearly and completely described in the following with reference to the accompanying drawings in the embodiments of this application. Apparently, the described embodiments are merely some rather than all of the embodiments of this application. All other embodiments obtained by a person of ordinary skill in the art based on the embodiments of this application without creative efforts shall fall within the protection scope of this application.

[0021] All directional indications (e.g., up, down, left, right, front, back), if present in the embodiments of this application, are only used for explaining relative position relationships, movement situations, or the like of the various components in a specific posture (as shown in the accompanying drawings). If the specific posture changes, the directional indications change accordingly.

[0022] If a description, for example, "first" or "second" is present in the embodiments of this application, then the description, for example, "first" or "second", is merely intended for a purpose of description, and shall not be understood as an indication or implication of relative importance or an implicit indication of the number of indicated technical features. Therefore, a feature preceded by "first" or "second" may explicitly or implicitly include at least one of such a feature. In addition, technical solutions from the embodiments may be combined with each other, provided that the combination of the technical solutions can be implemented by a person of ordinary skill in the art. When the combination of technical solutions causes conflict between them or cannot be implemented, it should be considered that such a combination does not exist or is not within the protection scope of this application.

[0023] As shown in FIG. 1, FIG. 1 is a schematic structural diagram of a heater according to an embodiment of this application.

[0024] The heater 100 includes a heat generator 110 and an electrode portion 120 connected to the heat generator 110. The heat generator 110 includes a heat generating portion and a first embedding portion 1101. The electrode portion 120 includes an electrode body 121 and a second embedding portion 1201. The first embedding portion 1101 and the second embedding portion 1201 are both configured to be embedded into a preset liquid absorber (which may specifically refer to the liquid absorber 200 described below).

[0025] In this embodiment, the heater 100 may include two electrode portions 120. The two electrode portions 120 are respectively connected to the two opposite ends of the heat generator 110.

[0026] The heat generator 110 may be formed by being bent multiple times and includes a plurality of first linear units 111 and a plurality of first embedding portions 1101. Two adjacent first linear units 111 may be connected to each other by a first embedding portion 1101. The heat generating portion of the heater 100 may be constituted by the plurality of first linear units 111.

[0027] In this embodiment, the plurality of first linear units 111 may be disposed in a first plane. The two opposite ends of each of the plurality of first linear units 111 are respectively connected to the first embedding portions 1101. The two first embedding portions 110 at the two opposite ends of the first linear units 111 may be disposed in a second plane and a third plane respectively. The second plane and the third plane are both intersected with the first plane.

[0028] Further, each first embedding portion 1101 may also include at least one second linear unit 112 and a third linear unit 113. A plurality of third linear units 113 are embedded in the liquid absorber. That is, the side surfaces of each third linear unit 113 are completely wrapped by the porous ceramic material of the liquid absorber, and each of the ends of each third linear unit 113 is connected to the adjacent second linear units 112.

[0029] Alternatively, in some other embodiments, the heat generator 110 may be also formed by being bent multiple times and includes a plurality of first linear units 111 and a plurality of second linear units 112. That is, the heat generator 110 includes no third linear unit 113. Each first embedding portion 1101 may include two second linear units 112. One end of one of the two second linear units 112 is connected to one end of the other of the two second linear units 112 at an angle, and the other two ends of the two second linear units 112 may be connected to two first linear units 111 respectively.

[0030] In this embodiment, the electrode portion 120 also includes the electrode body 121. The electrode body 121 is connected to the heat generator 110, and is configured to be connected to a connecting wire. The second embedding portion 1201 may be connected to the electrode body 121. In some embodiments, the second embedding portion 1201 is integrated with the electrode body 121 to form one piece. The second embedding portion 1201 enables the electrode body 121 to be stably fixed on the liquid absorber, thereby avoiding the problem such as invalid connection or poor contact between the electrode body 121 and the connecting wire caused by loosening of the electrode body 121.

[0031] The plurality of first linear units 111 and the electrode bodies 121 in the two electrode portions 120 may be all disposed on the first plane. For example, the plurality of first linear units 111 and the electrode bodies 121 in the two electrode portions 120 are all sheet-like, and are all disposed on and parallel to the first plane. The plurality of third linear units 113 are disposed in a fourth plane that is parallel to and spaced apart from the first plane. That is, a connection line of the centers of the plurality of first linear units 111 in the heat generator 110 may be disposed in the first plane, a connection line of the centers of the plurality of third linear units 113 in the heat generator 110 may be disposed in the fourth plane, and the first plane is parallel to and spaced apart from the fourth plane. The plurality of second linear units 112 in the heat generator 110 may connect the plurality of first linear units 111 to the plurality of third linear units 113. Specifically, the two opposite ends of each second linear unit 112 may be connected to the first linear unit 111 and the third linear unit 113 respectively. The plurality of second linear units 112 that are located at one end of the first linear units 111 may be disposed in the second plane, and the plurality of second linear units 112 that are located at the other end of the first linear units 111 may be disposed in the third plane.

[0032] In this embodiment, the height of the first embedding portion 1101 may be equal to or approximately equal to the length of the second linear unit 112. The height of the first embedding portion 1101 may ranges from 0.5 mm to 4 mm, such as 0.5 mm, 1 mm, 2 mm, 3 mm, and 4 mm.

[0033] Further, in this embodiment, in a case that the heat generator 110 is formed by being bent multiple times and includes the plurality of first linear units 111, the plurality of second linear units 112 and the plurality of third linear units 113, a bending portion may be formed between two connected linear units (the first linear units 111, the second linear units 112 or the third linear units 113), and the bending angle of the bending portion ranges from 10° to 170°. The connected first linear unit 111 and the second linear unit 112 are herein used as an example, the first linear unit 111 and the second linear unit 112 are both linear, the bending portion may be the joint between the first linear unit 111 and the second linear unit 112, and the bending angle of the bending portion may range from 10° to 170°. Preferably, the bending angle of the bending portion may range from 80° to 100°. For example, the bending angle of the bending portion between the first linear unit 111 and the second linear unit 112 may be set to 80°, 90° or 100°. In a preferred embodiment, the bending angle of the bending portion may be an obtuse angle.

[0034] The included angle between the first embedding portions 1101 and the first plane may be equal to or mutually supplementary with the included angle between the first embedding portions 1101 and the first linear units 111. The included angle between the first embedding portions 1101 and the first linear units 111 may be set to be from 90° to 170°, such as 90°, 100°, 110°, 130° or 170°. That is, the included angle between the first embedding portions 1101 and the first plane ranges from 10° to 90°.

[0035] Further, the included angle between the second embedding portions 1201 and the electrode bodies 121 may be equal to the bending angle of the bending portions between the second embedding portions 1201 and the electrode bodies 121. The included angle between the second embedding portions 1201 and the electrode bodies 121 may be an obtuse angle, and may be set to be from 90° to 170°. That is, the included angle between the second embedding portions 1201 and the first plane may range from 10° to 90°.

[0036] In this embodiment, the included angle between the first embedding portions 1101 and the first plane may be set to be equal to the included angle between the second embedding portions 1201 and the first plane. In addition, the first embedding portions 1101 and the second embedding portions 1201 that are located on a same side of the heat generator 110 may be disposed in a same plane or in two parallel and spaced apart planes respectively.

[0037] In some other embodiments, the included angle between the first embedding portions 1101 and the first plane may be set to be different from the included angle between the second embedding portions 1201 and the first plane. That is, the plane where the first embedding portions 1101 are located is intersected with the plane where the second embedding portions 1201 are located, thereby improving the stability of the heat generator 110 embedded in the liquid absorber.

[0038] Optionally, the second embedding portion 1201 as a whole may have a rectangular, a square, a triangular or an I shape.

[0039] Further, in this embodiment, each electrode body 121 may be provided with a plurality of second embedding portions 1201. The plurality of second embedding portions 1201 may be respectively disposed at different side ends of the electrode body 121, and are connected to the edges of the electrode body 121.

[0040] In this embodiment, each electrode body 121 is provided with two second embedding portions 1201. The two second embedding portions 1201 are respectively disposed on the two opposite sides of the electrode body 121. In some other embodiments, the side edge of each electrode body 121 away from the heat generator 110 may also be connected with a second embedding portion 1201. Optionally, at least two second embedding portions 1201 are mounted to each side edge (which is not connected to the heat generator 110) of each electrode body 121. A through hole 1202 may be defined in each second embedding portion 1201.

[0041] In this embodiment, the heat generator 110 and the electrode portions 120 are integrated with each other to form one piece. For example, the heater 100 may be made of a metal sheet, and the aforementioned heater 100 may be formed by pressing and bending the metal sheet.

[0042] Alternatively, the heat generator 110 and the electrode portions 120 may be separate structures, which may be fixed together by welding, so as to form the heater 100.

[0043] The heat generator 110 may be a metal bar or a metal wire. The heat generator 110 may have any one of a circular cross section, a square cross section, a rectangular cross section or an elliptical cross section. In other embodiments, the cross section of the heat generator 110 may have a shape of a regular polygon, such as a regular hexagon or a regular octagon.

[0044] Further, in this embodiment, the heat generator 110 may be a metal bar or a metal wire, or may be a patterned metal sheet. The heat generator 110 may be made of any one of iron-chromium alloy, iron-chromium-aluminum alloy, iron-chromium-nickel alloy, chromium-nickel alloy, titanium alloy, stainless steel alloy, Karma alloy, or may be made of a mixture of at least two of them.

[0045] In a case that the heat generator 110 is a metal bar or a metal wire, the diameter of the cross section of the heat generator 110 may range from 0.02 mm to 1.00 mm, such as 0.02 mm, 0.5 mm, or 1 mm. In a case that the heat generator 110 is a metal sheet, the thickness of the metal sheet of the heat generator 110 may range from 0.01 mm to 2 mm.

[0046] In a case that the heat generator 110 is bent and includes the plurality of first linear units 111, the plurality of second linear units 112 and the plurality of third linear units 113, the length of each bending portion may be set in a range from 0.1 mm to 5 mm. For example, the length of each bending portion may be set to 0.1 mm, 2.5 mm, or 5 mm.

[0047] As described in the foregoing embodiments, the heat generator 110 with the three-dimensional structure is formed by being bent multiple times. In other embodiments, the heat generator 110 with the three-dimensional structure may be formed by one or more approaches such as die stamping, casting, machine weaving or chemical etching.

[0048] Alternatively, in some other embodiments, a plurality of heat generators 110 may be mechanically woven into a mesh structure, and then the formed mesh-shaped heater is bent, to form the heat generator 110 with the three-dimensional structure.

[0049] Alternatively, a plurality of sub-heat generators with smaller diameter may be adopted, to form a heat generator 110 with a greater diameter by means of winding, bonding or welding. Then, the heat generator 110 with the greater diameter is bent, to form the three-dimensional structure including the plurality of first linear units 111, the plurality of second linear units 112 and the plurality of third linear units 113.

[0050] Further as shown in FIG. 1, in this embodiment, a plurality of micro-pores 101 may be defined in the heat generator 110. The micro-pores 101 may be through holes or blind holes defined in the heat generator 110. The micro-pores 101 help to enhance the stability of the combination of the heat generator 110 and the liquid absorber, and make the heat transfer more uniform. Further, by defining the micro-pores 101, the liquid absorber is partially exposed, which allows the liquid to be heated to seep out through the surface of the liquid absorber exposed by the micro-pores 101, thereby evenly heating the liquid to be heated.

[0051] The number of the micro-pores 101 may be is multiple, and the plurality of micro-pores 101 may be sequentially spaced apart by an equal interval along the length direction of the heat generator 110. In this embodiment, the plurality of micro-pores 101 may be disposed in the first linear units 111, the second linear units 112 or the third linear units 113. In some other embodiments, the plurality of micro-pores 101 may be disposed in each of the first linear units 111, the second linear units 112 and the third linear units 113.

[0052] In a case that the micro-pores 101 defined in the heat generator 110 are through holes, the through holes may be circular holes, and the diameters of the through holes may be set to be from 0.01 mm to 1.00 mm. For example, the diameters of the through holes may be set to 0.01 mm, 0.5 mm or 1 mm.

[0053] In a case that the micro-pores 101 defined in the heat generator 110 are blind holes, the blind holes may be circular holes or rectangular holes. In a case that the blind holes are circular holes, the diameters of the blind holes may be set to be from 0.01 mm to 1.00 mm. In a case that the blind holes are rectangular holes, the widths of the blind holes may be set to range from 0.01 mm to 1.00 mm, and the lengths of the blind holes may be set to range from 0.10 mm to 2.00 mm.

[0054] The spacing between two adjacent micro-pores 101 may be set to be from 0.03 mm to 1.00 mm.

[0055] Therefore, in this embodiment, by defining the plurality of through holes in the heat generating units of the heat generator 110, the stability of the combination of the heat generator 110 and the liquid absorber is further improved. This enables the heat generated by the heat generator 110 to be uniformly diffused into the liquid absorber, so as to prevent the occurrence of heat accumulation in a local area of the heat generator 110 due to poor contact with the liquid absorber. The heat accumulation causes the problem that the local temperature of the heat generator 110 is too high. In addition, the present application also ensures that, the temperature of the liquid absorber rises quickly and evenly. Therefore, the atomization effect on the atomization liquid is enhanced.

[0056] As shown in FIG. 2 to FIG. 4, FIG. 2 is a schematic structural diagram of an atomization core according to an embodiment of this application, FIG. 3 is an exploded diagram of the atomization core shown in FIG. 2, and FIG. 4 is a schematic structural diagram of the atomization core shown in FIG. 2 after a rotation of 180°.

[0057] The atomization core 20 includes the liquid absorber 200 and the heater 100. The atomization core 20 may be configured to heat the atomization liquid, so as to atomize the atomization liquid.

[0058] A plurality of tiny pores may be provided or defined in the liquid absorber 200 so as to form a porous body. The atomization liquid is capable of entering the liquid absorber 200 through the tiny pores, or may seep from one side of the liquid absorber 200 to the other side through the tiny pores. The plurality of tiny pores in the liquid absorber 200 may store the atomization liquid. The heater 100 is partially buried in the liquid absorber 200. The liquid absorber 200 includes an atomization surface 201 and a liquid absorbing surface 202. The liquid absorbing surface 202 may be in contact with the atomization liquid, so that the atomization liquid enters the liquid absorber 200 through the liquid absorbing surface 202. The atomization liquid in the liquid absorber 200 may be further transferred from the side of the liquid absorbing surface 202 to the side of the atomization surface 201, so as to be heated and atomized on the atomization surface 201.

[0059] The material of the liquid absorber 200 may include a porous ceramic material. Specifically, the material of the liquid absorber 200 may include any one or more of alumina, silicon oxide, silicon nitride, silicate and silicon carbide.

[0060] Specifically, a powder material (or slurry material) of any one material selected from the group consisting of alumina, silicon oxide, silicon nitride, silicate and silicon carbide or a mixture of a plurality of materials thereof may be used to form the preform body of the liquid absorbing body 200, and the heater 100 is at least partially buried in the preform body. By heating and sintering, the liquid absorber 200 in which the heater 100 is partially embedded is formed, and the heater 100 is tightly bonded to the liquid absorber 200.

[0061] The shape and size of the liquid absorber 200 are not limited, which may be chosen according to requirements.

[0062] In this embodiment, specifically, the liquid absorber 200 includes a bottom wall 210 and a side wall connected to a side of the bottom wall 210. The heater 100 may be embedded in the liquid absorber 200, and the first embedding portions 1101 of the heater 100 may be disposed corresponding to the side wall, so that the atomization liquid close to the side wall is preheated by the first embedding portions 1101.

[0063] The side wall may be an annular side wall 220. The annular side wall 220 may be connected to a side of the bottom wall 210, and a liquid storage groove 211 is formed by the side wall 220 and the bottom wall 210. The first embedding portions 1101 may pass through the bottom wall 210 and is partially inserted in the annular side wall 220.

[0064] The atomization surface 201 may be disposed on the outer surface of the bottom wall 210, and the first embedding portions 1101 and the second embedding portions 1201 of the heater 100 may be inserted into the liquid absorber 200 from the atomization surface. Specifically, the plurality of first linear units 111 and the electrode bodies 121 of the heater 100 are all embedded in the bottom wall 210. The first embedding portions 1101 may pass through the bottom wall 210 and are partially inserted in the annular side wall 220. The second embedding portions 1201 are all accommodated in the bottom wall 210.

[0065] In this embodiment, by partially embedding the first embedding portions 1101 of the heater 100 into the annular side wall 220, the atomization liquid at the side of the liquid absorbing surface 202 can be preheated. When the viscosity of the atomization liquid is great, the atomization liquid can be preheated, thereby enhancing its fluidity. As such, the atomization liquid can quickly enter the liquid absorber 200 through the liquid absorbing surface 202, and the rate of the atomization liquid in the liquid absorber 200 flowing to the atomization surface 201 can be enhanced, such that the atomization liquid at the side of the atomization surface 201 can be timely replenished, thereby avoiding the problem of dry heating of the atomization core 100.

[0066] The outer surface at the side of the bottom wall 210 facing away from the annular side wall 220 is the atomization surface 201 of the liquid absorber 200. The atomization liquid is heated and atomized at positions of the atomization surface 201. The surface of the annular side wall 220 of the liquid absorber 200 away from the bottom wall 210 may be in contact with the atomization liquid to form the liquid absorbing surface 202, so that the atomization liquid can enter the liquid absorber 200 through the liquid absorbing surface, and seep out through the atomization surface 201 of the bottom wall 210. When the atomization liquid seeps out through the atomization surface 201, the part of the heater 100 located outside of the liquid absorber 200 can heat and atomize the seeped-out atomization liquid.

[0067] An opening of the liquid storage groove 211 is defined at the side of the annular side wall 220 facing away from the bottom wall 210, and the opening of the liquid storage groove 211 allows the atomization liquid to enter the liquid storage groove 211. Therefore, the inner wall of the liquid storage groove 211 also forms the liquid absorbing surface of the liquid absorber 200. By defining the liquid storage groove 211, the area of the liquid absorbing surface 202 can be increased, so that the contact area between the atomization liquid and the liquid absorber 200 can be increased, thereby facilitating the atomization liquid to seep into the liquid absorber 200.

[0068] As shown in FIG. 5 to FIG. 7, FIG. 5 is a schematic structural diagram of the atomization core shown in FIG. 2 from another point of view, FIG. 6 is a cross-sectional diagram taken along a dashed line 'A-A' of the atomization core shown in FIG. 5, and FIG. 7 is a cross-sectional diagram taken along a dashed line 'B-B' of the atomization core shown in FIG. 5.

[0069] The outer contour of the annular side wall 220 presents a substantial rectangle. The first embedding portions 1101 at the two opposite sides of the heater 100 may be respectively inserted into the two opposite long edges of the annular side wall 220. The first embedding portions 1101 may be buried in parts of the two opposite long edges of the annular side wall 220.

[0070] In this embodiment, by embedding the heater 100 in the liquid absorber 200, the heater 100 is closely attached to the liquid absorber 200, thereby making the heat transfer of the heater 100 more uniform. In addition, by embedding the heater 100 in the liquid absorber 200, during the process of the atomization liquid seeping from the liquid absorbing surface to the atomization surface, the heater 100 can preheat the atomization liquid in the liquid absorber 200, so as to uniformly increase the temperature of the atomization liquid, thereby improving the atomization effect of the atomization liquid. By inserting the first embedding portions 1101 of the heat generator 110 into the annular side wall 220, the liquid to be atomized in the liquid storage groove 211 can be preheated, thereby further improving the atomization effect of the atomization liquid.

[0071] In this embodiment, further, the heater 100 is configured to have the three-dimensional structure, thereby further improving the atomization effect of the atomization liquid.

[0072] Further, as shown in FIG. 6, the heater 100 is buried in the liquid absorber 200. Specifically, exposed surfaces of the plurality of first linear units 111 and the electrode bodies 121 may be flush with the outer surface of the bottom wall 210.

[0073] Alternatively, as shown in FIG. 8, in some other embodiments, the heater 100 may be disposed to partially protrude beyond the outer surface of the bottom wall 210.

[0074] In this embodiment, a protruding portion 212 is disposed on the inner surface of the bottom wall 210, and the protruding portion 212 may be connected to the annular side wall 220. The protruding portion 212 may be disposed parallel to the short edges of the annular side wall 220, and the two opposite sides of the protruding portion 212 may be respectively connected to the parts of the side wall corresponding to the two opposite long edges of the annular side wall 220. By providing the protruding portion 212, the protruding portion 212 is immersed in the liquid to be atomized in the liquid storage groove 211. The protruding portion 212 can transfer the heat from the annular side wall 220 and/or the bottom wall 210 to the liquid to be atomized in the liquid storage groove 211 more quickly and uniformly, so as to preheat the liquid to be atomized in the liquid storage groove 211, thereby further improving the atomization effect of the atomization liquid.

[0075] Optionally, the number of the protruding portions 212 are at least two. Two adjacent protruding portions 212 may be spaced apart to define a V-shaped groove or an arc-shaped groove.

[0076] Further reference may be made to FIG. 1 and FIG. 2.

[0077] In this embodiment, the two electrode bodies 121 of the heater 100 may respectively form the positive electrode and negative electrode of the heat generator 110. The two electrode bodies 121 are electrically connected to the positive electrode and negative electrode of an external power supply, so as to supply power to the heat generator 210, thereby allowing the heat generator 210 to generate heat.

[0078] A through groove 1202 may be defined in the second embedding portion 1201. When the second embedding portion 1201 is embedded in the preform body of the liquid absorber 200, the powder or slurry forming the liquid absorber 200 may enter the through groove 1202. After the sintering and fixing of the preform body of the liquid absorber 200 is completed, the stability of the combination of the heater 100 and the liquid absorber 200 is further enhanced.

[0079] Further, as shown in FIG. 6, in this embodiment, the thickness L1 of the bottom wall 210 ranges from 0.5 mm to 4 mm. The height L2 of the annular side wall 220 ranges from 0.5 mm to 4 mm, and the wall thickness of the annular side wall 220 is greater than 0.8 mm.

[0080] Further, this application further provides an atomizer. As shown in FIG. 9 to FIG. 11, FIG. 9 is a schematic structural diagram of an atomizer according to an embodiment of this application, FIG. 10 is a cross-sectional diagram of the atomizer shown in FIG. 9, and FIG. 11 is a partial enlarged diagram of a circle A of the atomizer shown in FIG. 9.

[0081] The atomizer 30 includes an atomization sleeve 310, a mounting base 320 and an atomization core 20.

[0082] The atomization sleeve 310 defines a liquid storage cavity 312, a vent tube 314 is defined in the atomization sleeve 310. The liquid storage cavity 312 is configured to store the atomization liquid. The vent tube 314 is configured to guide atomized gas to a mouth of the user.

[0083] The mounting base 320 defines a first pressure regulating channel 322, a liquid inlet cavity 321 and an atomized-gas outlet 323. The first pressure regulating channel 322 is circuitously disposed at the periphery of the liquid inlet cavity 321. The mounting base 320 is embedded into the atomization sleeve 310. The first pressure regulating channel 322 and the liquid inlet cavity 321 are both in communication with the liquid storage cavity 312. The liquid inlet cavity 321 guides the atomization liquid to the atomization core 20, so that the atomization core 20 atomizes the atomization liquid to generate the atomized gas. The vent tube 314 is connected to the atomized-gas outlet 323, to guide the atomized gas to the oral cavity of the user through the atomized-gas outlet 323.

[0084] The atomization core 20 is connected to the end of the mounting base 320 away from the liquid storage cavity 312 and blocks the liquid inlet cavity 321, so that the atomization sleeve 310, the mounting base 320 and the atomization core 20 cooperatively define a liquid storage space. After the atomization liquid is stored in the liquid storage space, the atomization liquid seals the first pressure regulating channel 322 by means of liquid seal.

[0085] When the outer atmospheric pressure changes or when an air pressure inside the liquid storage cavity 312 is out of balance with the outer atmospheric pressure due to inhalation, for example, when the air pressure in the liquid storage cavity 312 is excessively large, the atomization liquid may leak between the mounting base 320 and the inner wall of the atomization sleeve 310, or the atomization liquid may leak from the atomization core 20, or the atomization liquid may leak from a joint between the atomization core 20 and the mounting base 320. Alternatively, when the air pressure in the liquid storage cavity 312 is excessively low, due to the influence of the air pressure difference between the air pressure inside and outside of the liquid storage cavity 312, the atomization liquid may not flow smoothly, and the atomization core 20 may generate a burnt flavor during operation due to insufficient liquid supply, leading to poor inhalation experience of the user.

[0086] Further, this application provides an electronic atomization apparatus. As shown in FIG. 12, FIG. 12 is a schematic structural diagram of an electronic atomization apparatus according to an embodiment of this application.

[0087] The electronic atomization apparatus 40 includes an atomizer 30 and a body assembly 410. The atomizer 30 may be configured to store and atomize the atomization liquid, so as to generate atomized gas that is configured to be inhaled by a user. The atomizer 30 may be configured to mounted on the body assembly 410. A power supply assembly is disposed in the body assembly 410. After the atomizer 30 is mounted on the body assembly 410, the positive and negative electrodes of the power supply assembly in the body assembly 410 may be respectively electrically connected to two electrode bodies 121, so as to form a power supply circuit, thereby supplying power to the heat generator 110.

[0088] In summary, it is readily understood by those skilled in the art that this application has the following beneficial effects. By embedding the heater in the liquid absorber, the heater can be closely attached to the liquid absorber, thereby making the heat transfer of the heater more uniform. In addition, by embedding the heater in the liquid absorber, during the process of the atomization liquid entering the liquid absorber from the side of the body portion away from the bottom wall and seeping out from the outer surface of the bottom wall, the heater can preheat the atomization liquid in the liquid absorber, so as to uniformly increase the temperature of the atomization liquid, thereby improving the atomization effect of the atomization liquid. Further, by embedding the first embedding portions of the heater in the annular side wall, the atomization liquid at the side of the liquid absorbing surface can be preheated. When the viscosity of the atomization liquid is high, the atomization liquid can be preheated, thereby improving its fluidity. As such, the atomization liquid can quickly enter the liquid absorber through the liquid absorbing surface, and the rate of the atomization liquid in the liquid absorber flowing to the atomization surface can be enhanced, so as to timely replenish the atomization liquid to the atomization surface side, thereby avoiding the problem of dry heating of the atomization core.

[0089] The foregoing descriptions are merely some embodiments of this application, and the patent scope of this application is not limited thereto. All equivalent structure or process variations made according to the content of this specification and accompanying drawings in this application or direct or indirect applying of this application in other related technical fields shall fall within the protection scope of this application.

Claims

1. An atomization core, **characterized by** comprising a liquid absorber and a heater fixed to the liquid absorber, wherein

   the liquid absorber comprises a bottom wall and a side wall connected to one side of the bottom wall, and the bottom wall comprises an atomization surface on the other side of the bottom wall (210);
   the heater comprises a heat generator and an electrode portion connected to the heat generator ; and
   the heat generator comprises a heat generating portion and a first embedding portion, wherein the heat generating portion and the electrode portion are disposed in the bottom wall and exposed from the atomization surface, and the first embedding portion is embedded in the bottom wall and corresponds to the side wall.

2. The atomization core as claimed in claim 1, wherein the side wall is an annular side wall, a liquid storage groove is formed by the bottom wall and the annular side wall, and the first embedding portion passes through the bottom wall and is embedded in the annular side wall.

3. The atomization core as claimed in claim 2, wherein

   the cross section of the annular side wall comprises two opposite long edges and two opposite short edges; and
   the first embedding portion is at least partially accommodated in a part of the annular side wall corresponding to the two opposite long edges of the annular side wall.

4. The atomization core as claimed in claim 2, wherein the heat generator is bent and defines at least one first linear unit and at least two first embedding portions, and the two ends of each first linear unit are respectively connected to one first embedding portion.

5. The atomization core as claimed in claim 4, wherein

   the heat generating portion comprises at least two first linear units and at least two first embedding portions, and any two adjacent first linear units are connected by the first embedding portion; or
   the at least two first linear units are disposed in the atomization surface or in a first plane parallel to the atomization surface, and an included angle between each of the at least two first embedding portions and the first plane is greater than or equal to 10° and less than or equal to 90°.

6. The atomization core as claimed in claim 5, wherein the first embedding portions at the two ends of the first linear unit are respectively located in a second plane and a third plane, and the first linear unit is located between the second plane and the third plane.

7. The atomization core as claimed in claim 5, wherein

   the electrode portion comprises an electrode body and a second embedding portion,
   the electrode body is disposed in the first plane and connected to the heat generator, and
   the second embedding portion is connected to an edge of the electrode body, and the included angle between the second embedding portion and the first plane is greater than or equal to 10° and less than or equal to 90°.

8. The atomization core as claimed in claim 7, wherein the exposed surfaces of the at least two of first linear units and the electrode body are flush with the outer surface of the bottom wall.

9. The atomization core as claimed in claim 1, wherein

   the heat generator is a metal bar or a metal wire;
   a plurality of through holes and/or blind holes are defined in the heat generator ; and
   the plurality of through holes and/or blind holes are spaced apart along the lengthy direction of the heat generator.

10. The atomization core as claimed in claim 3, wherein a protruding portion is disposed on the inner surface of the bottom wall, and the protruding portion is connected to the annular side wall.

11. The atomization core as claimed in claim 10, wherein the two ends of the protruding portion are respectively connected to the annular side wall corresponding to the two opposite long edges.

12. An atomizer, **characterized by** comprising an atomization sleeve, a mounting base and the atomization core as claimed in any of claims 1 to 11.

13. An electronic atomization apparatus, **characterized by** comprising:

the atomizer as claimed in claim 12, configured to store and atomize atomization liquid, so as to generate atomized gas that is configured to be inhaled by a user; and

a body assembly, configured to supply power to the atomizer.

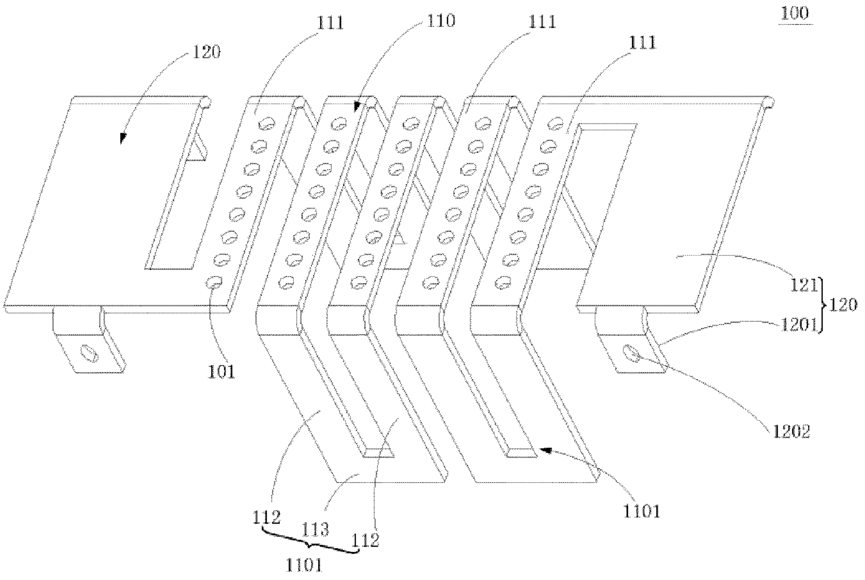
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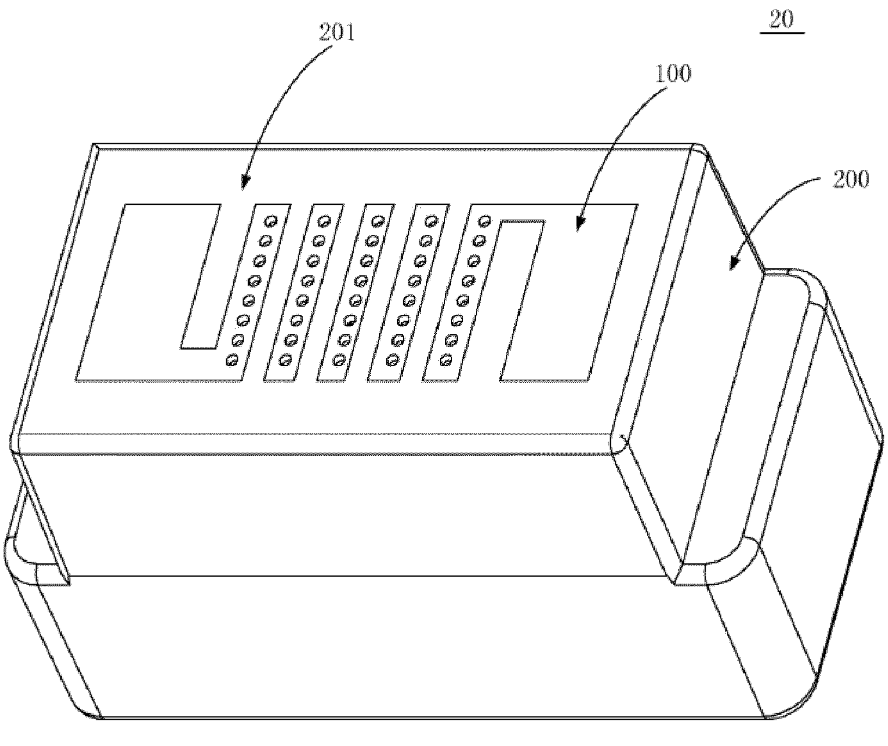
FIG. 1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200

FIG. 2

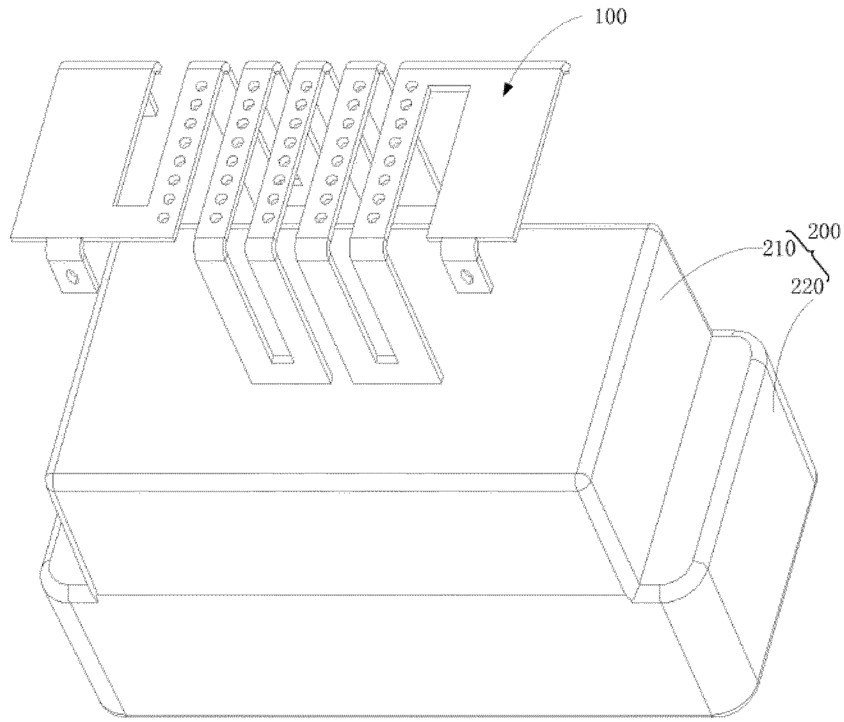

FIG. 3

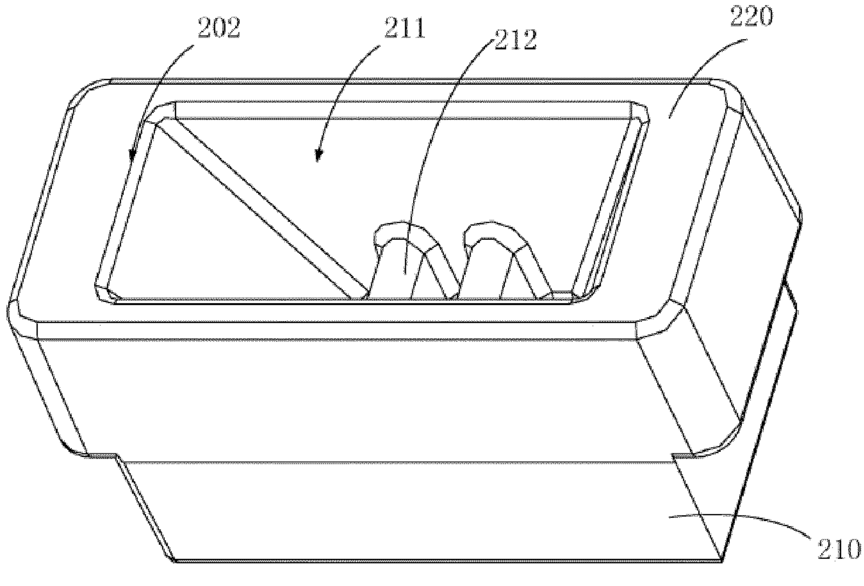

FIG. 4

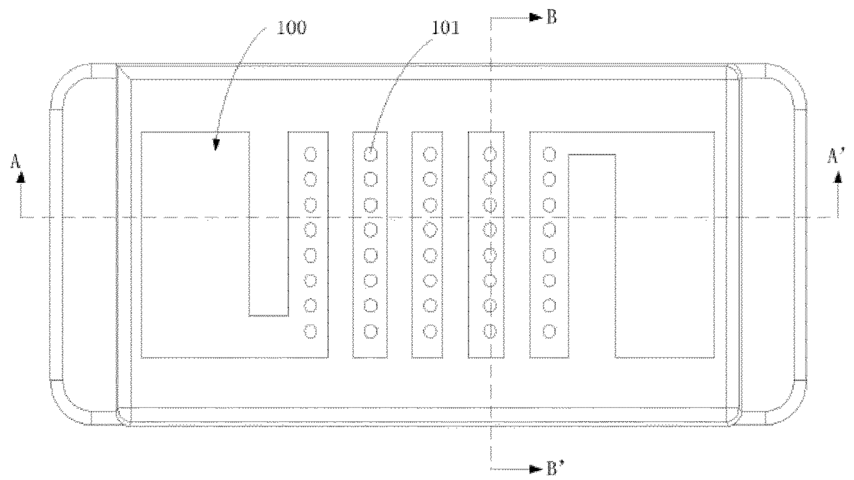

FIG. 5

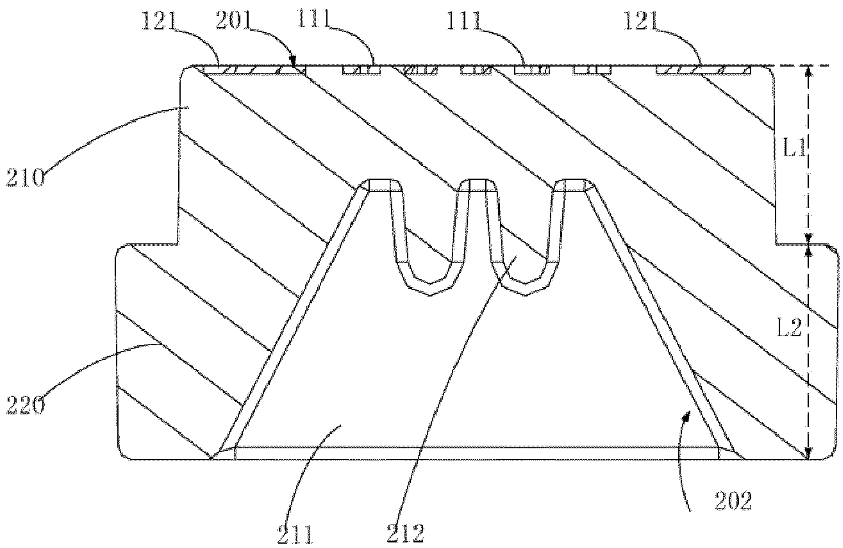

FIG. 6

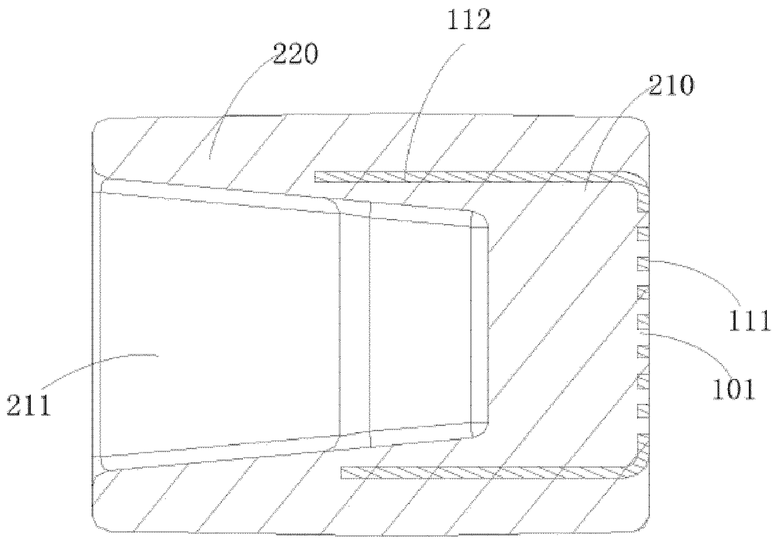

FIG. 7

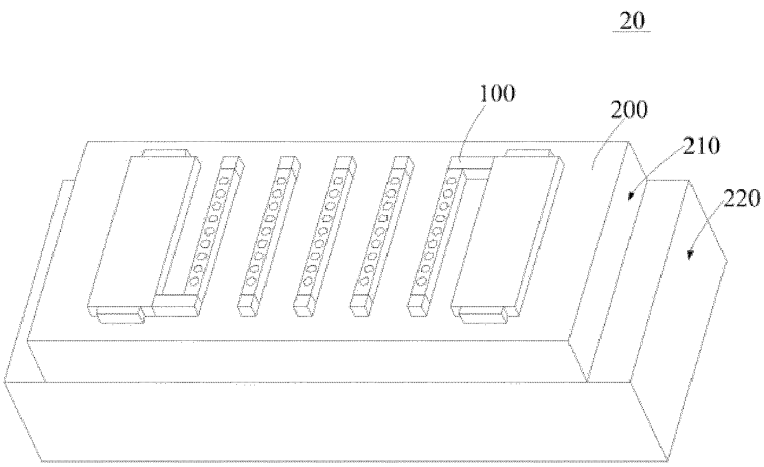

FIG. 8

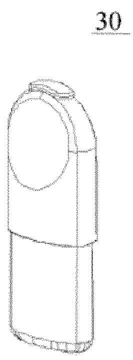

FIG. 9

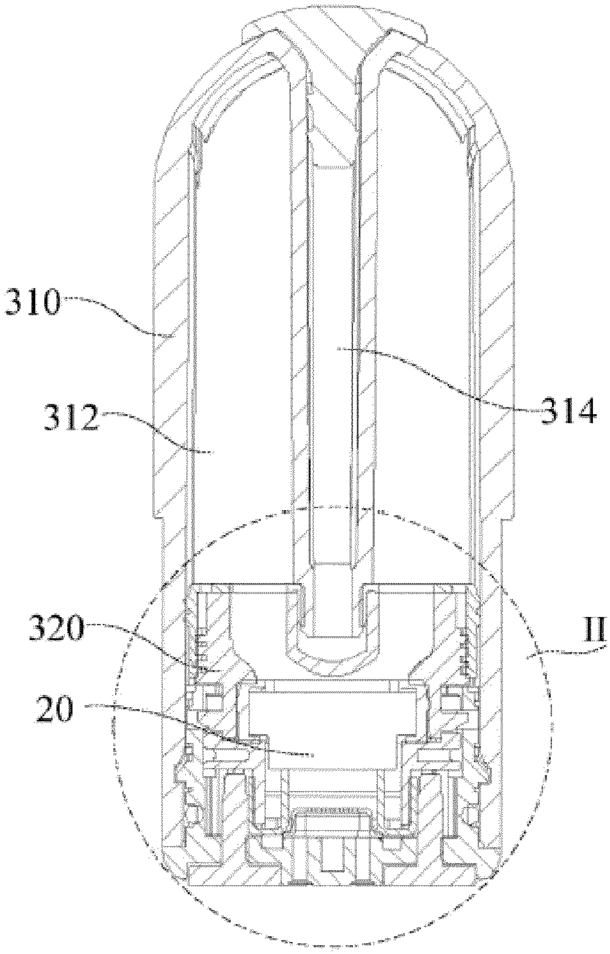

FIG. 10

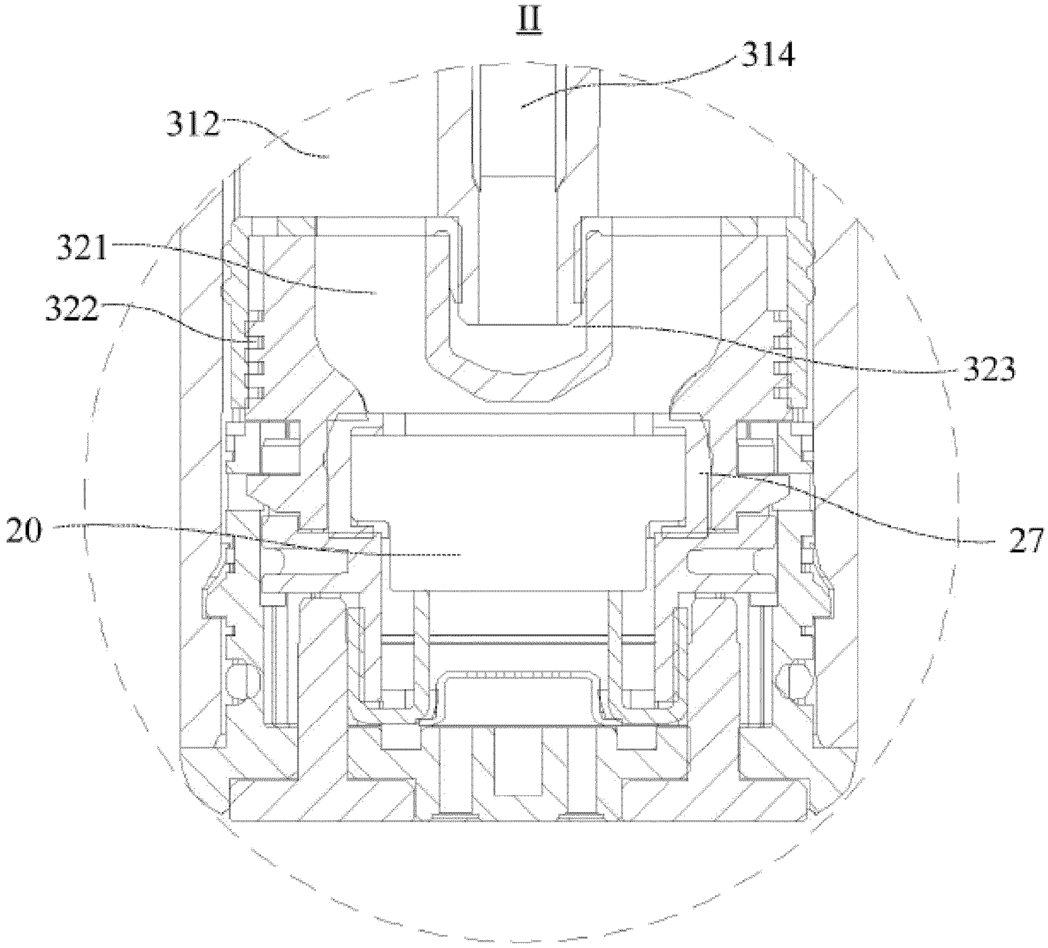

FIG. 11

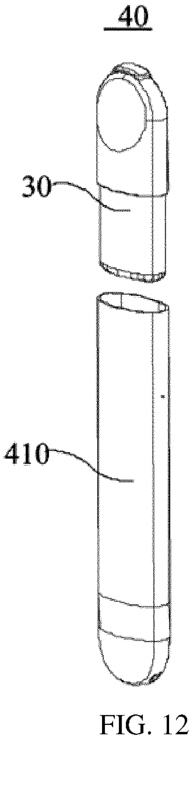

FIG. 12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2020/142461

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/46(2020.01)i; A24F 40/40(2020.01)i; A24F 40/42(2020.01)i; A24F 40/10(2020.01)i

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A24F40/-

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

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

WPI, EPODOC, CNPAT, CNKI: 麦克韦尔, 陈武, 电子烟, 电子雾化, 气溶胶发生, 雾化器, 雾化, 储液, 吸液, 多孔陶瓷, 嵌入, 埋设, 插入, 穿设, 穿过, 流动性, 粘性, 黏性, electronic cigarette, aerosol generat+, atomiz+, liquid, oil, porous ceramic

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	CN 112315027 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 05 February 2021 (2021-02-05) description, paragraphs [0042]-[0095], and figures 1-8	1, 9, 12-13
E	CN 213096094 U (SHENZHEN SMOORE TECHNOLOGY LIMITED) 04 May 2021 (2021-05-04) description, paragraphs [0042]-[0095], and figures 1-8	1, 9, 12-13
X	CN 110881694 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 17 March 2020 (2020-03-17) description, paragraphs [0038]-[0048], [0068]-[0074], figures 1-4, 8-9	1, 12-13
Y	CN 110881694 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 17 March 2020 (2020-03-17) description, paragraphs [0038]-[0048], [0068]-[0074], figures 1-4, 8-9	9
Y	CN 111109666 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 08 May 2020 (2020-05-08) description, paragraphs [0039]-[0049], and figures 1-4	9

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

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- "A" document defining the general state of the art which is not considered to be of particular relevance
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- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed
- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
09 September 2021	**28 September 2021**

Name and mailing address of the ISA/CN	Authorized officer
China National Intellectual Property Administration (ISA/CN) **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China**	
Facsimile No. **(86-10)62019451**	Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2020/142461

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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A	CN 111728277 A (SHENZHEN YIKAPU TECHNOLOGY CO., LTD.) 02 October 2020 (2020-10-02) entire document	1-13
A	CN 111000293 A (DONGGUAN TAOTAO NEW MATERIAL TECHNOLOGY CO., LTD.) 14 April 2020 (2020-04-14) entire document	1-13
A	US 2016000146 A1 (ZHU, Xiaochun) 07 January 2016 (2016-01-07) entire document	1-13

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2020/142461

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				CN	110973708	A	10 April 2020
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				CN	110301674	A	08 October 2019
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				WO	2016000201	A1	07 January 2016

Form PCT/ISA/210 (patent family annex) (January 2015)