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(54) **ATOMIZER, ELECTRONIC ATOMIZATION DEVICE, AND ATOMIZATION ASSEMBLY FOR ATOMIZER**

(57) An atomizer (100), an electronic atomization device, and an atomization assembly for an atomizer are provided. The atomizer (100) includes: a liquid storage cavity (12), configured to store a liquid substrate; and a porous body (30), including a first surface (330), a second surface (320), and a third surface (310), where the first surface (330) is constructed to be in fluid communication with the liquid storage cavity (12), for at least part of the liquid substrate to enter the porous body (30) via the first surface (330); a coating layer (40) that covers the second surface (320) is formed on the second surface (320); the coating layer (40) is combined with a heating element (50) to heat the at least part of the liquid substrate in the porous body (30) to generate an aerosol; and the third surface (310) is an exposed surface, for releasing the aerosol. Different surfaces of the porous body (30) absorb the liquid substrate and release the aerosol respectively.

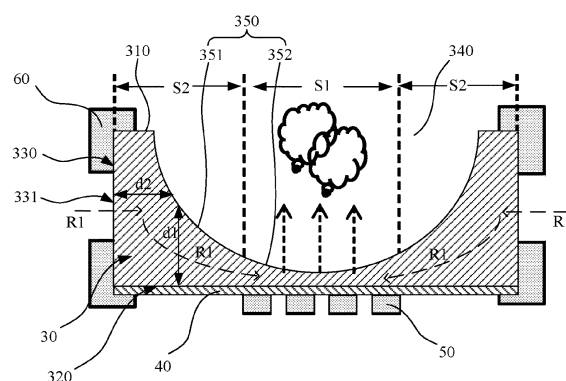


FIG. 3

Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Chinese Patent Application No. 202111345696.8, filed with the China National Intellectual Property Administration on November 15, 2021 and entitled "ATOMIZER, ELECTRONIC ATOMIZATION DEVICE, AND ATOMIZATION ASSEMBLY FOR ATOMIZER", which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

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

BACKGROUND

[0003] Tobacco products (such as cigarettes and cigars) burn tobacco during use to produce tobacco smoke. Attempts are made to replace these tobacco-burning products by making products that release compounds without burning.

[0004] An example of this type of products is a heating device that releases compounds by heating rather than burning materials. For example, the materials may be tobacco or other non-tobacco products. These non-tobacco products may include or not include nicotine. In another example, there are aerosol-providing products, for example, electronic atomization devices. These devices usually contain a liquid, a porous body that absorbs the liquid through capillary infiltration, and a heating element combined on the porous body to heat and atomize the liquid, to generate an inhalable aerosol. The liquid may contain nicotine, and/or aromatics, and/or aerosol-generation substances (such as glycerin). In a known heating device, the aerosol is released from the same surface of the porous body combined with the heating element.

SUMMARY

[0005] An embodiment of this application provides an atomizer, including:

- a liquid storage cavity, configured to store a liquid substrate; and
- a porous body, including a first surface, a second surface, and a third surface, where the first surface is constructed to be in fluid communication with the liquid storage cavity, for at least part of the liquid substrate to enter the porous body via the first surface;
- a coating layer that covers the second surface is formed on the second surface; the coating layer is

combined with a heating element to heat the at least part of the liquid substrate in the porous body to generate an aerosol; and
the third surface is an exposed surface, for releasing the aerosol.

In a preferred embodiment, the porous body includes a porous ceramic.

[0006] In a preferred embodiment, the coating layer includes a dense ceramic, glaze, a metal or an inorganic oxide or an inorganic nitride.

[0007] In a preferred embodiment, the second surface is a flat surface.

[0008] In a preferred embodiment, the heating element is a heating element printed or deposited on the coating layer.

[0009] In a preferred embodiment, the heating element is a planar heating element.

[0010] In a preferred embodiment, the heating element includes a resistance heating trajectory formed on the coating layer.

[0011] In a preferred embodiment, the heating element is an inductive heating element penetrable by a changing magnetic field to generate heat.

[0012] In a preferred embodiment, the third surface is arranged away from the coating layer.

[0013] In a preferred embodiment, a projection of the third surface on a surface of the coating layer covers the heating element.

[0014] In a preferred embodiment, a distance between the third surface and the first surface gradually decreases along a direction of the third surface away from the coating layer.

[0015] In a preferred embodiment, the first surface is constructed to extend along a circumferential direction of the porous body.

[0016] In a preferred embodiment, there is an angle between the first surface and the second surface.

[0017] In a preferred embodiment, the first surface at least partially extends between the second surface and the third surface.

[0018] In a preferred embodiment, the third surface is constructed to be obliquely arranged along a direction close to the second surface.

[0019] In a preferred embodiment, the third surface is substantially parallel to the second surface.

[0020] In a preferred embodiment, a distance between the third surface along an axial direction of the porous body and the second surface ranges from 0.01 mm to 0.5 mm.

[0021] In a preferred embodiment, a minimum distance between the third surface along an axial direction of the porous body and the second surface is 0.01 mm.

[0022] In a preferred embodiment, the third surface is at least partially constructed as a curved surface.

[0023] In a preferred embodiment, the third surface is at least partially defined with a concave cavity.

[0024] In a preferred embodiment, the concave cavity

is constructed to accommodate at least part of an atomization chamber of the aerosol.

[0025] In a preferred embodiment, the concave cavity is separated from the liquid storage cavity.

[0026] In a preferred embodiment, the coating layer is configured to prevent the liquid substrate or the aerosol from leaving the second surface.

[0027] Another embodiment of this application further provides an electronic atomization device, including an atomizer configured to atomize a liquid substrate to generate an aerosol and a power supply assembly configured to supply power to the atomizer. The atomizer includes the foregoing atomizer.

[0028] Another embodiment of this application further provides an atomization assembly for an atomizer, including:

- a porous body, including a first surface, a second surface, and a third surface, where the second surface and the third surface are arranged oppositely along an axial direction of the porous body, and the first surface is used to receive a liquid substrate, for the liquid substrate to enter the porous body;
- a coating layer, covering the second surface; and
- a heating element, combined on the coating layer.

[0029] The third surface is an exposed surface, for releasing an aerosol.

[0030] In the foregoing atomizer, the porous body absorbs the liquid substrate and releases the aerosol respectively from different surfaces combined with the heating element.

BRIEF DESCRIPTION OF THE DRAWINGS

[0031] One or more embodiments are exemplarily described with reference to the corresponding figures in the accompanying drawings, and the descriptions do not constitute a limitation to the embodiments. Components in the accompanying drawings that have same reference numerals are represented as similar components, and unless otherwise particularly stated, the figures in the accompanying drawings are not drawn to scale.

- FIG. 1 is a schematic diagram of an electronic atomization device according to an embodiment;
- FIG. 2 is a schematic diagram of an atomizer in FIG. 1 according to an embodiment;
- FIG. 3 is a schematic diagram of an atomization assembly in FIG. 2 from an angle of view;
- FIG. 4 is a top view of an atomization assembly according to an embodiment;
- FIG. 5 is a top view of an atomization assembly according to another embodiment;
- FIG. 6 is a schematic diagram of the atomization assembly in FIG. 5 from another angle of view;
- FIG. 7 is a schematic diagram of an atomization assembly according to another embodiment;

FIG. 8 is a schematic diagram of an atomization assembly according to another embodiment;

FIG. 9 is a schematic diagram of an atomization assembly according to another embodiment; and

FIG. 10 is a schematic diagram of an atomization assembly according to another embodiment.

DETAILED DESCRIPTION

[0032] For ease of understanding of this application, this application is described in further detail below with reference to the accompanying drawings and specific implementations.

[0033] This application provides an electronic atomization device, as shown in FIG. 1, including: an atomizer 100 configured to store a liquid substrate and atomize the liquid substrate to generate an aerosol; and a power supply assembly 200 configured to supply power to the atomizer 100.

[0034] In an optional embodiment, as shown in FIG. 1, the power supply assembly 200 includes: a receiving cavity 270, arranged at an end along a length direction and configured to receive and accommodate at least part of the atomizer 100, and a first electrical contact 230, at least partially exposed on a surface of the receiving cavity 270 and configured to supply power to the atomizer 100 when the at least part of the atomizer 100 is received and accommodated in the power supply assembly 200.

[0035] According to the preferred embodiment shown in FIG. 1, an end portion of the atomizer 100 opposite to the power supply assembly 200 along the length direction is arranged with a second electrical contact 21, so that when the at least part of the atomizer 100 is received in the receiving cavity 270, the second electrical contact 21 forms conductivity by being in contact with and abutting against the first electrical contact 230.

[0036] A seal element 260 is arranged inside the power supply assembly 200, and at least part of an internal space of the power supply assembly 200 is separated through the seal element 260 to form the receiving cavity 270. In the preferred embodiment shown in FIG. 1, the seal element 260 is constructed to extend along a cross section direction of the power supply assembly 200, and is preferably prepared by a flexible material, to prevent the liquid substrate seeping from the atomizer 100 to the receiving cavity 270 from flowing to components such as a controller 220 and a sensor 250 inside the power supply assembly 200.

[0037] In the preferred embodiment shown in FIG. 1, the power supply assembly 200 further includes: a battery core 210, located at another end away from the receiving cavity 270 along the length direction, and configured to supply power; and a controller 220, arranged between the battery core 210 and the receiving cavity 270, where the controller 220 operably guides a current between the battery core 210 and the first electrical contact 230.

[0038] During use, the power supply assembly 200 in-

cludes a sensor 250, configured to sense an inhalation flow generated by the atomizer 100 during inhalation, so that the controller 220 controls the battery core 210 to output the current to the atomizer 100 according to a detection signal of the sensor 250.

[0039] Further, in the preferred embodiment shown in FIG. 1, a charging interface 240 is arranged on another end of the power supply assembly 200 away from the receiving cavity 270, and is configured to supply power to the battery core 210.

[0040] The embodiment in FIG. 2 shows a schematic structural diagram of the atomizer 100 in FIG. 1 according to an embodiment. The atomizer 100 includes: a main housing 10. According to FIG. 2, the main housing 10 is roughly in a longitudinal cylindrical shape, and certainly, its interior is hollow for necessary functional components for storing and atomizing the liquid substrate. The main housing 10 has a near end 110 and a far end 120 opposite to each other along the length direction. According to the requirements of common use, the near end 110 is configured as an end for the user to inhale the aerosol, and a suction nozzle A for the user to inhale is arranged on the near end 110; and the far end 120 is configured to as an end for combining the power supply assembly 200.

[0041] Further, as shown in FIG. 2, the main housing 10 is internally arranged with a liquid storage cavity 12 for storing the liquid substrate, and an atomization assembly for absorbing the liquid substrate from the liquid storage cavity 12, and heating and atomizing the liquid substrate. In the schematic diagram shown in FIG. 2, a vapor conveying tube 11 is arranged along an axial direction in the main housing 10, and the liquid storage cavity 12 configured to store the liquid substrate is formed in a space between the vapor conveying tube 11 and an inner wall of the main housing 10. A first end of the near end 110 opposite to the vapor conveying tube 11 is in communication with the suction nozzle A, so that the generated aerosol is conveyed to the suction nozzle A for inhalation.

[0042] Further, in some optional embodiments, the vapor conveying tube 11 and the main housing 10 are integrally molded by using moldable materials, so that the liquid storage cavity 12 formed after preparation is open toward the far end 120.

[0043] Further, as shown in FIG. 2 and FIG. 3, the atomizer 100 further includes the atomization assembly, configured to atomize at least part of the liquid substrate to generate the aerosol. Specifically, the atomization assembly includes a liquid guide element, such as a porous body 30 in FIG. 2 and FIG. 3; and a heating element 50, configured to heat and atomize the liquid substrate absorbed by the porous body 30. In addition, in FIG. 2, the atomizer 100 further includes a support element 20, arranged at the far end 120 to provide support to the atomization assembly, so that the atomization assembly is stably assembled and maintained in the main housing 10.

[0044] In some embodiments, the porous body 30 may

be made of a rigid capillary element such as a porous ceramic, a porous glass ceramic, or porous glass. Alternatively, in some other embodiments, the porous body 30 includes a capillary element with an internal capillary channel that can absorb and convey the liquid substrate.

[0045] For a shape and a construction of the porous body 30, as shown in FIG. 3 and FIG. 4, the porous body 30 is in a cup-like shape or the like as a whole. In addition, in arrangement, an axial direction of the porous body 30 is substantially arranged coaxial with or arranged in parallel to a central axis of the main housing 10.

[0046] Specifically, the porous body 30 includes: a surface 310 and a surface 320 opposite to each other along the axial direction, and a surface 330 between the surface 310 and the surface 320. In the embodiments shown in FIG. 2 and FIG. 3, the surface 310 is toward or adjacent to the near end 110, and the surface 320 is toward or close to the far end 120. The surface 310 and the surface 320 are parallel to each other, and are both flat. The surface 330 is an outer surface of the porous body 30, and is perpendicular to the surface 310 and the surface 320. The surface 330 is a peripheral surface of the porous body 30, and is substantially an annular shape that surrounds along a circumferential direction of the porous body 30 or surrounds the porous body 30.

[0047] Alternatively, in another variant embodiment, the surface 330 is obliquely arranged, to be at an acute angle or an obtuse angle or a non-zero angle with the surface 320. For example, in another variant embodiment shown in FIG. 8, an angle between a surface 330c and a coating layer 40c is obliquely arranged to be an acute angle.

[0048] Further, as shown in FIG. 3, the surface 330 and the surface 320 are intersected. The surface 350 and the surface 320 are not intersected.

[0049] During implementation, the surface 310 is helpful for a stable maintenance of a sealing element 60 abutting against a surface 30 during assembly. Alternatively, in some other variant embodiments, the porous body 30 does not have the surface 310, for example, the atomization assembly of the variant embodiment shown in FIG. 8 to FIG. 10. Correspondingly, it is convenient for the sealing element 60 to stably combine with the porous body 30 by abutting against a coating layer 40.

[0050] Further, as shown in FIG. 2 and FIG. 3, during use after assembly, part of the surface 330 of the porous body 30 is surrounded by the sealing element 60. In addition, the surface 330 of the porous body 30 also has an exposed part 331 that is not surrounded by the sealing element 60. During implementation, the exposed part 331 is configured to be a liquid absorbing surface that is directly exposed in the liquid storage cavity 12 to absorb the liquid substrate. Alternatively, in other variant embodiments, the exposed part 331 that is not surrounded by the sealing element 60 is in indirect communication with the liquid storage cavity 12 via a liquid channel to absorb the liquid substrate.

[0051] Further, as shown in FIG. 2 and FIG. 3, the sur-

face 320 of the porous body 30 is substantially completely covered and coated by the coating layer 40. Specifically, in some embodiments, the coating layer 40 includes a thin film of glaze, a dense ceramic, an inorganic oxide (such as zirconia, alumina, boron oxide, or titanium oxide), an inorganic nitride (such as silicon nitride, aluminum nitride, or calcium nitride), a surface-insulated metal, or the like. Complete coating of the surface 320 by the coating layer 40 substantially prevents the liquid substrate and the aerosol from seeping or overflowing from, or leaving the surface 320.

[0052] Further, as shown in FIG. 2 and FIG. 3, the atomization assembly further includes:

the heating element 50, combined on a surface of the coating layer 40. Further, as shown in FIG. 2 and FIG. 3, the heating element 50 is substantially arranged in a central region near the surface of the coating layer 40. During implementation, the heating element 50 is not in contact with a surface of the porous body 30.

[0053] The surface 350 is close to, or toward, or adjacent to the near end 110, and is a concave oblique surface. Therefore, the surface 350 defines a concave cavity 340 that is close to, or toward, or adjacent to the near end 110. During use, the concave cavity 340 is configured to be an atomization chamber for releasing the aerosol.

[0054] As shown in FIG. 3 and FIG. 4, when the heating element 50 is arranged, the porous body 30 includes:

a porous part S1, being roughly or substantially a part opposite to an arrangement region of the heating element 50 along the axial direction, where the porous part S1 is mainly configured to receive heat of the heating element 50 to atomize an atomization region part of the liquid substrate; and

a porous part S2, being a part that avoids the arrangement region of the heating element 50 along the axial direction, where the porous part S2 in the figure is defined between the porous part S1 and the surface 330. During use, the porous part S2 is a part mainly configured to absorb and store the liquid substrate, and convey the liquid substrate to the porous part S1. For example, as shown in FIG. 2 and FIG. 3, the liquid substrate is absorbed by the exposed part 331 of the surface 330 into the porous part S2 and is conveyed along an arrow R1 to the porous part S1 to be atomized as the aerosol.

[0055] Specifically, as shown in FIG. 3, the surface 350 has a first region part 351 that avoids the heating element 50 along the axial direction, and a second region part 352 opposite to the heating element 50 or covering the heating element 50. The porous part S1 is a part defined between the second region part 352 of the surface 350 and the second surface 320.

[0056] Further, as shown in FIG. 3, a surface of the porous part S1 away from the surface 320 is exposed. Therefore, during use, the surface of the porous part S1 away from the surface 320 is an aerosol release surface

for the generated aerosol to overflow.

[0057] Further, as shown in FIG. 2, after assembly, an atomization chamber 340 of the porous body 30 is in airflow communication with the vapor conveying tube 11, so that the vapor conveying tube 11 may be used to convey the aerosol to the suction nozzle A for user inhalation. In addition, after assembly, the atomization chamber 340 is separated from or sealed with the liquid storage cavity 12 via a component 70.

[0058] In the embodiment shown in FIG. 2, the second electrical contact 21 of the atomizer 100 penetrates into the atomizer 100 from the far end 120, and directly or indirectly forms conductivity with the heating element 50 by directly abutting against the heating element 50, wire welding, conductive spring piece, or other manners.

[0059] In some embodiments, a cross section of the porous body 30 may be constructed as a circle, as shown in FIG. 4. Alternatively, in another variant embodiment shown in FIG. 5, the cross section of the porous body 30 may be constructed as a shape of a square or rectangle. Alternatively, in other variant embodiments, the cross section of the porous body 30 may be more of a regular or irregular shape, such as a polygon.

[0060] Based on functional requirements for heating and atomizing, the heating element 50 usually uses a resistive metal material or a metal alloy material with appropriate impedance. For example, an appropriate metal or alloy material includes at least one of nickel, cobalt, zirconium, titanium, nickel alloy, cobalt alloy, zirconium alloy, titanium alloy, nickel chromium alloy, nickel iron alloy, iron chromium alloy, titanium alloy, iron manganese aluminum based alloy, or stainless steel.

[0061] In preparation, the heating element 50 may be in a form of a printed or a deposited resistance heating trajectory. In some embodiments, the heating element 50 may be a patterned resistance heating trajectory. In some other embodiments, the heating element 50 is planar.

[0062] In some embodiments, after the heating element 50 is formed through cutting or etching by a sheet-like metal substrate, the heating element 50 is attached to the porous body 30 having the coating layer 40. Alternatively, in some other embodiments, the heating element 50 is formed by mixing a raw material (such as metal powder of nickel chromium alloy) with an amount of sintering aids to form a mixed slurry, then brushing the mixed slurry on the surface of the coating layer 40 according to the shape described in the above embodiments, and then firing. For example, FIG. 6 shows a schematic diagram of a heating element 50a in an embodiment. In this embodiment, the heating element 50a is obtained through sintering by printing a coating layer 40a.

[0063] Alternatively, in some other variant embodiments, the heating element 50/50a is an inductive heating element penetrable by a changing magnetic field to generate heat. Correspondingly, a magnetic field generator, such as an induction coil, that is configured to generate an alternating magnetic field, may be further ar-

ranged in the atomizer 100.

[0064] Alternatively, in some other variant embodiments, the heating element 50/50a is not exposed on the surface of the coating layer 40/40a, but embedded or buried in the coating layer 40/40a.

[0065] Further, as shown in FIG. 3, a distance d1 between the second region part 352 of the surface 350 of the porous body 30 and the surface 320 is constructed to gradually decrease inward along a radial direction.

[0066] In addition, in a preferred embodiment, a shortest distance between the second region part 352 and the surface 320 is greater than 0.01 mm. That is, a minimum value of the distance d1 is 0.01 mm.

[0067] In a preferred embodiment, the second region part 352 is at the porous part S1 that is used as an atomization region, and the distance d1 between the second region part 352 and the surface 320 is preferably ranges from 0.01 mm to 0.5 mm.

[0068] In some preferred embodiments, a porosity of the porous body 30 ranges from 40% to 70%. In addition, a pore dimension of a capillary pore in the porous body 30 ranges from 10 μm to 100 μm .

[0069] In some embodiments, a thickness of the coating layer 40 ranges approximately from 0.05 mm to 0.2 mm.

[0070] In addition, a distance d2 between the surface 350 of the porous body 30 and the surface 330 is constructed to gradually increase along a direction close to the surface 320.

[0071] In the embodiment shown in FIG. 3, the surface 350 is constructed to be spherical curved.

[0072] In some preferred embodiments, in an overall dimension of the porous body 30, a length of the porous body 30 along the axial direction ranges approximately from 3 mm to 6 mm. An outer diameter of the porous body 30 along the radial direction ranges from 8 mm to 12 mm.

[0073] In some embodiments, a projection area of the porous part S1 on the second surface 320/320a in the foregoing embodiments ranges approximately from 10% to 50% of an area of the second surface 320/320a.

[0074] In some embodiments, the porous body 30/30a combined with the coating layer 40/40a is formed through sintering by sequentially printing their raw materials layer by layer by using a 3D printing technology. Alternatively, in some other embodiments, the porous body 30/30a combined with the coating layer 40/40a is formed through sintering by sequentially injecting and hot pressing their raw materials into a mold. Alternatively, in some other embodiments, the coating layer 40/40a is formed on the porous body 30/30a through spraying, vapor deposition, brushing, printing, and transfer printing.

[0075] Further, FIG. 7 shows a schematic diagram of the atomization assembly in another optional embodiment. A porous body 30b in the atomization assembly in this embodiment includes:

a surface 311b and a surface 320b opposite to each

other along the axial direction, where the surface 320b is covered by a coating layer 40b, to prevent the liquid substrate or the aerosol from seeping or overflowing from the surface 320b, and the surface 311b and the surface 320b are flat surfaces;

a surface 330b, being an outer surface that surrounds the porous body 30b, where after assembly or during use, at least part of the surface 330b is a liquid absorbing surface for absorbing the liquid substrate; structurally, the surface 330b extends from the surface 311b to a surface 312b; and substantially, the surface 330b is perpendicular to the surface 311b and the surface 312b;

a fourth surface 313b, being located at a side away from the surface 320, and being a flat surface parallel to the surface 320b; in dimension, the surface 313b coincides with a projection of a heating element 50b; and therefore, during use, a part between the surface 313b and the heating element 50b defines the porous body 30b as the porous part S1 of the atomization region; and

a surface 312b, extending from the surface 311b to the surface 313b, where the surface 312b is obliquely arranged, that is, the surface 312b is at an angle with the surface 311b and the angle 313b.

[0076] During use, a concave cavity 340b jointly defined by the surface 312b and the surface 313b serves as the atomization chamber for releasing the aerosol. A distance between the surface 313b and the surface 320b preferably ranges from 0.01 mm to 0.5 mm.

[0077] It should be noted that, the specification of this application and the accompanying drawings thereof illustrate preferred embodiments of this application, but are not limited to the embodiments described in this specification, furthermore, a person of ordinary skill in the art may make improvements or modifications according to the foregoing description, and all the improvements and modifications shall fall within the protection scope of the attached claims of this application.

Claims

1. An atomizer, comprising:

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

a porous body, comprising a first surface, a second surface, and a third surface, wherein the first surface is constructed to be in fluid communication with the liquid storage cavity, for at least part of the liquid substrate to enter the porous body via the first surface;

a coating layer that covers the second surface is formed on the second surface; the coating layer is combined with a heating element to heat the at least part of the liquid substrate in the po-

- rous body to generate an aerosol; and the third surface is an exposed surface, for releasing the aerosol.
2. The atomizer according to claim 1, wherein the porous body comprises a porous ceramic.
 3. The atomizer according to claim 1 or 2, wherein the coating layer comprises a dense ceramic, glaze, a metal or an inorganic oxide or an inorganic nitride.
 4. The atomizer according to claim 1 or 2, wherein the second surface is a flat surface.
 5. The atomizer according to claim 1 or 2, wherein the heating element is a heating element printed or deposited on the coating layer.
 6. The atomizer according to claim 1 or 2, wherein the heating element is a planar heating element.
 7. The atomizer according to claim 1 or 2, wherein the heating element comprises a resistance heating trajectory formed on the coating layer.
 8. The atomizer according to claim 1 or 2, wherein the heating element is an inductive heating element penetrable by a changing magnetic field to generate heat.
 9. The atomizer according to claim 1 or 2, wherein the third surface is arranged away from the coating layer.
 10. The atomizer according to claim 9, wherein a projection of the third surface on a surface of the coating layer covers the heating element.
 11. The atomizer according to claim 9, wherein a distance between the third surface and the first surface gradually decreases along a direction of the third surface away from the coating layer.
 12. The atomizer according to claim 1 or 2, wherein the first surface is constructed to extend along a circumferential direction of the porous body.
 13. The atomizer according to claim 1 or 2, wherein there is an angle between the first surface and the second surface.
 14. The atomizer according to claim 1, wherein the first surface at least partially extends between the second surface and the third surface.
 15. The atomizer according to claim 1 or 2, wherein the third surface is constructed to be obliquely arranged along a direction close to the second surface.
 16. The atomizer according to claim 1 or 2, wherein the third surface is substantially parallel to the second surface.
 17. The atomizer according to claim 1 or 2, wherein a distance between the third surface along an axial direction of the porous body and the second surface ranges from 0.01 mm to 0.5 mm.
 18. The atomizer according to claim 1 or 2, wherein a minimum distance between the third surface along an axial direction of the porous body and the second surface is 0.01 mm.
 19. The atomizer according to claim 1 or 2, wherein the third surface is at least partially constructed as a curved surface.
 20. The atomizer according to claim 1 or 2, wherein the third surface is at least partially defined with a concave cavity.
 21. The atomizer according to claim 20, wherein the concave cavity is constructed to accommodate at least part of an atomization chamber of the aerosol.
 22. The atomizer according to claim 20, wherein the concave cavity is separated from the liquid storage cavity.
 23. The atomizer according to claim 1 or 2, wherein the coating layer is configured to prevent the liquid substrate or the aerosol from leaving the second surface.
 24. An electronic atomization device, comprising an atomizer configured to atomize a liquid substrate to generate an aerosol and a power supply assembly configured to supply power to the atomizer, wherein the atomizer comprises the atomizer according to any one of claims 1 to 23.
 25. An atomization assembly for an atomizer, comprising:
 - a porous body, comprising a first surface, a second surface, and a third surface, wherein the second surface and the third surface are arranged oppositely along an axial direction of the porous body, and the first surface is used to receive a liquid substrate, for the liquid substrate to enter the porous body;
 - a coating layer, covering the second surface; and
 - a heating element, combined on the coating layer, wherein the third surface is an exposed surface, for releasing an aerosol.

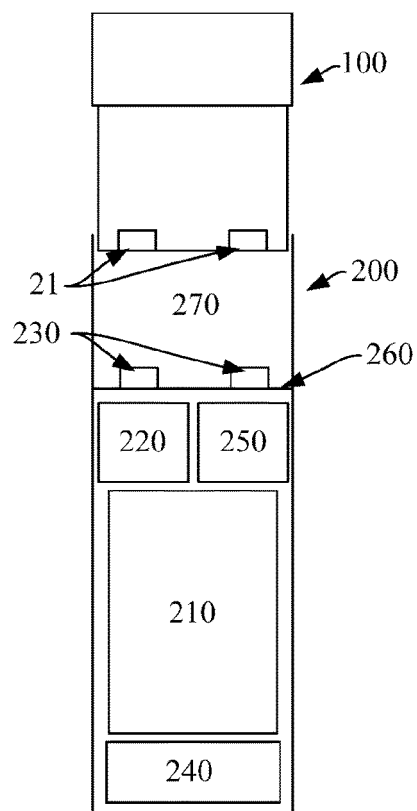


FIG. 1

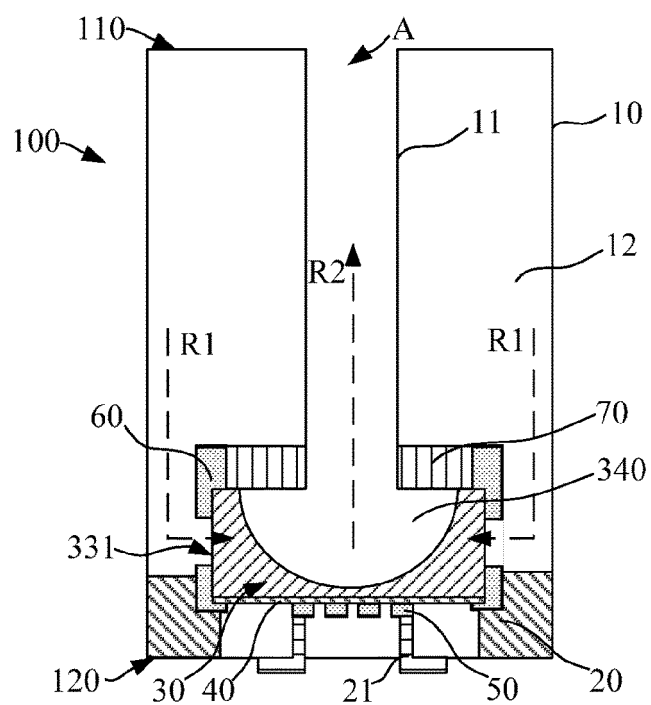


FIG. 2

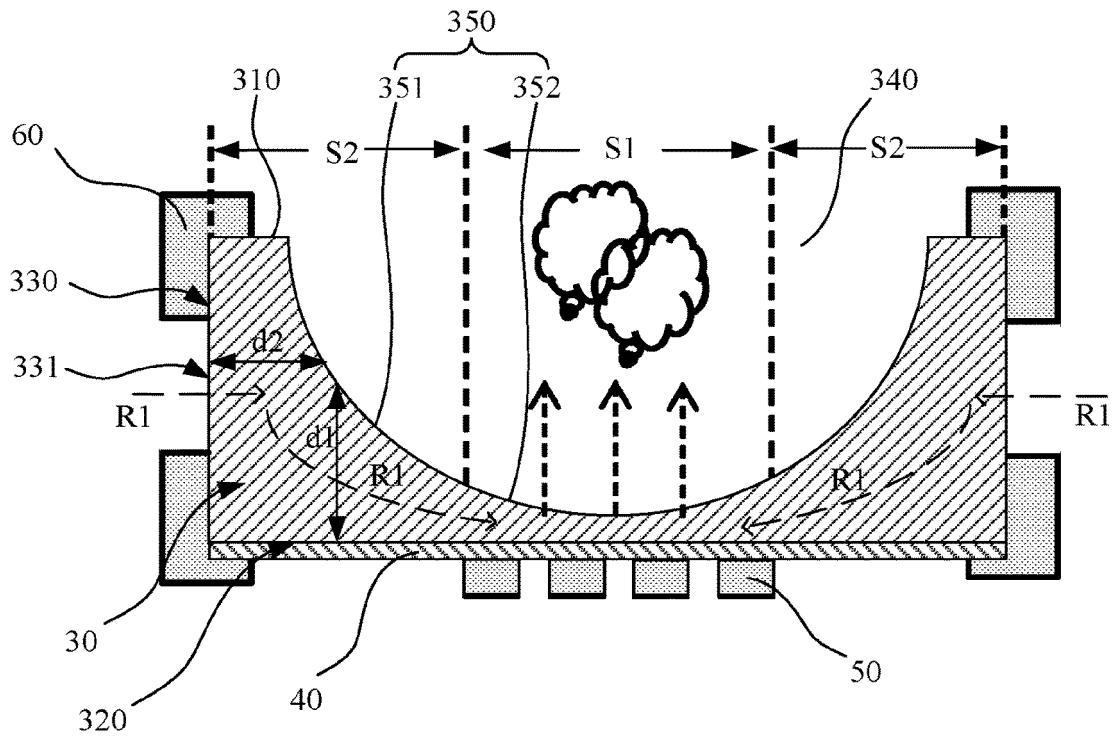


FIG. 3

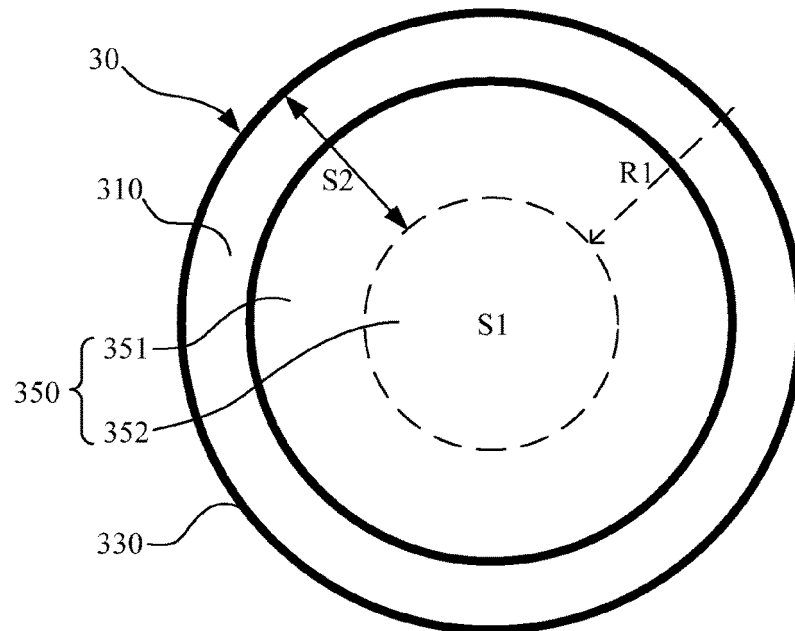


FIG. 4

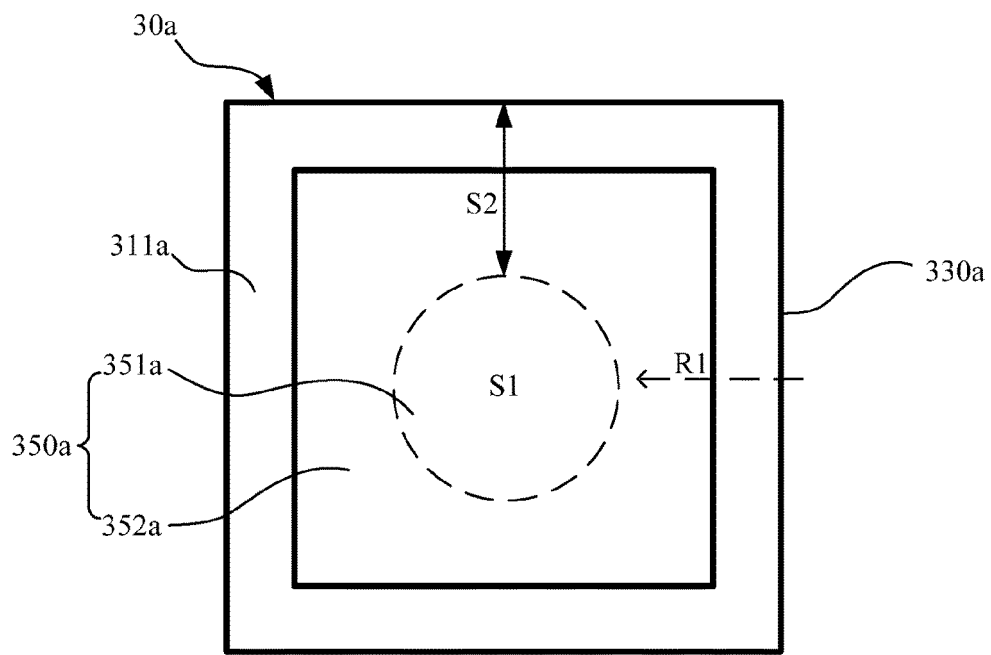


FIG. 5

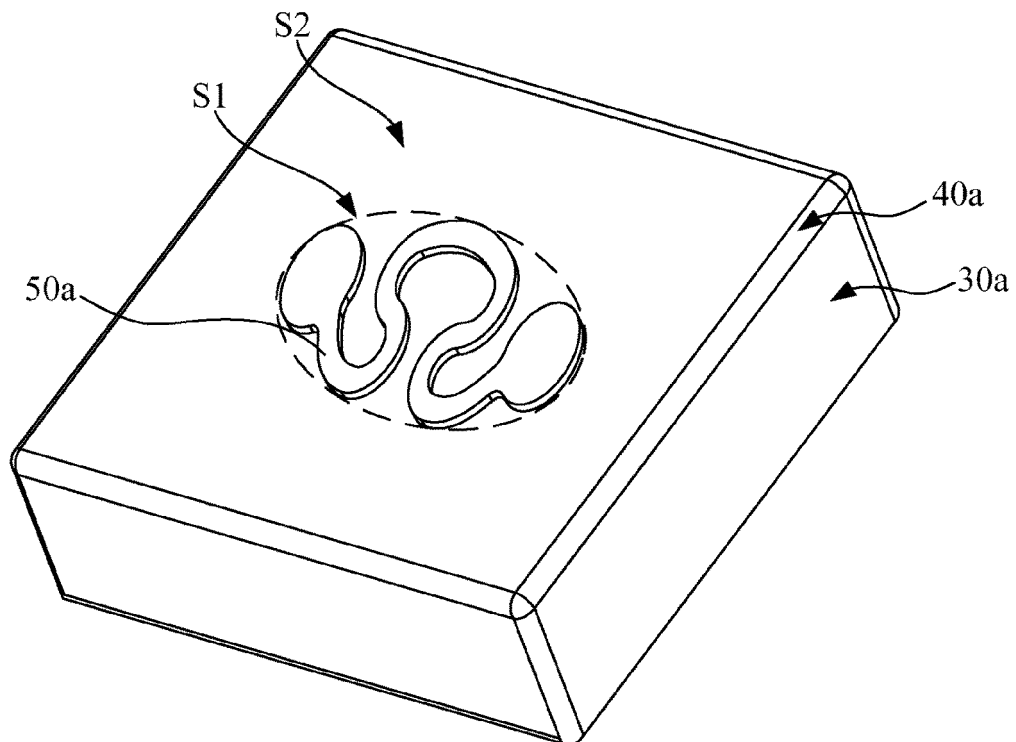


FIG. 6

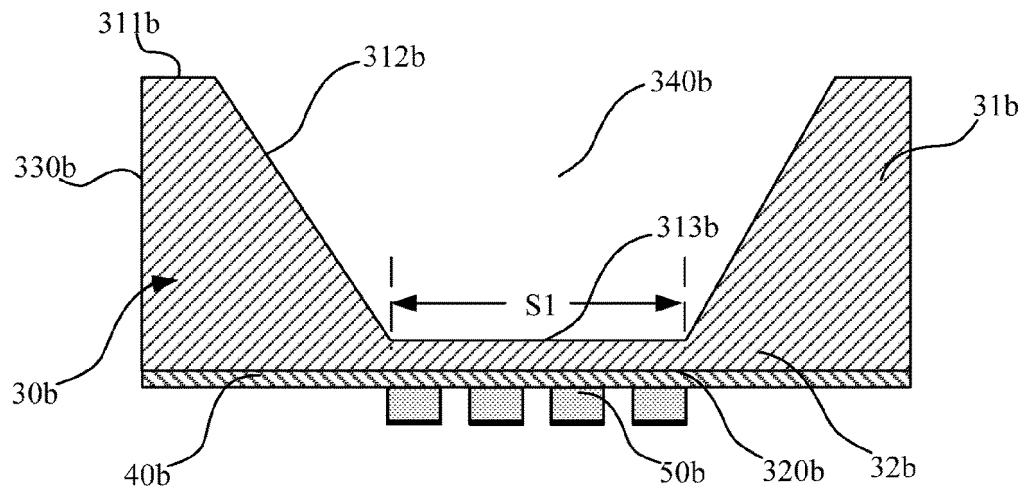


FIG. 7

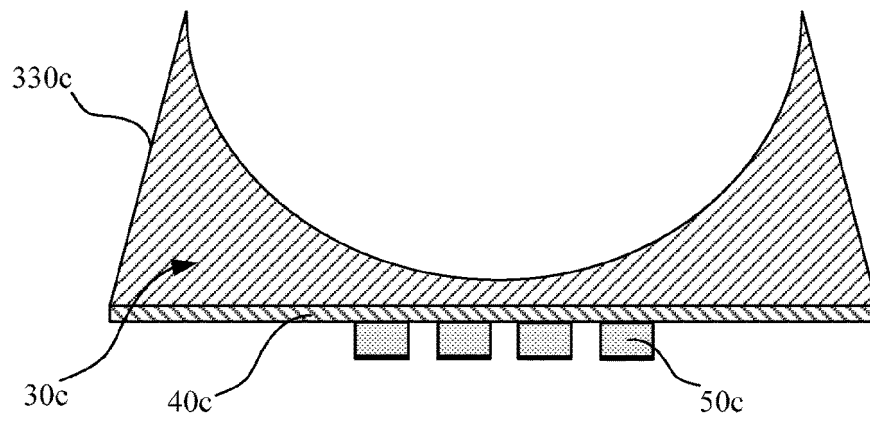


FIG. 8

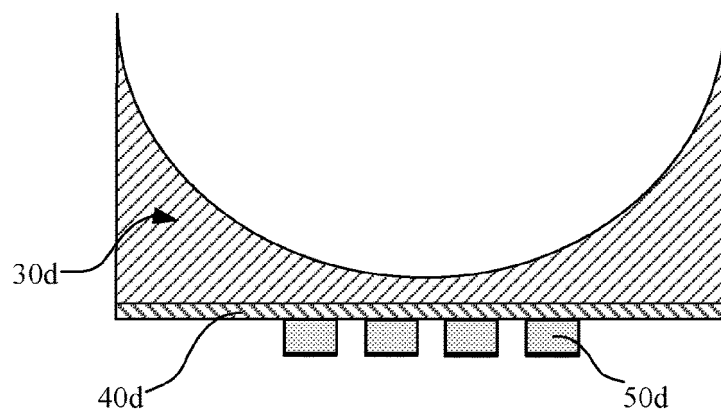


FIG. 9

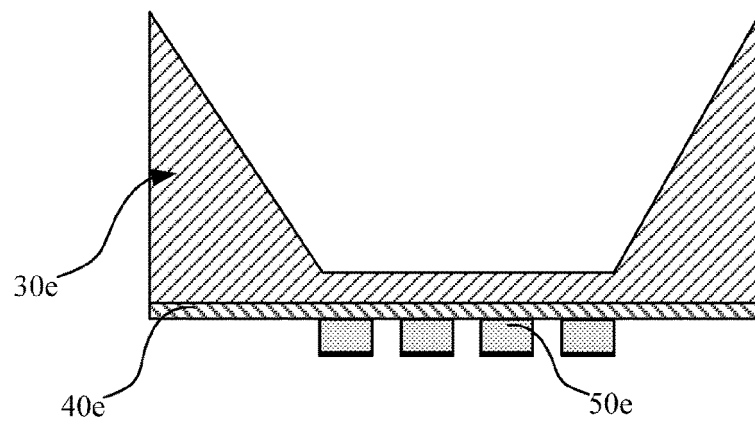


FIG. 10

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/131773

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/48(2020.01)i; A24F 40/46(2020.01)i; A24F 40/40(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)

A24F 40/-; A24F 47/-

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

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

CNTXT, ENTXTC, VEN: 电子烟, 雾化, 多孔, 陶瓷, 包覆, 金属, 导液, e-cigarette, atomiz+, porous, ceramic, coated, metal, guid+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 110419779 A (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 08 November 2019 (2019-11-08) description, paragraphs 0005-0034, 0050-0057, and 0119-0122, and figures 1-6 and 12	1-25
X	CN 109674094 A (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 26 April 2019 (2019-04-26) description, paragraphs 0037-0075, and figures 1-4 and 10	1-25
X	CN 109527657 A (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 29 March 2019 (2019-03-29) description, paragraphs 0044-0099, and figures 1-5 and 14-15	1-25
X	US 2019350256 A1 (RAI STRATEGIC HOLDINGS INC.) 21 November 2019 (2019-11-21) description, paragraphs 0038-0079, and figures 1-9	1-25
A	CN 213344341 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 04 June 2021 (2021-06-04) entire document	1-25
A	CN 213587424 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 02 July 2021 (2021-07-02) entire document	1-25

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

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

Date of the actual completion of the international search

06 December 2022

Date of mailing of the international search report

18 January 2023

Name and mailing address of the ISA/CN

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Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/131773

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 210726705 U (CHANGZHOU PATENT ELECTRONIC TECHNOLOGY CO., LTD.) 12 June 2020 (2020-06-12) entire document	1-25

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2022/131773

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 110419779 A	08 November 2019	None	
CN 109674094 A	26 April 2019	None	
CN 109527657 A	29 March 2019	None	
US 2019350256 A1	21 November 2019	KR 20210008864 A	25 January 2021
		WO 2019220372 A1	21 November 2019
		US 2021145064 A1	20 May 2021
		EP 3793377 A1	24 March 2021
		CN 112492872 A	12 March 2021
		BR 112020023138 A2	09 February 2021
		AU 2019270627 A1	24 December 2020
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		CA 3100160 A1	21 November 2019
CN 213344341 U	04 June 2021	None	
CN 213587424 U	02 July 2021	None	
CN 210726705 U	12 June 2020	None	

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

REFERENCES CITED IN THE DESCRIPTION

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