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(54) **AEROSOL GENERATING SYSTEM AND AEROSOL GENERATING DEVICE**

(57) This application provides a vapor generation system and a vapor generation device, where the vapor generation system includes: a product box, configured to store an aerosol-generating product; a vapor generation device, configured to heat the aerosol-generating product to generate an aerosol, where an outer surface of the vapor generation device has a first plane with a largest area; and when the first plane of the vapor generation device is in contact with a largest plane of an outer surface of the product box, a contact area is defined by a plane with a smaller area of the two planes. The foregoing vapor generation system and combination of the vapor generation device and the product box is advantageous for the user to hold or maintain.

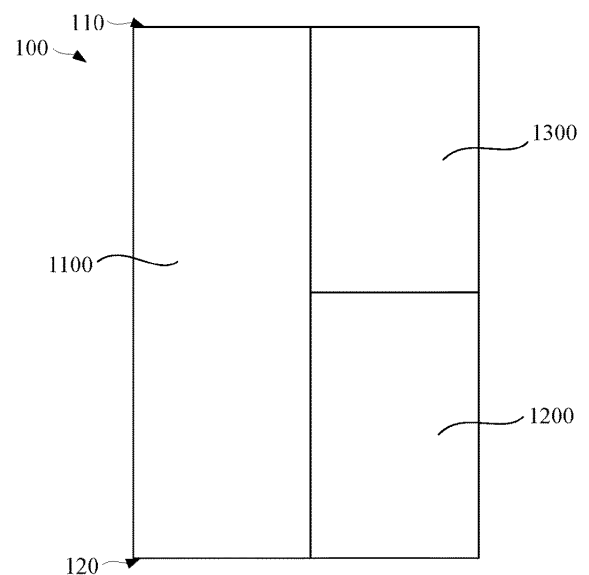


FIG. 1

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Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Chinese Patent Application No. 202110882128.5, entitled "VAPOR GENERATION SYSTEM AND VAPOR GENERATION DEVICE" filed with the China National Intellectual Property Administration on August 2, 2021, which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] This application relates to the field of heat not burning electronic cigarette device technologies, and in particular, to a vapor generation system and a vapor generation device.

BACKGROUND

[0003] Tobacco products (such as cigarettes, cigars, and the like) 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 apparatus 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. As another example, there are aerosol-providing articles, for example, electrically heating smoking devices.

SUMMARY

[0005] An embodiment of this application provides a vapor generation system, including:

a product box, configured to store an aerosol-generating product; and
a vapor generation device, configured to heat the aerosol-generating product to generate an aerosol, where an outer surface of the vapor generation device has a first plane with a largest area; and
when the first plane of the vapor generation device is in contact with a largest plane of an outer surface of the product box, a contact area is defined by a plane with a smaller area of the two planes.

[0006] In a preferred implementation, the first plane is in a shape of a square.

[0007] In a preferred implementation, the outer surface of the vapor generation device has a side surface adjacent to the first plane; and the side surface is in a shape of a square.

[0008] In a preferred implementation, when the first plane of the vapor generation device is in contact with the largest plane of the outer surface of the product box,

a side surface of the outer surface of the vapor generation device that is adjacent to the product box is in a shape of a square.

[0009] In a preferred implementation, a shape of the first plane is close to that of the largest plane of the outer surface of the product box.

[0010] In a preferred implementation, the first plane has a length size ranging from 70 mm to 80 mm and a width size ranging from 40 mm to 50 mm.

[0011] In a preferred implementation, the vapor generation device and/or the product box are/is basically in a shape of a cube.

[0012] In a preferred implementation, the vapor generation device and the product box have basically similar external sizes.

[0013] In a preferred implementation, the vapor generation device has a length size ranging from 70 mm to 80 mm, a width size ranging from 40 mm to 50 mm, and a thickness size ranging from 9.5 mm to 20 mm.

[0014] In a preferred implementation, when the first plane of the vapor generation device is in contact with the largest plane of the outer surface of the product box, a user simultaneously holds or operates the vapor generation device and the product box through one hand.

[0015] Still another embodiment of this application further provides a vapor generation device, configured to heat an aerosol-generating product to generate an aerosol; and configured to heat the aerosol-generating product to generate the aerosol, where an outer surface of the vapor generation device has a first plane with a largest area; and

when the first plane of the vapor generation device is in contact with a largest plane of an outer surface of the product box, a contact area is defined by a plane with a smaller area of the two planes.

[0016] Still another embodiment of this application further provides a vapor generation device, configured to heat an aerosol-generating product to generate an aerosol; and an outer surface of the vapor generation device has a first plane with a largest area; and the area of the first plane approximately ranges from 2800 mm² to 4000 mm².

[0017] In a preferred implementation, the first plane has a length size ranging from 70 mm to 80 mm.

[0018] In a preferred implementation, when the first plane of the vapor generation device is in contact with a largest plane of an outer surface of the product box, a contact area is defined by a plane with a smaller area of the two planes.

[0019] In a preferred implementation, the vapor generation device further includes: a wireless charging coil, configured to charge accommodated in the vapor generation device, where

the wireless charging coil is a planar spiral coil parallel to the first plane.

[0020] Still another embodiment of this application further provides a vapor generation device, configured to heat an aerosol-generating product to generate an aer-

osol; and the vapor generation device has a length direction and a width direction perpendicular to the length direction; the vapor generation device has a proximal end and a distal end that are opposite to each other in the length direction, and a first side and a second side that are opposite to each other in the width direction; and the vapor generation device includes:

a first space, close to the first side in the width direction, and basically extending from the proximal end to the distal end, where the first space is used to accommodate an electric core that supplies power; a second space, close to the second side in the width direction, and close to the distal end in the length direction, where the second space is used to accommodate and assemble a circuit board; and a third space, close to the second side in the width direction, and close to the proximal end in the length direction, where the third space defines a heating space used to receive the aerosol-generating product during use.

[0021] In a preferred implementation, a width size of the first space is between 1/3 and 2/3 of a width size of the vapor generation device.

[0022] In a preferred implementation, the first space has a length size ranging from 60 mm to 65 mm, a width size ranging from 15 mm to 25 mm, and a thickness size ranging from 5 mm to 10 mm.

[0023] In a preferred implementation, the vapor generation device further includes: the electric core accommodated in the first space, where the electric core is configured to supply power; and the electric core is basically in a shape of a cube with a length size greater than a width size and the width size greater than a thickness size.

[0024] In a preferred implementation, the electric core has a length ranging from 60 mm to 65 mm, a width ranging from 15 mm to 25 mm, and a thickness ranging from 5 mm to 10 mm.

[0025] In a preferred implementation, a width size of the second space and/or the third space is between 1/3 and 2/3 of the width size of the vapor generation device.

[0026] In a preferred implementation, in the length direction of the vapor generation device, a length size of the second space is greater than a length size of the third space.

[0027] In a preferred implementation, a length size of the second space is between 1/2 and 2/3 of a length size of the vapor generation device.

[0028] In a preferred implementation, a length size of the third space is between 1/3 and 1/2 of a length size of the vapor generation device.

[0029] In a preferred implementation, the second space has a length size ranging from 35 mm to 50 mm, a width size ranging from 15 mm to 25 mm, and a thickness size ranging from 5 mm to 10 mm.

[0030] In a preferred implementation, the third space

has a length size ranging from 25 mm to 40 mm, a width size ranging from 15 mm to 25 mm, and a thickness size ranging from 5 mm to 10 mm.

[0031] In a preferred implementation, a thickness size of the vapor generation device is not less than 9.5 mm.

[0032] In a preferred implementation, the vapor generation device and the product box have basically similar external sizes.

the first space, the second space, and the third space are airtightly sealed from each other.

[0033] In a preferred implementation, the vapor generation device further includes: a wireless charging coil, configured to charge the electric core accommodated in the first space.

[0034] In a preferred implementation, the wireless charging coil is a planar spiral coil.

[0035] In a preferred implementation, the wireless charging coil is arranged basically parallel to a plane defined by a length direction and a width direction of the vapor generation device.

[0036] In a preferred implementation, the wireless charging coil is arranged adjacent to a side of the vapor generation device in a thickness direction.

[0037] In a preferred implementation, the vapor generation device further includes:

a heater, at least partially extending in the third space, to heat the aerosol-generating product, where the heater has a free front end configured to be inserted into the aerosol-generating product; and a window, at least partially surrounding the heater and avoiding the free front end, to cause the heater to have an exposed portion exposed through the window, where a user cleans the exposed portion of the heater through the window

[0038] The foregoing vapor generation system and combination of the vapor generation device and the product box is advantageous for the user to hold or maintain.

BRIEF DESCRIPTION OF THE DRAWINGS

[0039] One or more embodiments are exemplarily described with reference to the corresponding figures in the accompanying drawings, and the descriptions are not to be construed as limiting the embodiments. Elements in the accompanying drawings that have same reference numerals are represented as similar elements, and unless otherwise particularly stated, the figures in the accompanying drawings are not drawn to scale.

FIG. 1 is a schematic diagram of a vapor generation device according to an embodiment;
FIG. 2 is an exploded schematic diagram of a vapor generation device from still another perspective;
FIG. 3 is a schematic diagram of combination of a vapor generation device and a product box according to an embodiment;

FIG. 4 is a schematic diagram of a vapor generation device according to still another embodiment;
FIG. 5 is a schematic diagram of a specific structure of an embodiment of a vapor generation device in FIG. 1;

FIG. 6 is a schematic diagram of a structure of a door cover in FIG. 5 being moved to open a heating assembly;

FIG. 7 is a schematic diagram of a use state of a vapor generation device in FIG. 6 from one perspective;

FIG. 8 is a schematic diagram of a structure of a door cover from still another perspective;

FIG. 9 is an exploded schematic diagram of each part of the vapor generation device in FIG. 6;

FIG. 10 is a schematic cross-sectional view of the vapor generation device in FIG. 6;

FIG. 11 is a schematic diagram of an extractor in FIG. 10 in an operating state;

FIG. 12 is a schematic diagram of the extractor in FIG. 11 in an extraction state;

FIG. 13 is a schematic cross-sectional view of the extractor in FIG. 10 from one perspective;

FIG. 14 is a schematic diagram of a perspective after the extractor in FIG. 6 extracts an aerosol-generating product;

FIG. 15 is a schematic diagram of a use state of still another embodiment of the vapor generation device in FIG. 1;

FIG. 16 is an exploded schematic diagram of each part of the vapor generation device in FIG. 15 from one perspective;

FIG. 17 is an exploded schematic diagram of each part of the vapor generation device in FIG. 15 from still another perspective;

FIG. 18 is a schematic cross-sectional view of the vapor generation device in FIG. 16 from one perspective;

FIG. 19 is a schematic cross-sectional view of the extractor in FIG. 18 from still another perspective;

FIG. 20 is a schematic diagram after a blocking member in FIG. 15 is removed;

FIG. 21 is a schematic diagram of a vapor generation device in an extraction state according to still another embodiment;

FIG. 22 is a schematic cross-sectional view of the vapor generation device in FIG. 21 in an operating state;

FIG. 23 is a schematic cross-sectional view of the vapor generation device in FIG. 21 in an extraction state; and

FIG. 24 is an enlarged view of a part B in FIG. 23.

DETAILED DESCRIPTION

[0040] For ease of understanding of this application, this application is described in further detail below with reference to the accompanying drawings and specific im-

plementations.

[0041] An embodiment of this application provides a vapor generation device, configured to receive an aerosol-generating product to generate an aerosol.

[0042] Further, in an optional implementation, an aerosol-generating product preferably uses a tobacco-containing material that releases volatile compounds from a substrate when being heated; or may also be a non-tobacco material that may be adapted to be electrically heated for smoking after being heated. The aerosol-generating product preferably uses a solid substrate, which may include one or more powders, granules, fragments, thin strips, strips, or flakes of one or more of vanilla leaves, tobacco leaves, homogenized tobacco, and expanded tobacco; or a solid substrate may include additional tobacco or non-tobacco volatile flavor compounds that are released when the substrate is heated.

[0043] Further, in an optional implementation, the aerosol-generating product includes cigarettes in a shape of a slender cylinder.

[0044] Further, refer to FIG. 1 and FIG. 2, in one embodiment, the vapor generation device 100 is configured to have a generally square shape.

[0045] In the implementation shown in FIG. 1, the vapor generation device 100 includes:

a proximal end 110 and a distal end 120 that are opposite to each other in a length direction, where according to requirements of normal use, the proximal end 110 is configured as an end for a user to inhale an aerosol. During use, the aerosol-generating product is at least partially received into the vapor generation device 100 through the proximal end 110 and is heated to generate the aerosol.

[0046] Further, refer to FIG. 1 and FIG. 2, the vapor generation device 100 defines:

a first space 1100, basically extending from the proximal end 110 to the distal end 120, where the first space 1100 is located on a side of the vapor generation device 100 in a width direction; and during use, the first space 1100 is a space used to accommodate and assemble an electric core 11 for power supply; a second space 1200, basically located at a position close to the distal end 120, and being opposite to or adjacent to a part of the first space 1100 in the width direction, where during use, the second space 1200 is a space used to accommodate and assemble a circuit board, such as a PCB board; and a third space 1300, basically located at a position close to the proximal end 110, being opposite to the second space 1200 in a length direction, and being opposite to or adjacent to the part of the first space 1100 close to the proximal end 110 in the width direction, where during use, the third space 1300 is an at least partially defined heating space, to receive and heat at least a part of the aerosol-generating product, to generate an aerosol for inhaling.

[0047] In a preferred implementation, the first space 1100, the second space 1200, and the third space 1300 are basically airtightly sealed from each other, to prevent hot air or the aerosol from flowing in front of the first space 1100, the second space 1200, and the third space 1300.

[0048] Further, FIG. 3 is a schematic diagram of a vapor generation system including a vapor generation device 100 and a product box 200. As shown in FIG. 3, the product box 200, such as a cigarette box, is usually configured in a shape of a square; and the product box 200 usually has an openable flip cover 300, and by opening the flip cover 300, the aerosol-generating product, such as cigarettes, accommodated inside the product box 200 may be accessed.

[0049] Further, as shown in FIG. 3, the vapor generation device 100 basically has a shape and a volume size that are similar to that of the product box 200 such as the cigarette box. Therefore, it is conducive to being placed in combination with the product box 200.

[0050] Further, as shown in FIG. 3, an outer surface of the vapor generation device 100 has several planes, and a plane with a largest area is planar side surface located on two sides in a thickness direction; and the product box 200, such as a cigarette box, also has a planar side surface located on two sides in the thickness direction, which is the plane with the largest area. When a side surface of the vapor generation device 100 in the thickness direction is combined with a side surface of the product box 200 in the thickness direction, a contact area between a side surface of the vapor generation device 100 in the thickness direction and a side surface of the product box 200 in the thickness direction is defined by the smaller plane of the two.

[0051] Certainly, in some implementations, an area or a shape of the largest plane on the outer surface of the vapor generation device 100 is basically the same as or close to an area or a shape of the largest plane on the outer surface of the product box 200. Alternatively, in some implementations, an area or a shape of any side surface of the vapor generation device 100 in the thickness direction is basically the same as or close to an area or a shape of any side surface of the product box 200 in the thickness direction.

[0052] In addition, as shown in FIG. 3, the side surface of the vapor generation device 100 that is in contact with or is in combination with the product box 200 is in a shape of a square; any other side surfaces of the vapor generation device 100 adjacent to the side surface in contact with the product box 200 each are in a shape of a square; and for example, the side surfaces of the vapor generation device 100 in FIG. 3 in the length direction or the width direction are all in a shape of a square.

[0053] In addition, as shown in FIG. 3, when the vapor generation device 100 is combined with the product box 200 in the thickness direction, the side surface of the vapor generation device 100 facing away from the product box 200 in the thickness direction, and the side surface of the product box 200 facing away from the vapor

generation device 100 are exposed. During use, a user may simultaneously keep the side surface of the vapor generation device 100 facing away from the product box 200 in the thickness direction with fingers, and the side surface of the product box 200 facing away from the vapor generation device 100 simultaneously keeps the vapor generation device 100 and the product box 200; and this is advantageous for portability.

[0054] As shown in FIG. 3, the vapor generation device 100 and the product box 200 basically have similar shapes, sizes, and volumes. In an implementation, the product box 200 has a length size approximately ranging from 70 mm to 80 mm, a width size approximately ranging from 40 mm to 50 mm, and a thickness size approximately ranging from 10 mm to 20 mm.

[0055] According to FIG. 3, the corresponding vapor generation device 100 may have a length L approximately ranging from 70 mm to 80 mm, a width W approximately ranging from 40 mm to 50 mm, and a thickness H approximately ranging from 9.5 mm to 20 mm. In an implementation, surfaces on two sides of the vapor generation device 100 in the thickness direction are the planes with the largest area, and the area approximately ranges from 2800 mm² to 4000 mm².

[0056] Further, in some optional implementations, an extending length/thickness of the first space 1100 is basically close to a length L/thickness H of the vapor generation device 100. A width of the first space 1100 is between 1/3 and 2/3 of a width W of the vapor generation device 100; and more preferably, a width of the first space 1100 is basically close to 1/2 of the width W of the vapor generation device 100. In some implementations, the first space 1100 also has a length size approximately ranging from 60 mm to 65 mm, a width size approximately ranging from 15 mm to 25 mm, and a thickness size approximately ranging from 5 mm to 10 mm.

[0057] Correspondingly, as shown in FIG. 2, the electric core 11 accommodated or assembled in the first space 1100 is configured to be basically in a shape of a square. Correspondingly, in some implementations, a volume or a shape of the electric core 11 is basically the same as or similar to a volume or a shape of the first space 1100. In some implementations, the electric core 11 has a length approximately ranging from 60 mm to 65 mm, a width approximately ranging from 15 mm to 25 mm, and a thickness approximately ranging from 5 mm to 10 mm.

[0058] Further, in some optional implementations, the second space 1200 has a length size approximately ranging from 35 mm to 50 mm, a width size ranging from 15 mm to 25 mm, and a thickness size approximately ranging from 5 mm to 10 mm.

[0059] Further, in some optional implementations, the third space 1300 has a length size approximately ranging from 25 mm to 40 mm, a width size ranging from 15 mm to 25 mm, and a thickness size approximately ranging from 5 mm to 10 mm.

[0060] In some other implementations, a width of the

second space 1200 and/or the third space 1300 is between $1/3$ and $2/3$ of the width W of the vapor generation device 100; and more preferably, a width of the second space 1200 and/or the third space 1300 is basically close to $1/2$ of the width W of the vapor generation device 100.

[0061] A thickness of the second space 1200 and/or the third space 1300 is basically close to the thickness H of the vapor generation device 100.

[0062] In some other implementations, an extending length of the second space 1200 is greater than an extending length of the third space 1300. In some other implementations, the extending length of the second space 1200 is between $1/2$ and $2/3$ of the length of the vapor generation device 100. In some other implementations, the extending length of the third space 1300 is between $1/3$ and $1/2$ of the length of the vapor generation device 100.

[0063] Further, as shown in FIG. 4, in still another optional implementation, a wireless charging coil 1400 close to at least one side in a thickness direction is arranged in the vapor generation device 100; and the wireless charging coil 1400 may be configured to be couple to an external wireless charging device, and then receive electromagnetic energy of the wireless charging device to generate a charging current to charge the electric core 11.

[0064] Further, as shown in FIG. 4, the wireless charging coil 1400 configured to wirelessly charge the electric core 11 is a planar spiral coil. In some implementations, the wireless charging coil 1400 is a generally planar spiral coil in a shape of a square, as shown in FIG. 4. Alternatively, in some implementations, the wireless charging coil 1400 may be further configured as a planar spiral coil in a shape of a circle.

[0065] In some optional implementations, the wireless charging coil 1400 is made of a wire material with a cross section in a shape of a circle or a rectangle; and the wire material includes, for example, a common copper wire, a nickel wire, and the like. Alternatively, in some other optional implementations, the planar spiral coil of the wireless charging coil 1400 is in the form of a deposited, printed, or etched coating, track, or line; and for example, the wireless charging coil 1400 is in the form of a planar spiral coil with a coating or circuit made of a conductive material by printing and depositing on a substrate. Alternatively, in some other optional implementations, the planar spiral coil of the wireless charging coil 1400 is in the form of a planar spiral coil formed by etching or cutting a piece of metal conductive substrate.

[0066] Further, FIG. 5 to FIG. 7 show a schematic diagram of a vapor generation device 100 of a specific embodiment. In this embodiment, the vapor generation device 100 includes:

a main housing 10, where the main housing 10 mainly serves as a housing component of the vapor generation device 100, and further defines a first space 1100, a second space 1200, and a third space 1300

inside the main housing 10; and therefore, in an implementation, the main housing 10 generally has requirements of a shape and a size of the vapor generation device 100 described above; and

a door cover 20, located at a proximal end 110 of the main housing 10 and/or the vapor generation device 100, and being configured to be movable relative to the main housing 10 in an implementation, where certainly, according to the preferred embodiment shown in FIG. 5 and FIG. 6, movement of the door cover 20 relative to the main housing 10 is sliding in a width direction of the main housing 10, as shown by the arrow $R1$ in FIG. 6; or Alternatively, in other variation implementations, movement of the door cover 20 relative to the main housing 10 may be in the form of rotation around a specific axis.

[0067] As shown in FIG. 5 to FIG. 7, the door cover 20 is designed to move, so that the door cover 20 has an open position and a closed position. When the door cover 20 is at the closed position, for example, as shown in FIG. 5, the door cover 20 blocks or seals the third space 1300. In this case, the vapor generation device 100 is locked and cannot be used; and when the door cover 20 is at the open position, for example, as shown in FIG. 6 and FIG. 7, the third space 1300 is exposed, and then a user may receive an aerosol-generating product A into the vapor generation device 100 for inhaling, and clean the third space 1300.

[0068] Further, as shown in FIG. 5 to FIG. 7, a guide groove 11 is provided on the main housing 10, and is configured to provide guidance for a movement process of the door cover 20. Specifically, in a preferred implementation, the guide groove 11 is provided on a side surface of the main housing 10 in a thickness direction; and the guide groove 11 is configured as a slender groove extending in a width direction of the main housing 10. During use, the door cover 20 at least partially extends into the guide groove 11, thereby engaging with the guide groove 11 to form guide for a movement process; and positions of end portions at two ends of the guide groove 11 are used to limit the movement of the door cover 20.

[0069] In the implementation shown in the figure, the guide groove 11 has a length approximately ranging from 30 mm to 40 mm.

[0070] For a shape or a structure of the door cover 20, refer to FIG. 8. The door cover 20 includes:

a first blocking wall 210, basically parallel to an upper side surface of the main housing 10, where the third space 1300 is blocked or closed at a proximal end 110 when in a use state at the closed position; and a second blocking wall 220 and a third blocking wall 230, extending in a length direction of the main housing 10, where the second blocking wall 220 and the third blocking wall 230 are connected to the first blocking wall 210 at the proximal end 110. The second blocking wall 220 and the third blocking wall 230

are separately arranged on two sides of the main housing 10 in a thickness direction; and further, during use, the second blocking wall 220 and the third blocking wall 230 separately block or seal the third space 1300 from two sides of the main housing 10 in a thickness direction.

[0071] Further, a first hook 221 is arranged at an end portion of the second blocking wall 220 facing away from the first blocking wall 210, and/or a second hook 231 is arranged at an end portion of the third blocking wall 230 facing away from the first blocking wall 210; and during use, the first hook 221 and/or the second hook 231 at least partially extend into the guide groove 11, to provide guidance while remaining connected to the main housing 10, thereby preventing the first hook 221 and/or the second hook 231 from protruding from the guide groove 11 and causing the door cover 20 to fall off from the main housing 10.

[0072] In the preferred implementation shown in FIG. 8, the first blocking wall 210 and/or the second blocking wall 220 and/or the third blocking wall 230 are in a shape of a rectangle. In a more preferred implementation, the first blocking wall 210 has a length size approximately ranging from 15 mm to 25 mm and a width size approximately ranging from 5 mm to 10 mm. In addition, the second blocking wall 220 and/or the third blocking wall 230 have a length size approximately ranging from 28 mm to 40 mm, and a width size approximately ranging from 15 mm to 25 mm.

[0073] In a more preferred implementation, the door cover 20 is made of a highly heat conductive material, such as a metal material, which is conducive to promoting heat dissipation of a heating assembly in the third space 1300 and evenly transferring heat to other parts.

[0074] Further, refer to FIG. 6 and FIG. 7, the vapor generation device 100 includes:

a receiving hole 41, located at a proximal end 110, where an aerosol-generating product A may be at least partially received in the vapor generation device 100 through the receiving hole 41.

[0075] In the preferred implementation shown in FIG. 10, the receiving hole 41 is defined by an extractor 40. Alternatively, in other variation implementations, when the vapor generation device 100 does not have the extractor 40, the receiving hole 41 may be further defined by a main housing 10 or a bracket 30, or the like.

[0076] In addition, refer to FIG. 10, correspondingly, the vapor generation device 100 includes:

a receiving cavity 430, where at least a part of the aerosol-generating product A is removably received in the receiving cavity 430; and the receiving cavity 430 is in communication with the receiving hole 41.

[0077] In the preferred implementation shown in FIG. 10, the receiving cavity 430 is also defined by the extractor 40. Alternatively, in other variation implementations, when the vapor generation device 100 does not have the extractor 40, the receiving cavity 430 may be further de-

fined by a main housing 10 or a bracket 30, or the like.

[0078] Further, refer to FIG. 9 and FIG. 10, the vapor generation device 100 includes:

a heater 50, configured in a shape of a pin, a needle, a sheet, and the like, such as a shape of a needle shown in FIG. 9; and when the aerosol-generating product A is received in the vapor generation device 100, the heater 50 may be inserted into the aerosol-generating product A for heating. In some optional implementations, the pin-shaped or needle-shaped heater 50 has a length size approximately ranging from 12 mm to 19 mm and an outer diameter size approximately ranging from 2 mm to 5 mm. In some other optional implementations, the sheet-shaped heater 50 may have a length size approximately ranging from 12 mm to 19 mm, a width size approximately ranging from 3 mm to 6 mm, and a thickness size approximately ranging from 0.4 mm to 1 mm. Accordingly, as shown in FIG. 10, the heater 50 at least partially extends in the receiving cavity 430, thereby being conducive to being inserted into the aerosol-generating product A for heating.

[0079] In other variation implementations, the heater 50 may be further configured in a shape of a cylinder; and during use, an internal space of the heater 50 defines to form the receiving cavity 430 for receiving the aerosol-generating product A and generating an aerosol by heating a periphery of the aerosol-generating product A.

[0080] In some optional implementations, the heater 50 is a resistance heater; or Alternatively, in some implementations, the heater 50 is a susceptor that is penetrated by a magnetic field and generates heat.

[0081] Further, refer to FIG. 9 and FIG. 10, the vapor generation device 100 includes:

a bracket 30, configured to support the extractor 40 in an implementation. In addition, the bracket 30 is further configured to surround or block the heater 50 to protect the heater 50. Specifically, on one hand, the bracket 30 is arranged in the third space 1300 in a detachable manner. When the extractor 40 is connected to the vapor generation device 100, the extractor 40 is supported or kept by the bracket 30. On the other hand, if the bracket 30 at least partially surrounds or blocks the heater 50, the heater 50 may at least be prevented from being completely exposed in the third space 1300, which is conducive to preventing the user from being in contact with or touching the heater 50.

[0082] In a preferred implementation, the bracket 30 generally has a shape of a square. In an implementation, specifically, the bracket 30 has a length size approximately ranging from 25 mm to 40 mm, a width size ranging from 15 mm to 25 mm, and a thickness size approximately ranging from 5 mm to 10 mm.

[0083] Further, refer to FIG. 9 and FIG. 10, the extractor 40 includes:

a receiving portion 420 in a shape of a cylinder, where an internal space of the receiving portion 420 is configured as a receiving cavity 430 configured to receive the aerosol-generating product A; and an operating portion 410, where during use, the user operates the operating portion 410 to move or remove the extractor 40 and extract the aerosol-generating product A by operating the operating portion 410 with a finger, or the like. When the extractor 40 is assembled in the vapor generation device 100, the operating portion 410 is connected to the main housing 10, so that the extractor 40 is stably kept on the vapor generation device 100. Certainly, in some implementations, the operating portion 410 may be directly or indirectly connected to the main housing 10. Alternatively, in the preferred implementation shown in FIG. 9 and FIG. 10, the operating portion 410 is fixed and kept in the vapor generation device 100 by abutting against and being connected to an upper end portion of the bracket 30.

[0084] Further, in a more preferred implementation, the extractor 40 may be moved or removed relative to the main housing 10, to present an operating position and an extraction position that are opposite to each other. Specifically,

[0085] FIG. 11 is a schematic diagram of an extractor 40 at an operating position according to an embodiment. When the extractor 40 is at the operating position, an aerosol-generating product A is received in a receiving portion 420, and is supported by a supporting wall 421 of the receiving portion 420; and the heater 50 at least partially penetrates into a receiving cavity 430 defined by the receiving portion 420 through the supporting wall 421, thereby heating the aerosol-generating product A. The operating position is basically an operating position formed by the heater 50 being inserted into the aerosol-generating product A. At the operating position, the extractor 40 remains connected to a main housing 10.

[0086] FIG. 12 is a schematic diagram of an extractor 40 at an extraction position according to an embodiment. At the extraction position, when an operating portion 410 performs operation, the extractor 40 is moved or removed in a length direction relative to a main housing 10, and then an aerosol-generating product A is separated from a heater 50 under support of a supporting wall 421 and is removed. The extraction position is formed by separation between the aerosol-generating product A and the heater 50.

[0087] In an optional implementation, the extractor 40 is also directly or indirectly connected to the main housing 10 at the extraction position, which is conducive to preventing the extractor 40 from being detached from the vapor generation device 100. Alternatively, in still another optional implementation, the extractor 40 is not directly or indirectly connected to the main housing 10 at the extraction position, and then the extractor 40 is detached from the main housing 10 and/or the bracket 30 at the

extraction position, thereby facilitating direct removal or detachment from the vapor generation device 100.

[0088] In an optional implementation, the aerosol-generating product A has a length approximately ranging from 40 mm to 80 mm, and an outer diameter size approximately ranging from 4 mm to 8 mm.

[0089] In still another preferred implementation, the receiving portion 420 of the extractor 40 has a length approximately ranging from 15 mm to 40 mm; and the receiving portion 420 correspondingly has an inner diameter approximately ranging from 4 mm to 8 mm.

[0090] Further, refer to FIG. 13, the extractor 40 further includes:

a first hole 422, located on the supporting wall 421, where an inner diameter is basically adapted to the heater 50 and is slightly greater, to allow the heater 50 to pass through the first hole 422 and then to be inserted into the receiving portion 420; and when adapted to a pin-shaped or needle-shaped heater 50, for example, as shown in FIG. 13, the first hole 422 is in a shape of a circle, and has an inner diameter approximately ranging from 3 mm to 6 mm; and a second hole 423, located on the supporting wall 421 and configured to allow external air to enter the aerosol-generating product A through the second hole 423 in an inhaling process, as shown by the arrow R2 in FIG. 13. In an implementation, the second hole 423 has an inner diameter approximately ranging from 1 mm to 2 mm. In addition, a quantity of second holes 423 may be more than one, and the second holes 423 are provided around the first hole 422.

[0091] Further, refer to FIG. 9 and FIG. 10, a structure of the bracket 30 includes:

a left side wall 310 and a right side wall 320 that are opposite to each other in a width direction, where during assembly, the left side wall 310 is a side wall adjacent to the first space 1100, and is connected to the main housing 10 in a detachable manner such as a buckle; the right side wall 320 is at least partially exposed outside the vapor generation device 100 after assembly, and at least partially defines an outer surface of the vapor generation device 100 in the width direction;

a lower end wall 350 is adjacent to the second space 1200 in a length direction, a third hole 33 is formed on the lower end wall 350, and during assembly, the heater 50 penetrates the third hole 33 from below into the bracket 30 in the length direction; and a front side wall 330 and a rear side wall 340 are opposite to each other in a thickness direction, and a window 32 is arranged at a position close to the lower end wall 350 of the front side wall 330 and the rear side wall 340. In an optional implementation, the front side wall 330 and the rear side wall 340 are

not connected to or in contact with the lower end wall 350. In an implementation, the window 32 is defined by a distance between the front side wall 330 and/or the rear side wall 340 and the lower end wall 350.

[0092] In an implementation, the window 32 is directly in communication with the external air, and then the second hole 423 of the extractor 40 may be in communication with the external air through the window 32; and in an inhaling process, the external air directly enters the second hole 423 through the window 32, and then enters the receiving cavity 430 along with the aerosol generated by the aerosol-generating product A and is jointly inhaled by the user, as shown by the arrow R2 in FIG. 10.

[0093] Further, as shown in FIG. 9, FIG. 10, and FIG. 14, a free front end of the heater 50 penetrates into the bracket 30; and an end of the heater 50 facing away from the free front end is fixed in the main housing 10. Further, according to the implementation shown in the figure, the end of the heater 50 facing away from the free front end is surrounded and fixed by a fixing base 52.

[0094] In addition, the heater 50 has an exposed portion 51 exposed through the window 32; and certainly, the exposed portion 51 has a length approximately ranging from 2 mm to 5 mm. The exposed portion 51 of the heater 50 is visible through the window 32. Certainly, after assembly, the exposed portion 51 is defined by a size or a position of the window 32. Specifically, in this implementation, the fixing base 52 is covered by the lower end wall 350 of the bracket 30, and the exposed portion 51 of the heater 50 is completely defined by the bracket 30; and specifically, the fixing base 52 is defined by a part of the heater 50 located between the front side wall 330 and/or the lower end wall 350 of the rear side wall 340 in the length direction.

[0095] Certainly, the exposed portion 51 is close to an end of the fixing base 52 and/or the heater 50. It may be learnt from FIG. 14 that a distance d4 between the exposed portion 51 of the heater 50 and the free front end is approximately 12 mm. The exposed portion 51 is away from the free front end, and it is difficult for a cleaning tool to directly clean the exposed portion 51 from the receiving hole 41 of the extractor 40. Generally, in an implementation, a distance d4 between the exposed portion 51 of the heater 50 and the free front end is greater than 8 mm.

[0096] In still another implementation, the window 32 has a proper area, and by inserting some cleaning tools into the window 32, the exposed portion 51 of the heater 50 is cleaned during use. In some implementations, the cleaning tools are, for example, a small brush, a steel wire strip, a scraper, and the like.

[0097] In some preferred implementations, the window 32 needs to be of a proper area, to provide a necessary size for the cleaning tools to insert into, but also needs to prevent fingers of the user from being burned by the heater 50.

[0098] In a preferred implementation, an area of the

window 32 is greater than 10 mm² and an area of the window 32 is less than 100 mm². In a more preferred implementation, an area of the window 32 is greater than 30 mm² and an area of the window 32 is less than 80 mm².

[0099] In the preferred implementation shown in FIG. 9 and FIG. 14, the window 32 is basically in a shape of a square. For example, the window 32 is in a shape of a strip in a width direction of the bracket 30. In a more preferred implementation, a length size d1 of the window 32 extending in the width direction of the bracket 30 approximately ranges from 10 mm to 20 mm; and a width size d2 of the window 32 extending in a length direction of the bracket 30 approximately ranges from 3 mm to 6 mm.

[0100] In a specific implementation shown in FIG. 14, the length size d1 of the window 32 is 17 mm; and the width size d2 of the window 32 is approximately 4.2 mm.

[0101] In addition, in still another optional implementation, at least one of the length size d1 and the width size d2 of the window 32 shall not be greater than 10 mm, which is conducive to preventing the fingers of the user from inserting. In a more preferred implementation, at least one of the length size d1 and the width size d2 of the window 32 shall not be greater than 6 mm.

[0102] Correspondingly, a length of the exposed portion 51 of the heater 50 basically ranges from 3 mm to 6 mm. In a preferred implementation, a length of the heater 50 penetrating into the receiving portion 420 of the extractor 40 approximately ranges from 10 mm to 18 mm. In a preferred implementation, a length of the exposed portion 51 of the heater 50 does not exceed 1/3 of a total length of the heater 50.

[0103] Further, refer to FIG. 9 and FIG. 10, to facilitate guide of the extractor 40 and the bracket 30 during assembly, movement, or removal; and the bracket 30 further has a first inner wall 360 and a second inner wall 370. As shown in the figure, the first inner wall 360 and the second inner wall 370 are configured in a shape of an arc, and the first inner wall 360 and the second inner wall 370 are opposite to each other. In addition, the first inner wall 360 and the second inner wall 370 are in a shape of an arc that is curved outward in the width direction, and a guide accommodating space 31 is defined between the first inner wall 360 and the second inner wall 370. A shape of the accommodating space 31 is basically the same as a shape of the receiving portion 420 of the extractor 40, and a size volume of the accommodating space 31 is slightly greater than a volume of the receiving portion 420. The first inner wall 360 and the second inner wall 370 provide guidance when the extractor 40 is stably assembled to the bracket 30 and during movement or removal.

[0104] Alternatively, in another variation implementation, when the vapor generation device 100 does not have components of the extractor 40, the accommodating space 31 between the first inner wall 360 and the second inner wall 370 is configured as a receiving cavity 430 configured to receive the aerosol-generating product A.

[0105] In addition, as shown in FIG. 5 and FIG. 6, the door cover 20 blocks or closes the window 32 at the closed position; and at the open position, the door cover 20 opens or reveals the window 32a.

[0106] In the preferred implementation shown in FIG. 9 and FIG. 10, there is a distance between the first inner wall 360 and the left side wall 310 of the bracket 30, thereby forming a first heat insulation cavity 34 between the first inner wall 360 and the left side wall 310 of the bracket 30; and there is a distance between the second inner wall 370 and the right side wall 320 of the bracket 30, thereby forming a second heat insulation cavity 35 between the second inner wall 370 and the right side wall 320 of the bracket 30.

[0107] In the implementation shown in the figure, the first heat insulation cavity 34 and/or the second heat insulation cavity 35 are empty and open, and are in communication with the external air, thereby forming heat insulation through low heat conduction of the air; the first heat insulation cavity 34 prevents heat of the heater 50 from being transferred outward in a radial direction to an electric core 11 in the first space 1100; and/or the second heat insulation cavity 35 prevents the heat of the heater 50 from being transferred outward in a radial direction to the right side wall 320.

[0108] In some variation implementations, the first heat insulation cavity 34 and/or the second heat insulation cavity 35 are closed cavities, and internal pressures of the first heat insulation cavity 34 and the second heat insulation cavity 35 may be configured to be lower than the external pressure. In other words, the first heat insulation cavity 34 and/or the second heat insulation cavity 35 have a vacuum degree; and this is conducive to preventing heat transfer.

[0109] Alternatively, in some other variation implementations, the first heat insulation cavity 34 and/or the second heat insulation cavity 35 are filled with some heat insulation materials, such as aerogel, porous polymer, porous polyurethane, foam cotton, and the like; and this is conducive to preventing heat transfer.

[0110] Further, refer to FIG. 9 and FIG. 10, the receiving portion 420 of the extractor 40 is also at least partially exposed to the window 32.

[0111] Further, in the preferred implementation shown in FIG. 10, a circuit board 12 that controls operation of the vapor generation device 100 is mounted in the second space 1200 of the vapor generation device 100; and a charging interface 13 located at a distal end 120 is electrically connected to the circuit board 12 during use, and then charges an electric core 11 after an external power supply device is connected.

[0112] For the foregoing vapor generation device 100, cleaning of the debris or aerosol condensate dropped from the aerosol-generating product A may include:

when the extractor 40 is not removed, cleaning an inner wall of the receiving portion 420 and a part of a surface of the heater 50 by extending tools such

as a brush through a receiving hole 41; after removing the extractor 40, continuing to perform cleaning by extending tools such as a brush into the inner wall of the accommodating space 31; and cleaning the exposed portion 51 of the heater 50 by extending the tools through the window 32.

[0113] Further, the bracket 30 is removed from the main housing 10, as shown in FIG. 9, so that the heater 50 is basically completely exposed, and the surface of the heater 50 may be deeply and completely cleaned through a cleaning tool.

[0114] Further, FIG. 15 to FIG. 18 show a schematic diagram of a structure of still another embodiment of a vapor generation device 100; and in this implementation, the vapor generation device 100 includes:

a main housing 10a;
a door cover 20a, positioned at a proximal end 110a of the main housing 10a, and movable between an open position and a closed position relative to the main housing 10a; and for example, moving or rotating in a width direction of the main housing 10a.

[0115] In addition, refer to FIG. 18, the vapor generation device 100 further includes a limiting protrusion 17a located between the main housing 10a and the door cover 20a; and during assembly, the limiting protrusion 17a is located at the proximal end 110a of the main housing 10a, and at least partially protrudes relative to the main housing 10a. When the door cover 20a moves relative to the main housing 10a in a width direction, the limiting protrusion 17a is configured to provide a limit at the open position and the closed position of the door cover 20a. Certainly, in a more preferred implementation, the door cover 20a covers or hides the limiting protrusion 17a at any moving position. The limiting protrusion 17a is not exposed to a surface of the vapor generation device 100 at any moving position of the door cover 20a.

[0116] In addition, the vapor generation device 100 further includes:

a bracket 30a, at least partially defines a window 32a with the main housing 10a; a heater 50a, at least partially exposed in the window 32a; and an extractor 40a, supported and kept by the bracket 30a. During use, the extractor 40a is configured to extract the aerosol-generating product A received in the vapor generation device 100a.

[0117] Further, as shown in FIG. 16, to facilitate the extractor 40a to maintain a stable connection with the bracket 30a at the operating position, a latching protrusion 43a is arranged on the extractor 40a; and the latching protrusion 43a is configured to form a connection by engaging the extractor 40a with the bracket 30a at the operating position. In the preferred implementation shown in FIG. 16, a quantity of latching protrusions 43a

is more than one, and the latching protrusions 43a are configured in the form of ridges located on an outer surface of the receiving portion 420a of the extractor 40a.

[0118] In this embodiment, the extractor 40a further extracts the aerosol-generating product A through an operation of directly removing from the bracket 30a in the length direction, as shown by the arrow R3 in FIG. 16.

[0119] Further, refer to FIG. 16, a first connecting hole 15a and/or a second connecting hole 16a are provided on the bracket 30a. Certainly, the first connecting hole 15a is provided adjacent to the first space 1100. During use, connecting components such as a screw/bolt/screw are mounted in the first connection hole 15a and/or the second connection hole 16a to connect the bracket 30a and the main housing 10a. Specifically, the first connecting hole 15a is provided adjacent to the proximal end 110a; and the second connecting hole 16a is provided adjacent to the second space 1200.

[0120] Further, according to the preferred implementation shown in the figure, when the extractor 40a is kept on the bracket 30a, the first connecting hole 15a is covered or hidden by the extractor 40a. Specifically, the first connecting hole 15a is covered by the operating portion 410a of the extractor 40a. In addition, after removing the extractor 40a, the first connecting hole 15a is exposed. In this case, the user may disassemble connecting components such as the screw/bolt/screw located in the first connecting hole 15a by using tools such as a screwdriver; and further, a connection between the bracket 30a and the main housing 10a is released, so that the bracket 30a may be disassembled from the main housing 10a.

[0121] In addition, the second connecting hole 16a is exposed through the window 32a; or the second connecting hole 16a is visible through the window 32a; and the user may insert the screwdriver into the second connecting hole 16a through the window 32a to disassemble connecting components such as the screw/bolt/screw

[0122] Further, refer to FIG. 15 to FIG. 17, the exemplary vapor generation device 100 further includes: a blocking member 60a, configured to block or cover or close the window 32a. Further, when there is no need to open the window 32a for the sake of inhaling, safety protection, and the like, the window 32a is blocked or covered or closed by the blocking member 60a. When the exposed portion of the heater 50a exposed through the window 32a needs to be cleaned, or when connecting components such as the screw/bolt/screw in the second connecting hole 16a need to be disassembled, the window 32a may be opened by moving or removing the blocking member 60a.

[0123] Further, according to the preferred embodiment shown in FIG. 15 to FIG. 17, the blocking member 60a is removably combined with the bracket 30a to block or cover or close the window 32a. When the blocking member 60a is combined with the bracket 30a, the window 32a is blocked or covered or closed. When the blocking member 60a is removed from the bracket 30a, the window 32a is opened.

[0124] Further, as shown in FIG. 15 to FIG. 17, when the blocking member 60a is combined with the bracket 30a, a surface of the blocking member 60a is flatly joined to a surface of the bracket 30a.

[0125] In the preferred implementation shown in the figure, the blocking member 60a is combined with the bracket 30a in a width direction of the main housing 10a, or is removed from the bracket 30a in a width direction of the main housing 10a.

[0126] In a more preferred implementation, a guide rail 14a extending in the width direction is further arranged on the main housing 10a; and correspondingly, a guide groove 65a is provided on the blocking member 60a, to provide guidance during the operation of combining the blocking member 60a with the bracket 30a or removing the blocking member 60a.

[0127] In this embodiment, the window 32a is open on a front side and a rear side in a thickness direction of the main housing 10a and on a right side facing away from the first space 1100 in the width direction.

[0128] Further, as shown in FIG. 20, in an open size of the window 32a on two sides in the thickness direction, a length size d11 is 20 mm; and a width size d12 is approximately 6 mm.

[0129] In this embodiment, the window 32a is at least partially defined by the bracket 30a. Specifically, the window 32a is defined by a spacing space between the bracket 30a in the length direction and the main housing 10a.

[0130] Further, refer to FIG. 16 and FIG. 17, the bracket 30a further defines an accommodating space 31a that is at least partially configured to accommodate the extractor 40a. The accommodating space 31a extends in the length direction, and a shape of the accommodating space 31a is basically the same as a shape of the receiving portion 420a of the extractor 40a. A size volume of the accommodating space 31a is slightly greater than a volume of the receiving portion 420a. An inner wall of the accommodating space 31a is configured to provide guidance when the extractor 40a is stably assembled onto the bracket 30a, and during movement or removal.

[0131] Similarly, a receiving cavity configured to receive the aerosol-generating product A is defined by the receiving portion 420a of the extractor 40a in the foregoing implementation. When there are not components of the extractor 40a, the accommodating space 31a may be mainly used as a receiving cavity configured to receive the aerosol-generating product A.

[0132] Further, refer to FIG. 16 and FIG. 17, the bracket 30a has a protruding portion 34a protruding away from the first space 1100 in the width direction, and a recessed portion 33a is defined between the protruding portion 34a and other parts of the bracket 30a. Certainly, as shown in the figure, the protruding portion 34a is located at a proximal end 110a, so that the recessed portion 33a is formed adjacent to the window 32a.

[0133] As shown in the figure, the accommodating space 31a avoids the protruding portion 34a.

[0134] Correspondingly, the blocking member 60a includes a main body portion 61a extending in the length direction, and a first blocking arm 62a and a second blocking arm 63a that basically extend in the width direction from two sides in the thickness direction of the main body portion 61a. After assembly, the first blocking arm 62a and the second blocking arm 63a separately cover, block, or seal the window 32a from two opposite sides in the thickness direction. The main body portion 61a covers, blocks, or seals the window 32a from the right side in the width direction. In addition, after assembly, the main body portion 61a is accommodated and kept in the recessed portion 33a; and a surface of the blocking member 60a is flatly joined to the bracket 30a.

[0135] As shown in the figure, the guide groove 65a is formed on the first blocking arm 62a and/or the second blocking arm 63a.

[0136] Further, refer to FIG. 18, a first magnetic member 36a is further arranged on the bracket 30a; and certainly, in a preferred implementation, the first magnetic member 36a is arranged in the protruding portion 34a.

[0137] Correspondingly, a second magnetic member 64a is further arranged on the blocking member 60a, and is configured to magnetically attract the first magnetic member 36a when combined with the bracket 30a to block the window 32a, thereby causing the blocking member 60a to be stably kept on the bracket 60a. In a preferred implementation, the second magnetic member 64a is accommodated on the main body portion 61a of the blocking member 60a.

[0138] Correspondingly, a third magnetic member 45a is arranged on the extractor 40a, and is configured to magnetically attract the first magnetic member 36a at an operating position, thereby causing the extractor 40a to be stably kept on the bracket 60a.

[0139] Further, in the preferred implementation shown in the figure, after assembly, in the length direction, magnetic pole arrangement directions of the first magnetic member 36a, the second magnetic member 64a, and the second magnetic member 45a are the same. For example, in the preferred embodiment shown in the figure, the first magnetic member 36a has a first magnetic pole, such as an N pole, toward a proximal end 110a, and a second magnetic pole, such as an S pole, toward a distal end. In addition, the second magnetic member 64a also has a first magnetic pole, such as an N pole, toward the proximal end 110a, and a second magnetic pole, such as an S pole, toward the distal end. Correspondingly, the third magnetic member 45a also has a first magnetic pole, such as an N pole, toward the proximal end 110a, and a second magnetic pole, such as an S pole, toward the distal end.

[0140] After assembly, the first magnetic member 36a may be simultaneously magnetically attracted to the second magnetic member 64a and the second magnetic member 45a that are located on an upper side and a lower side.

[0141] Further, refer to FIG. 19 and FIG. 20, the re-

ceiving portion 420a of the extractor 40a has a relatively greater length. Further, after assembly, the receiving portion 420a of the extractor 40a completely covers the heater 50a, and the heater 50a is not visible when the extractor 40a is combined with the bracket 30a. In a specific implementation, a front end of the receiving portion 420a abuts against an upper surface 521a of a fixing base 52a facing the proximal end 110a.

[0142] Further, a first air port 46a that allows air from the window 32a to enter the extractor 40a is provided at the front end of the receiving portion 420a of the extractor 40a for allowing air to enter the receiving portion 420a.

[0143] In this implementation, the receiving portion 420a has a supporting wall 421a inside, configured to provide support to the aerosol-generating product A. Further, as shown in FIG. 18 and FIG. 19, the extractor 40a further has an extending wall 424a extending from the receiving portion 420a, and the extending wall 424a abuts against the upper surface 521a of the fixing base 52a during assembly. During use, on one hand, the extending wall 424a may block the exposed portion 51a surrounding and blocking the heater 50a exposed through the window 32a; and on the other hand, more importantly, a specific space is formed between the fixing base 52a and the supporting wall 421a through the extending wall 424a, to block or keep the air seeping or leaking from the first hole 422a and/or the second hole 423a, which is conducive to preventing the aerosol from seeping or leaking from the first hole 422a and/or the second hole 423a and being viewed by the user.

[0144] Certainly, the extending wall 424a is open to the exposed portion 51a of the heater 50a after the extractor 40a is moved or removed from the bracket 30a to extract the aerosol-generating product A, and then the user may clean the exposed portion 51a of the heater 50a through the window 32a by using the cleaning tool.

[0145] Correspondingly, the first air port 46a is formed on the extending wall 424a.

[0146] Further, in this embodiment, as shown in FIG. 16, the exposed portion 51a of the heater 50a is defined by the bracket 30a and the fixing base 52a that fixes the end of the heater 50a. Specifically, in this implementation, the exposed portion 51a is defined by a part of the heater 50a located between the bracket 30a and the fixing base 52a. Certainly, the exposed portion 51a is close to the end of the fixing base 52a and/or the heater 50a.

[0147] Similarly, a distance between the exposed portion 51a of the heater 50a and the free front end is approximately 12 mm. The exposed portion 51a is away from the free front end, and it is difficult for a cleaning tool to directly clean the exposed portion 51a from the receiving hole 41a of the extractor 40a.

[0148] Similarly, a first hole 422a for the heater 50a to pass through to the aerosol-generating product A is provided on the supporting wall 421a; and a second hole 423a for the air to enter the aerosol-generating product A.

[0149] In an inhaling process, for the flow of airflow, refer to the arrow R2 shown in FIG. 15 to FIG. 20. The

external air enters the window 32a through a gap between the bracket 30a and/or the blocking member 60a and the main housing 10a. The air from the window 32a enters the first air port 46a in the extractor 40a, enters the receiving portion 420a of the extractor 40a, and is inhaled into the aerosol-generating product A through the second hole 423a until the air is inhaled.

[0150] As shown in the figure, in the preferred implementation, an airflow channel includes an air inlet portion extending toward the heater 50a in a radial direction of the heater 50a, and an air outlet portion extending in the length direction toward the proximal end 110a in the receiving cavity. Certainly, the air inlet portion passes through the first air port 46a in the extractor 40a that allows the air from the window 32a to enter, and the air outlet portion passes through the second hole 423a.

[0151] In the implementation shown in FIG. 19, a distance d3 between the supporting wall 421a and the front end of the receiving portion 420a approximately ranges from 3 mm to 5 mm.

[0152] Alternatively, in another variation implementation, the blocking member 60a opens or blocks the window 32a by moving or rotating at different positions on the bracket 30a. For example, the blocking member 60a is configured to move in the length direction on the bracket 30a, thereby blocking the window 32a when moving close to the second space 1200, and at least partially opening the window 32a when moving away from the second space 1200. Certainly, in more variation implementations, the blocking member 60a may be further in the width direction.

[0153] Further, according to FIG. 18, a first heat insulation cavity 35a is further defined in the bracket 30a; and in arrangement, the first heat insulation cavity 35a is located between a receiving cavity configured to receive the aerosol-generating product A and the first space 1100 in the width direction, which is conducive to preventing the heat of the heater 50a from being transferred to an electric core 11a in the first space 1100.

[0154] In the optional implementation, the first heat insulation cavity 35a is a closed space, and the interior of the first heat insulation cavity 34b may be filled with air, thereby forming heat insulation by using low heat conductivity of the air. Alternatively, in some other implementations, the first heat insulation cavity 35a is evacuated, so that pressure of the first heat insulation cavity 34b is lower than the external pressure, to form heat insulation. Alternatively, in some other implementations, the first heat insulation cavity 35a is filled with a porous body, foam, aerogel, and the like, to improve heat insulation.

[0155] For the foregoing vapor generation device 100, cleaning of the debris or aerosol condensate dropped from the aerosol-generating product A may include:

when the extractor 40a is not removed, performing cleaning by extending tools such as a brush into an inner wall of the receiving portion 420a and a part of a surface of the heater 50a through a receiving hole

41a;

after removing the extractor 40a, continuing to clean the inner wall of the accommodating space 31a by extending tools such as a brush;

after continuing to remove the blocking member 60a, exposing the exposed portion 51a of the heater 50a through the window 32a, and then cleaning the exposed portion 51a of the heater 50 through the cleaning tool being inserted into the window 32a; and

after removing screws in the first connecting hole 15a and the second connecting hole 16a with a screwdriver, removing the bracket 30a, so that the heater 50a is basically completely exposed, and then a surface of the heater 50a may be deeply and completely cleaned with a cleaning tool.

[0156] Further, FIG. 21 to FIG. 24 show a schematic diagram of a vapor generation device 100b according to still another embodiment. In this implementation, the vapor generation device 100b is configured in a generally slender shape of a cylinder, has a length size approximately ranging from 90 mm to 110 mm, and an outer diameter size approximately ranging from 15 mm to 20 mm.

[0157] Further, the vapor generation device 100b further includes a proximal end 110b and a distal end 120b that are opposite to each other in a length direction; and

a first housing 10b, close to the distal end 120b, where

a second housing 15b adjacent to the proximal end 110b is further arranged on the first housing 10b; and an extractor 40b, located on the proximal end 110b, and configured to extract the aerosol-generating product A, where in the preferred implementation, the extractor 40b extracts the aerosol-generating product A by being directly removed from the second housing 10b.

[0158] Further, as shown in FIG. 22 and FIG. 23, the second housing 15b adjacent to the proximal end 110b is further arranged on the first housing 10b; and correspondingly, the extractor 40b includes an annular operating portion 410b and a receiving portion 420b in a shape of a cylinder located in the operating portion 410b. In an implementation, the user may exert a force on the operating portion 410b with a finger to perform an extraction operation; and the aerosol-generating product A is removably received in the receiving portion 420b through the receiving hole 41b defined by the operating portion 410b. During assembly, the operating portion 410b is arranged around the second housing 15b; in an operating state, the operating portion 410b abuts against an end portion of the second housing 15b toward the proximal end 110b, and is stably kept on the second housing 15b; and an outer surface of the second housing 15b is further configured to provide guidance when performing the extraction operation on the extractor 40b by the user.

[0159] Further, as shown in FIG. 24, the receiving portion 420b has a supporting wall 421b configured to support the aerosol-generating product A; a first hole 422b is provided on the supporting wall 421b for a susceptor 50b to pass through into the receiving portion 420b, thereby facilitating the susceptor 50b to be inserted into the aerosol-generating product A; and a second hole 423b is further provided on the supporting wall 421b, and is configured to allow air to enter the aerosol-generating product A of the receiving portion 420b.

[0160] Further, the second housing 15b is provided with:

a bracket 20b, basically in a shape of a tube extending in a length direction of the second housing 15b, where the bracket 20b is basically coaxially arranged with the second housing 15b, and is located in the second housing 15b; and an accommodating space 210b is defined and formed in the bracket 20b, and during use, the receiving portion 420b of the extractor 40b is received in the accommodating space 210b to form an operating state of the heatable aerosol-generating product A;

a magnetic field generator, such as an induction coil 30b surrounding the bracket 20b, configured to generate a changing magnetic field; and

a susceptor 50b, configured to generate heat when the changing magnetic field penetrates the susceptor 50b to heat the aerosol-generating product A, where the susceptor 50b is preferably configured in a shape of a pin, a needle, or a sheet that extends in an axial direction at least partially from the accommodating space 210b, which is conducive to being inserted into the aerosol-generating product A when the extractor 40b is received in the accommodating space 210b.

[0161] Further, according to FIG. 24, a free front end of the susceptor 50b is located in the accommodating space 210b, and is kept by the fixing base 70b relative to an end of the free front end. Specifically, the fixing base 70b includes a first fixing base 71b and a second fixing base 72b that are sequentially arranged from the inside to the outside in a radial direction of the susceptor 50b; and the first fixing base 71b is preferably made of ceramics with low heat conductivity such as zirconia, and the second fixing base 72b is preferably made of organic polymers with low heat conductivity such as PEEK.

[0162] In terms of the design of the inhaling airflow, further, refer to FIG. 21 to FIG. 24, a first air inlet 151b is provided on the second housing 15b; and in terms of specific position arrangement, the first air inlet 151b is located at a position at which the second housing 15b is adjacent to the first housing 10b, and is also adjacent to a position at which the operating portion 410b of the extractor 40b is joined to the first housing 10b. After assembly, when being kept in the second housing 15b, the operating portion 410b covers the first air inlet 151b, and

may expose the first air inlet 151b when the aerosol-generating product A is extracted by operations such as removal/movement to the extraction position. At the operating position, there is a joining gap of approximately 2 mm between the operating portion 410b of the extractor 40b and the first housing 10b, and the first air inlet 151b is opposite to and in airflow communication with the gap. In an inhaling process, the external air enters the first air inlet 151b through the joining gap between the operating portion 410b and the first housing 10b.

[0163] The bracket 20b further has an inner bottom wall 221b defining the accommodating space 210b; and there is a distance or gap approximately ranging from 1 mm to 3 mm between the inner bottom wall 221b and the fixing base 70b of the susceptor 50b, and the inner bottom wall 221b further has a second air port 222b. In an implementation, the second air port 222b is opposite to the second hole 423b on the extractor 40b.

[0164] During inhalation, as shown by the arrow R2 in the figure, the external air enters the first air inlet 151b through the joining gap between the operating portion 410b and the first housing 10b, flows from the first air inlet 151b in the radial direction to the second air port 222b through the gap between the bottom wall 221b and the fixing base 70b, and finally enters the aerosol-generating product A from the second air port 222b through the second hole 423b on the extractor 40b and is then inhaled.

[0165] It may be learnt from the figure that an airflow path includes an air inlet portion extending from the first air inlet 151b to the second air port 222b basically in a radial direction of the susceptor 50b; and an air outlet portion extending from the second air port 222b in a length direction to the proximal end 110b. Basically, the air inlet portion is basically vertical to the air outlet portion. Certainly, in an implementation, the air outlet portion passes through the accommodating space 210b and/or the receiving portion 420b of the extractor 40b.

[0166] Further, in a more preferred implementation, as shown in FIG. 24, the second fixing base 72b has a latching protrusion 721b extending into the first air inlet 151b, and the second housing 15b is kept by the latching protrusion 721b in the first air inlet 151b; and when disassembly is required, the latching protrusion 721b may be pressed to detach from the first air inlet 151b, so that the second housing 15b is disassembled or removed from the first housing 10b.

[0167] It should be noted that, the specification of this application and the accompanying drawings thereof illustrate preferred embodiments of this application, but this application is not limited to the embodiments described in the specification. Further, a person of ordinary skill in the art may make improvements or variations according to the foregoing descriptions, and such improvements and variations shall all fall within the protection scope of the appended claims of this application.

Claims**1.** A vapor generation system, comprising:

a product box, configured to store an aerosol-generating product; and
 a vapor generation device, configured to heat the aerosol-generating product to generate an aerosol, wherein an outer surface of the vapor generation device has a first plane with a largest area; and
 when the first plane of the vapor generation device is in contact with a largest plane of an outer surface of the product box, a contact area is defined by a plane with a smaller area of the two planes.

2. The vapor generation system according to claim 1, wherein the first plane is in a shape of a square.**3.** The vapor generation system according to claim 1 or 2, wherein the outer surface of the vapor generation device has a side surface adjacent to the first plane; and the side surface is in a shape of a square.**4.** The vapor generation system according to claim 1 or 2, wherein when the first plane of the vapor generation device is in contact with the largest plane of the outer surface of the product box, a side surface of the outer surface of the vapor generation device that is adjacent to the product box is in a shape of a square.**5.** The vapor generation system according to claim 1 or 2, wherein a shape of the first plane is close to that of the largest plane of the outer surface of the product box.**6.** The vapor generation system according to claim 2, wherein the first plane has a length size ranging from 70 mm to 80 mm and a width size ranging from 40 mm to 50 mm.**7.** The vapor generation system according to claim 1 or 2, wherein the vapor generation device and/or the product box are/is basically in a shape of a cube.**8.** The vapor generation system according to claim 1 or 2, wherein the vapor generation device and the product box have basically similar external sizes.**9.** The vapor generation system according to claim 1 or 2, wherein the vapor generation device has a length size ranging from 70 mm to 80 mm, a width size ranging from 40 mm to 50 mm, and a thickness size ranging from 9.5 mm to 20 mm.**10.** The vapor generation system according to claim 1

or 2, wherein when the first plane of the vapor generation device is in contact with the largest plane of the outer surface of the product box, a user simultaneously holds or operates the vapor generation device and the product box through one hand.

11. A vapor generation device, configured to heat an aerosol-generating product to generate an aerosol, wherein an outer surface of the vapor generation device has a first plane with a largest area; and when the first plane of the vapor generation device is in contact with a largest plane of an outer surface of the product box, a contact area is defined by a plane with a smaller area of the two planes.**12.** A vapor generation device, configured to heat an aerosol-generating product to generate an aerosol, wherein an outer surface of the vapor generation device has a first plane with a largest area; and the area of the first plane approximately ranges from 2800 mm² to 4000 mm².**13.** The vapor generation device according to claim 12, wherein the first plane has a length size ranging from 70 mm to 80 mm.**14.** The vapor generation device according to claim 12, wherein when the first plane of the vapor generation device is in contact with a largest plane of an outer surface of the product box, a contact area is defined by a plane with a smaller area of the two planes.**15.** The vapor generation device according to any one of claims 12 to 14, further comprising: a wireless charging coil, configured to charge accommodated in the vapor generation device, wherein the wireless charging coil is a planar spiral coil parallel to the first plane.**16.** A vapor generation device, configured to heat an aerosol-generating product to generate an aerosol, wherein the vapor generation device has a length direction and a width direction perpendicular to the length direction; the vapor generation device has a proximal end and a distal end that are opposite to each other in the length direction, and a first side and a second side that are opposite to each other in the width direction; and the vapor generation device comprises:

a first space, close to the first side in the width direction, and basically extending from the proximal end to the distal end, wherein the first space is used to accommodate an electric core that supplies power;
 a second space, close to the second side in the width direction, and close to the distal end in the length direction, wherein the second space is

- used to accommodate and assemble a circuit board; and
a third space, close to the second side in the width direction, and close to the proximal end in the length direction, wherein the third space defines a heating space used to receive the aerosol-generating product during use.
17. The vapor generation device according to claim 16, wherein a width size of the first space is between 1/3 and 2/3 of a width size of the vapor generation device.
 18. The vapor generation device according to claim 16 or 17, wherein the first space has a length size ranging from 60 mm to 65 mm, a width size ranging from 15 mm to 25 mm, and a thickness size ranging from 5 mm to 10 mm.
 19. The vapor generation device according to claim 16 or 17, further comprising: the electric core accommodated in the first space, wherein the electric core is configured to supply power; and the electric core is basically in a shape of a cube with a length size greater than a width size and the width size greater than a thickness size.
 20. The vapor generation device according to claim 19, wherein the electric core has a length ranging from 60 mm to 65 mm, a width ranging from 15 mm to 25 mm, and a thickness ranging from 5 mm to 10 mm.
 21. The vapor generation device according to claim 16 or 17, wherein a width size of the second space and/or the third space is between 1/3 and 2/3 of the width size of the vapor generation device.
 22. The vapor generation device according to claim 16 or 17, wherein in the length direction of the vapor generation device, a length size of the second space is greater than a length size of the third space.
 23. The vapor generation device according to claim 16 or 17, wherein a length size of the second space is between 1/2 and 2/3 of a length size of the vapor generation device.
 24. The vapor generation device according to claim 16 or 17, wherein a length size of the third space is between 1/3 and 1/2 of a length size of the vapor generation device.
 25. The vapor generation device according to claim 16 or 17, wherein the second space has a length size ranging from 35 mm to 50 mm, a width size ranging from 15 mm to 25 mm, and a thickness size ranging from 5 mm to 10 mm.
 26. The vapor generation device according to claim 16 or 17, wherein the third space has a length size ranging from 25 mm to 40 mm, a width size ranging from 15 mm to 25 mm, and a thickness size ranging from 5 mm to 10 mm.
 27. The vapor generation device according to claim 16 or 17, wherein a thickness size of the vapor generation device is not less than 9.5 mm.
 28. The vapor generation device according to claim 16 or 17, wherein the vapor generation device and the product box have basically similar external sizes.
 29. The vapor generation device according to claim 16 or 17, wherein the first space, the second space, and the third space are airtightly sealed from each other.
 30. The vapor generation device according to claim 16 or 17, further comprising: a wireless charging coil, configured to charge the electric core accommodated in the first space.
 31. The vapor generation device according to claim 30, wherein the wireless charging coil is a planar spiral coil.
 32. The vapor generation device according to claim 31, wherein the wireless charging coil is arranged adjacent to a side of the vapor generation device in a thickness direction.
 33. The vapor generation device according to claim 16 or 17, further comprising:

a heater, at least partially extending in the third space, to heat the aerosol-generating product, wherein the heater has a free front end configured to be inserted into the aerosol-generating product; and

a window, at least partially surrounding the heater and avoiding the free front end, to cause the heater to have an exposed portion exposed through the window, wherein a user cleans the exposed portion of the heater through the window

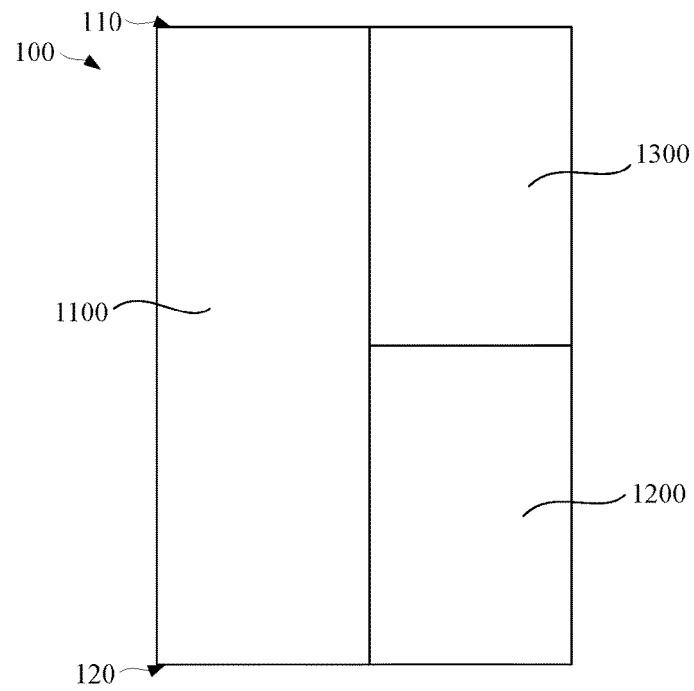


FIG. 1

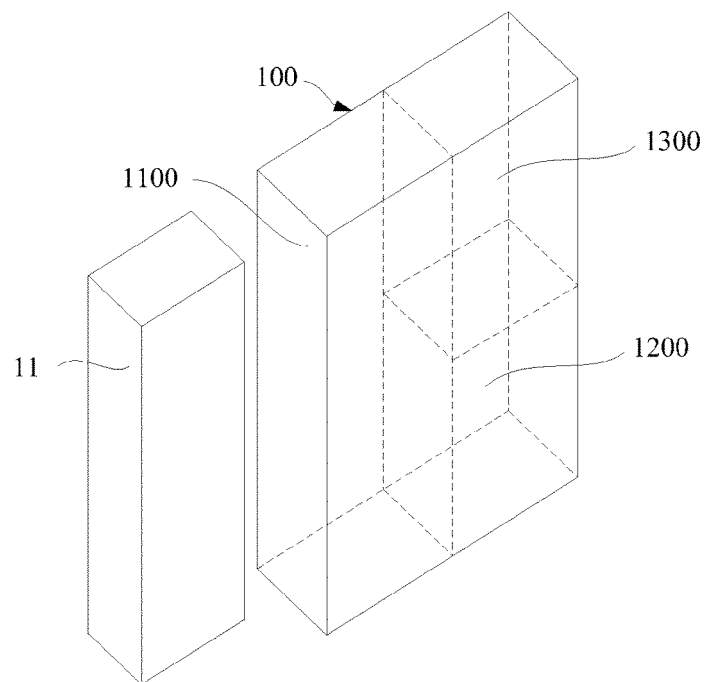


FIG. 2

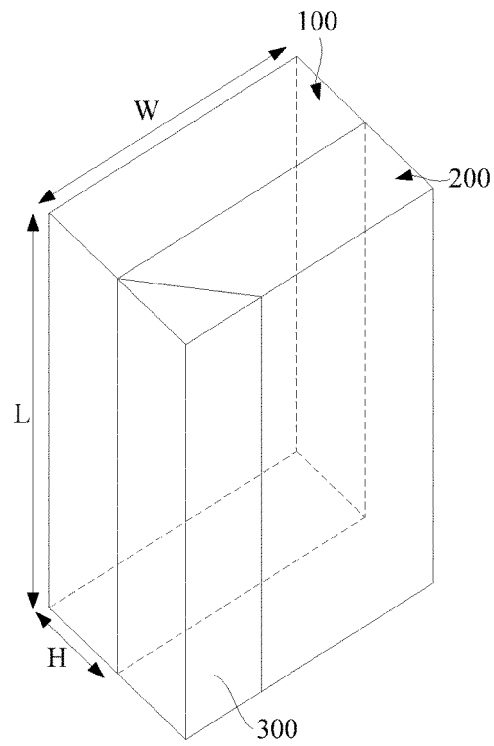


FIG. 3

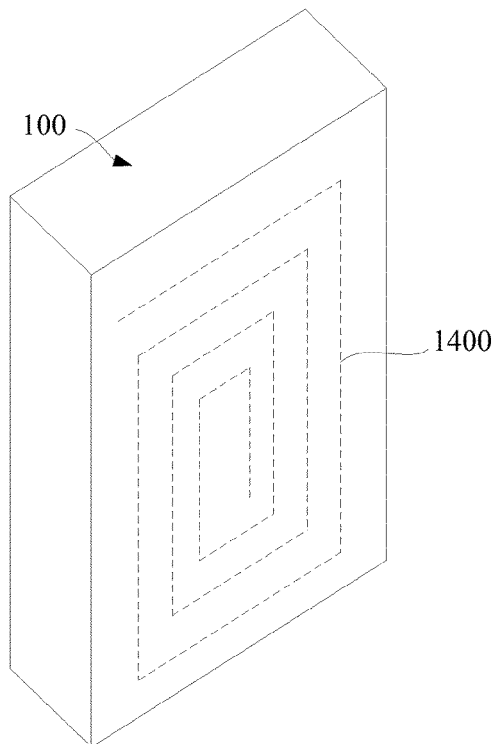


FIG. 4

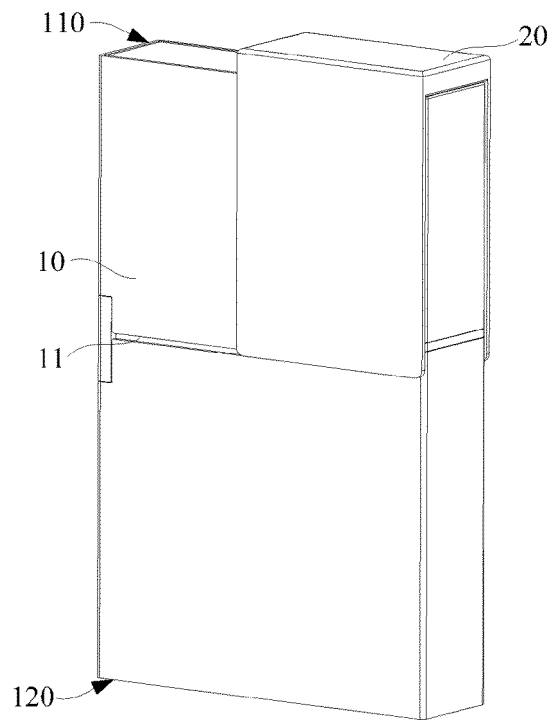


FIG. 5

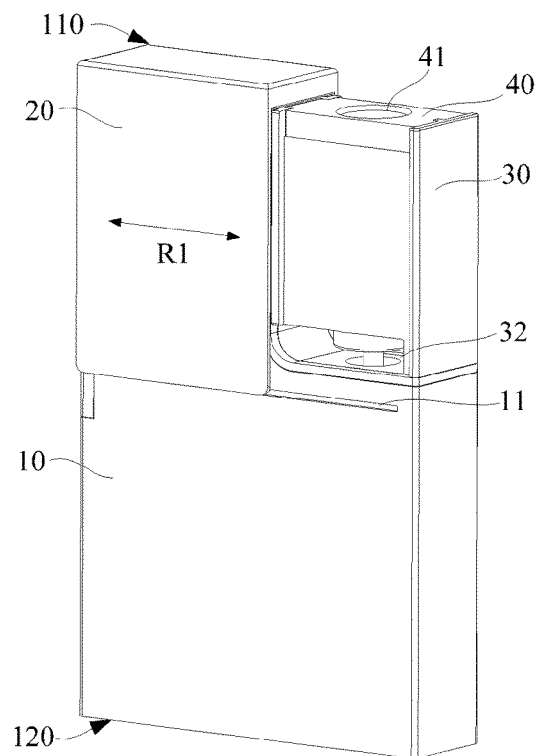


FIG. 6

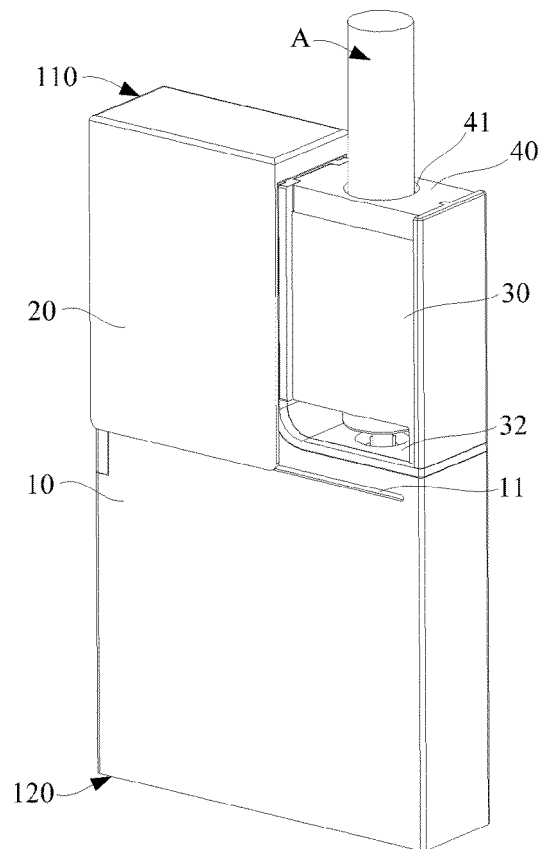


FIG. 7

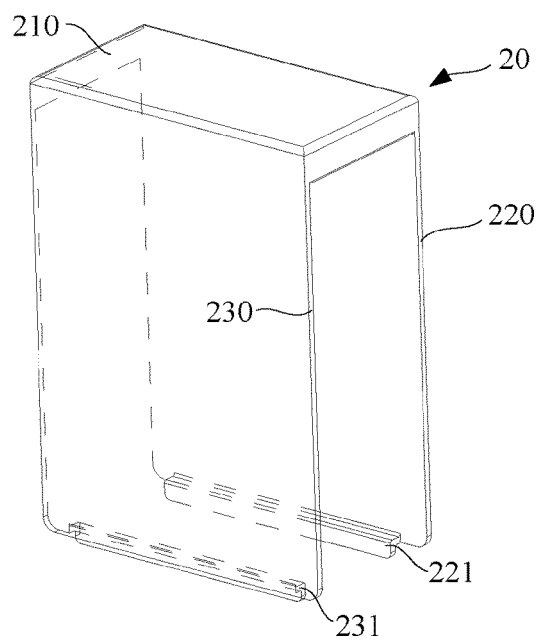


FIG. 8

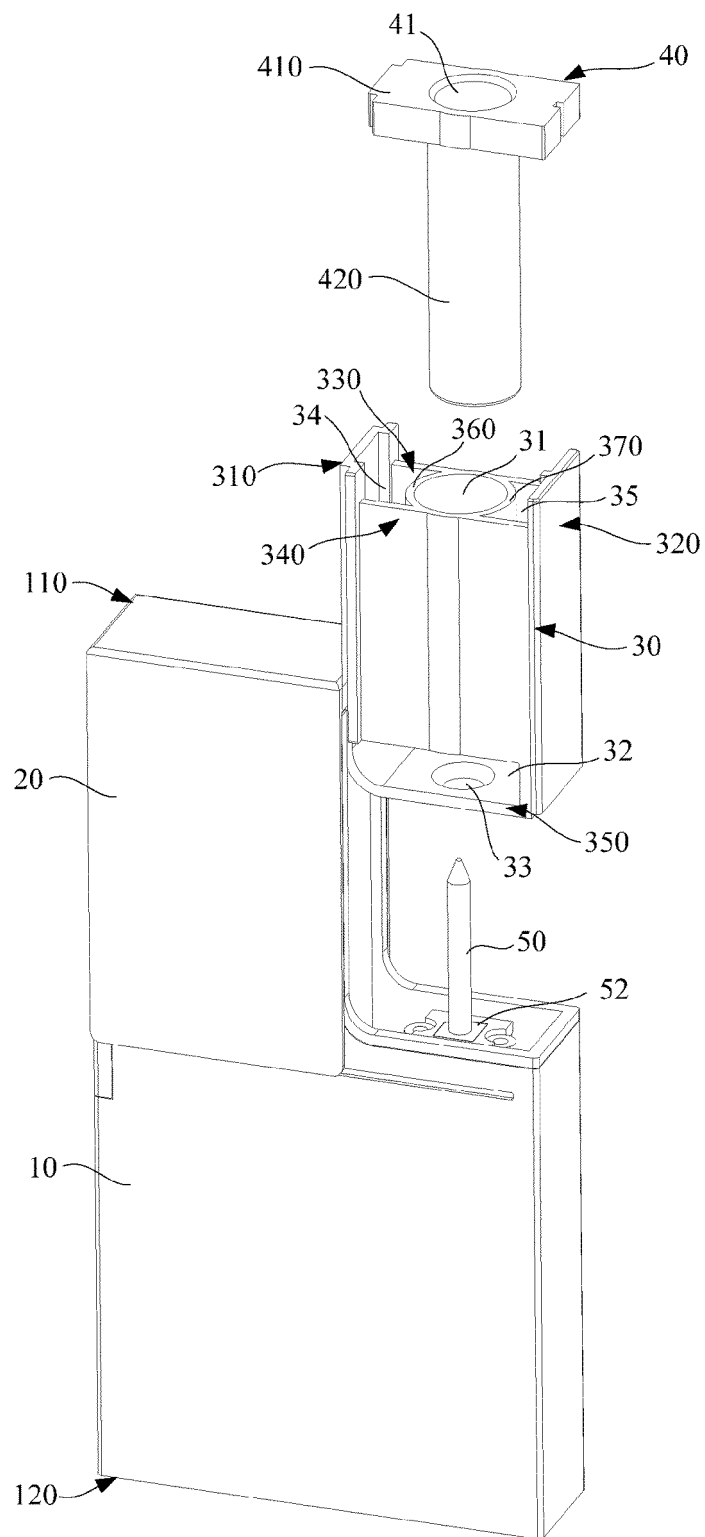


FIG. 9

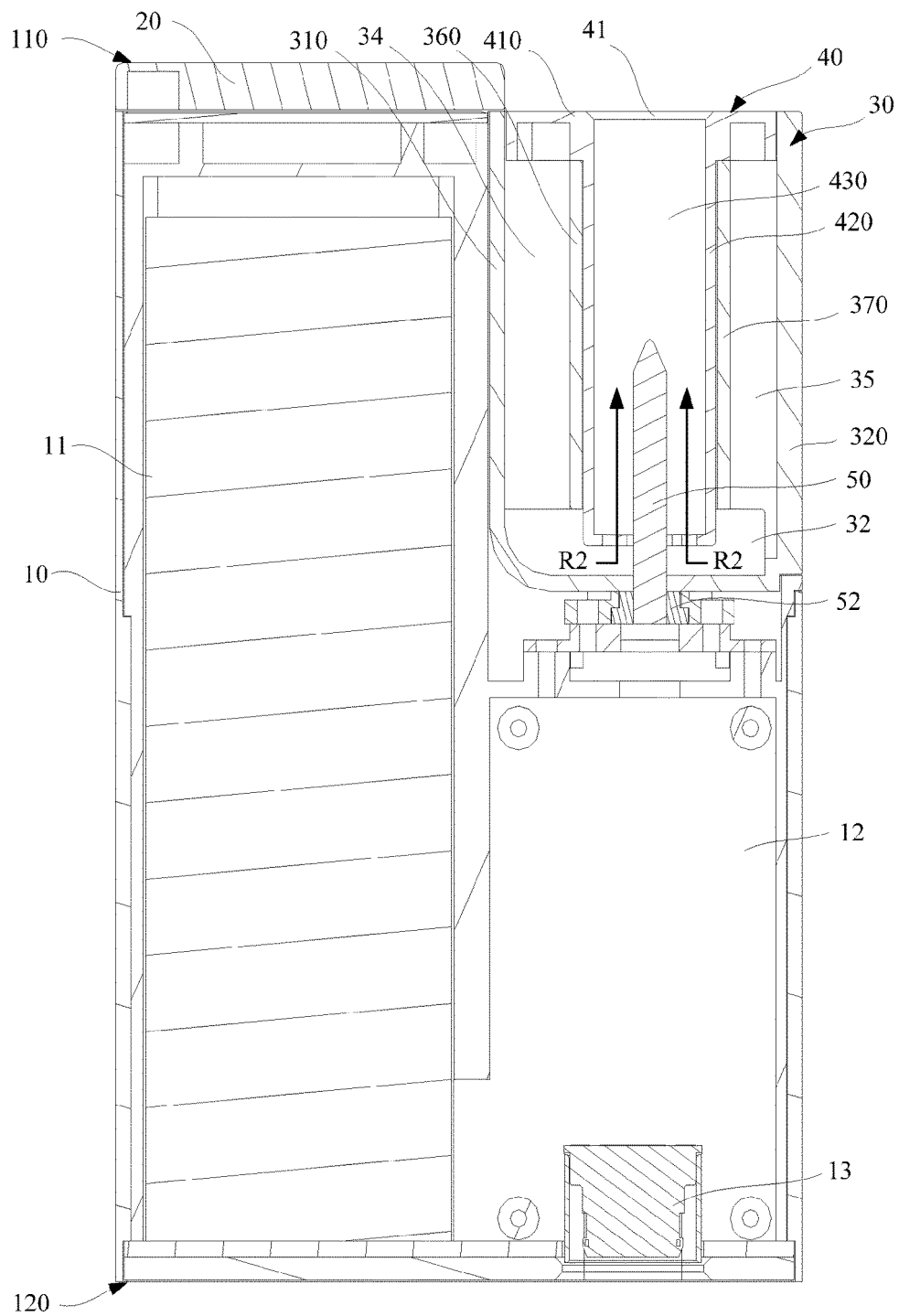


FIG. 10

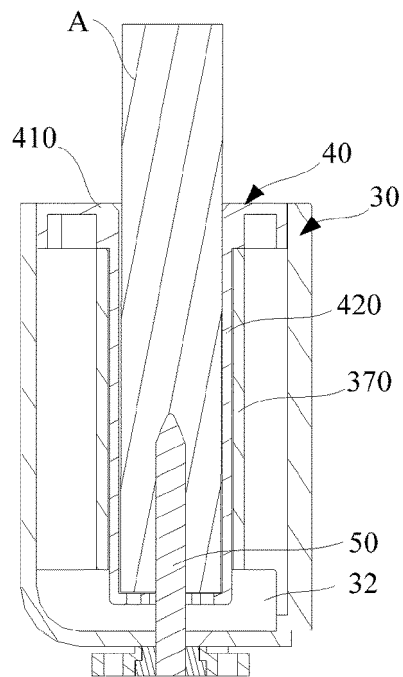


FIG. 11

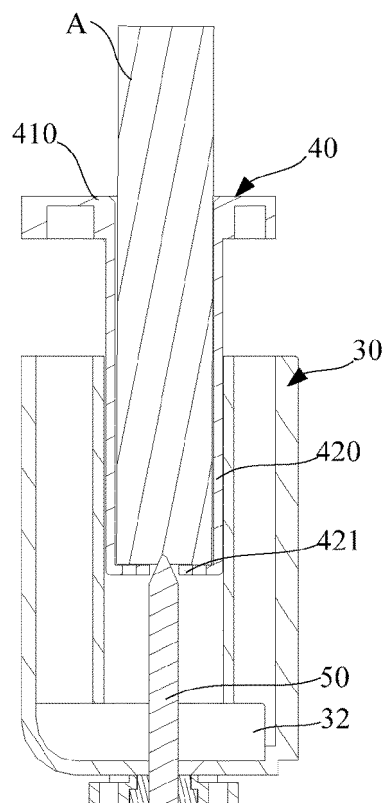


FIG. 12

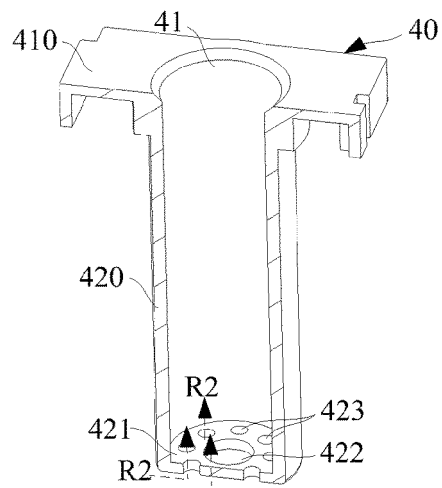


FIG. 13

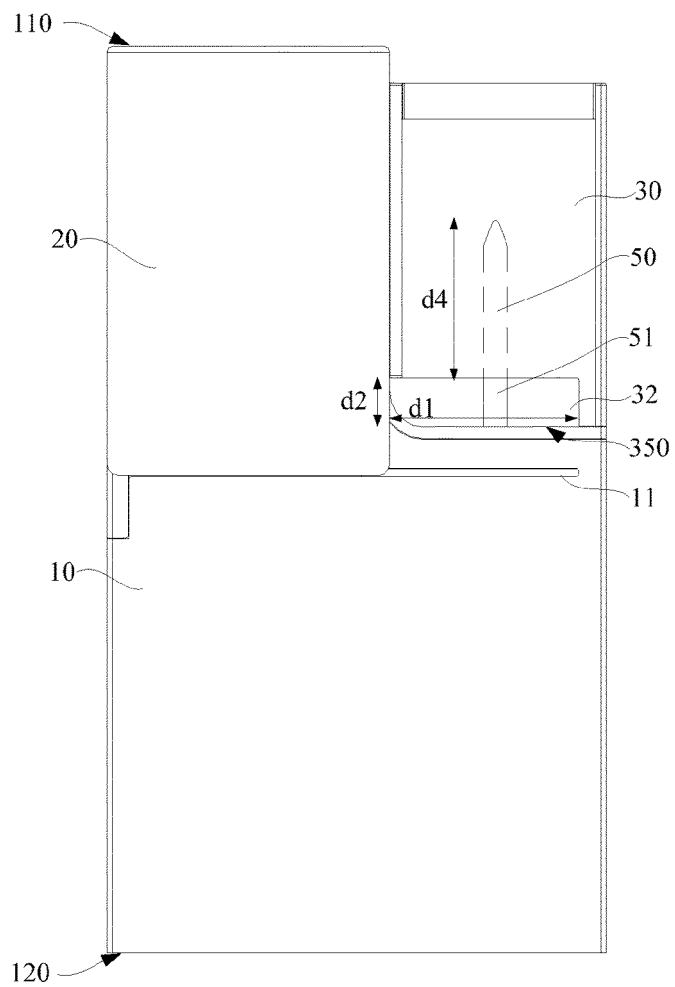


FIG. 14

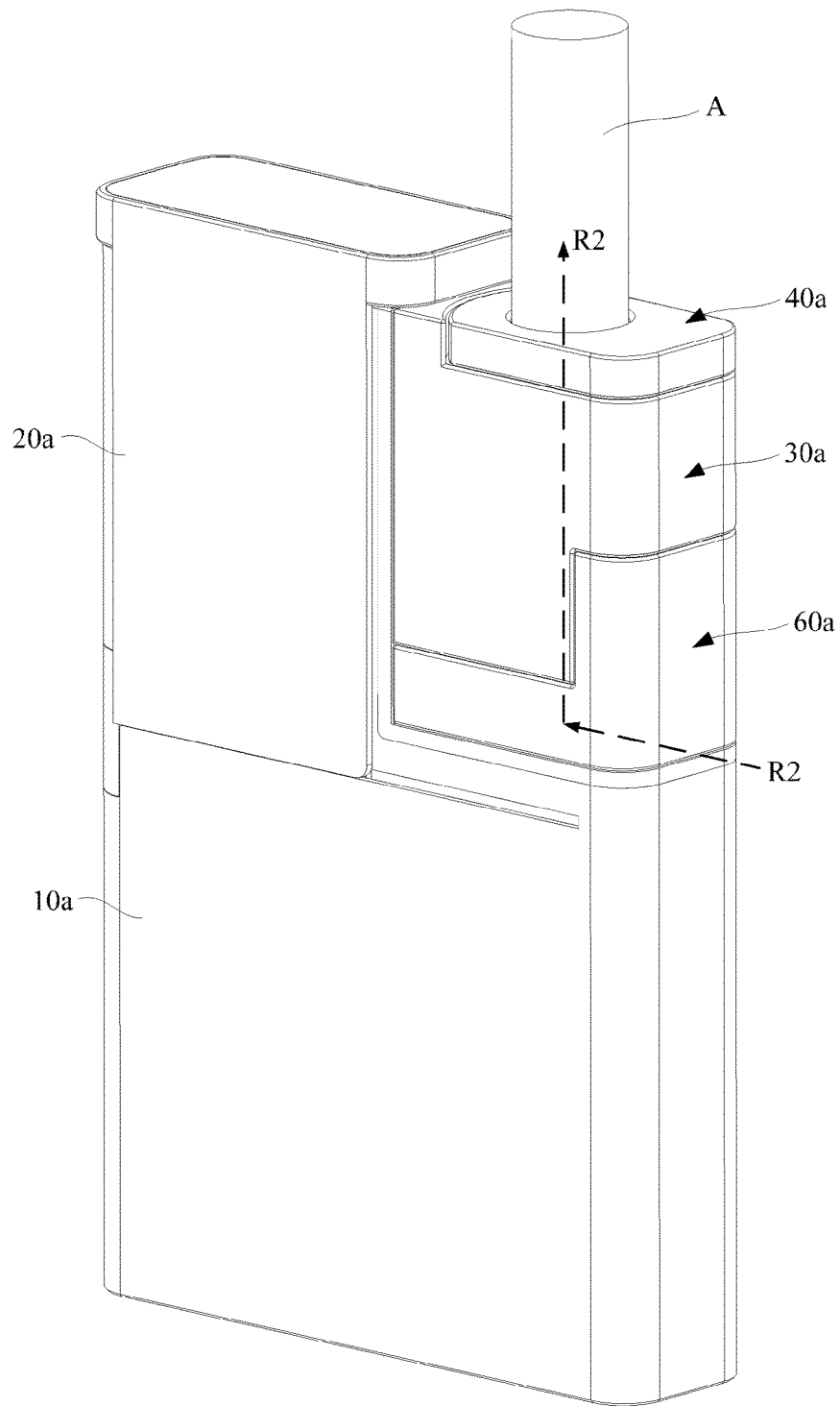


FIG. 15

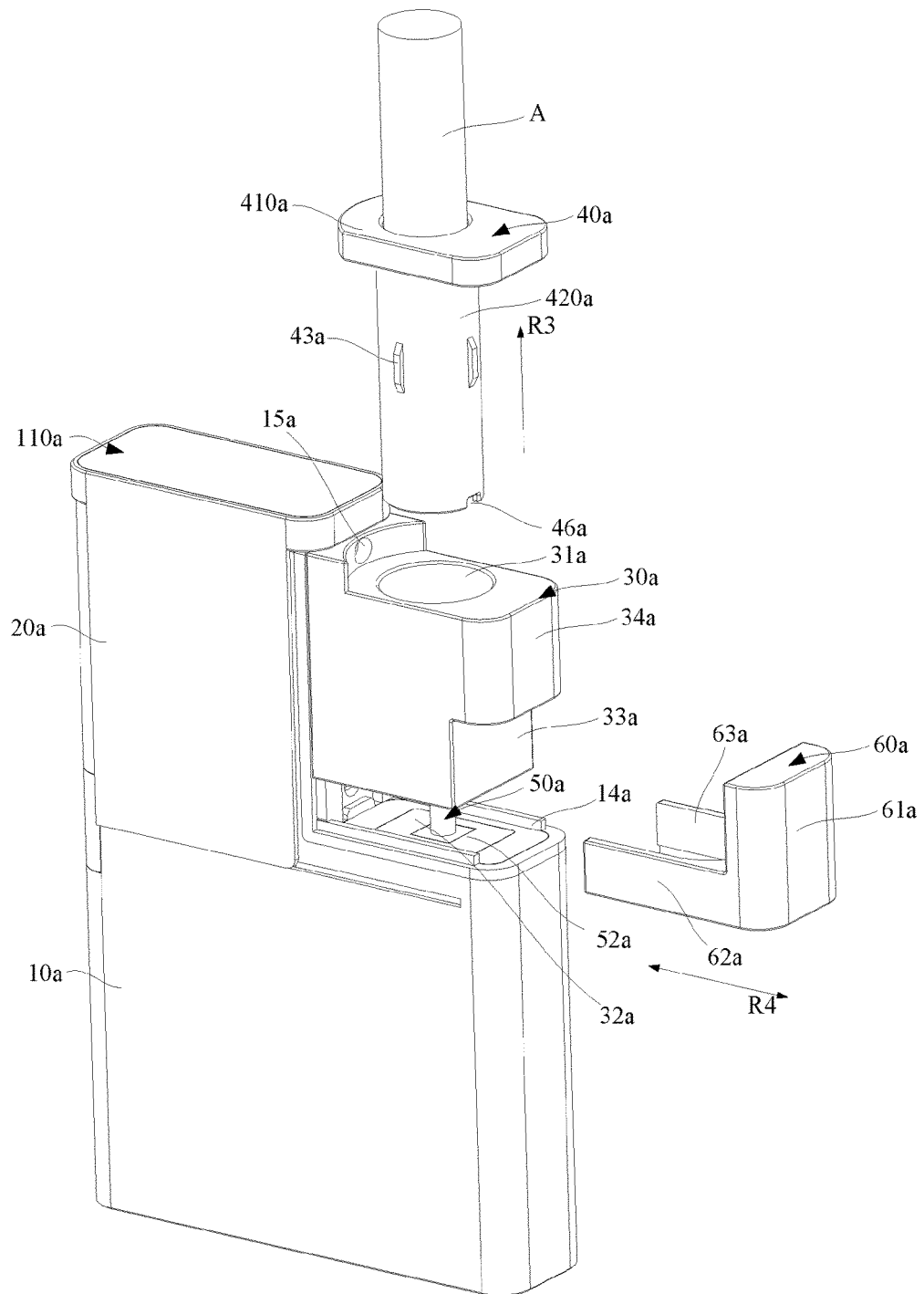


FIG. 16

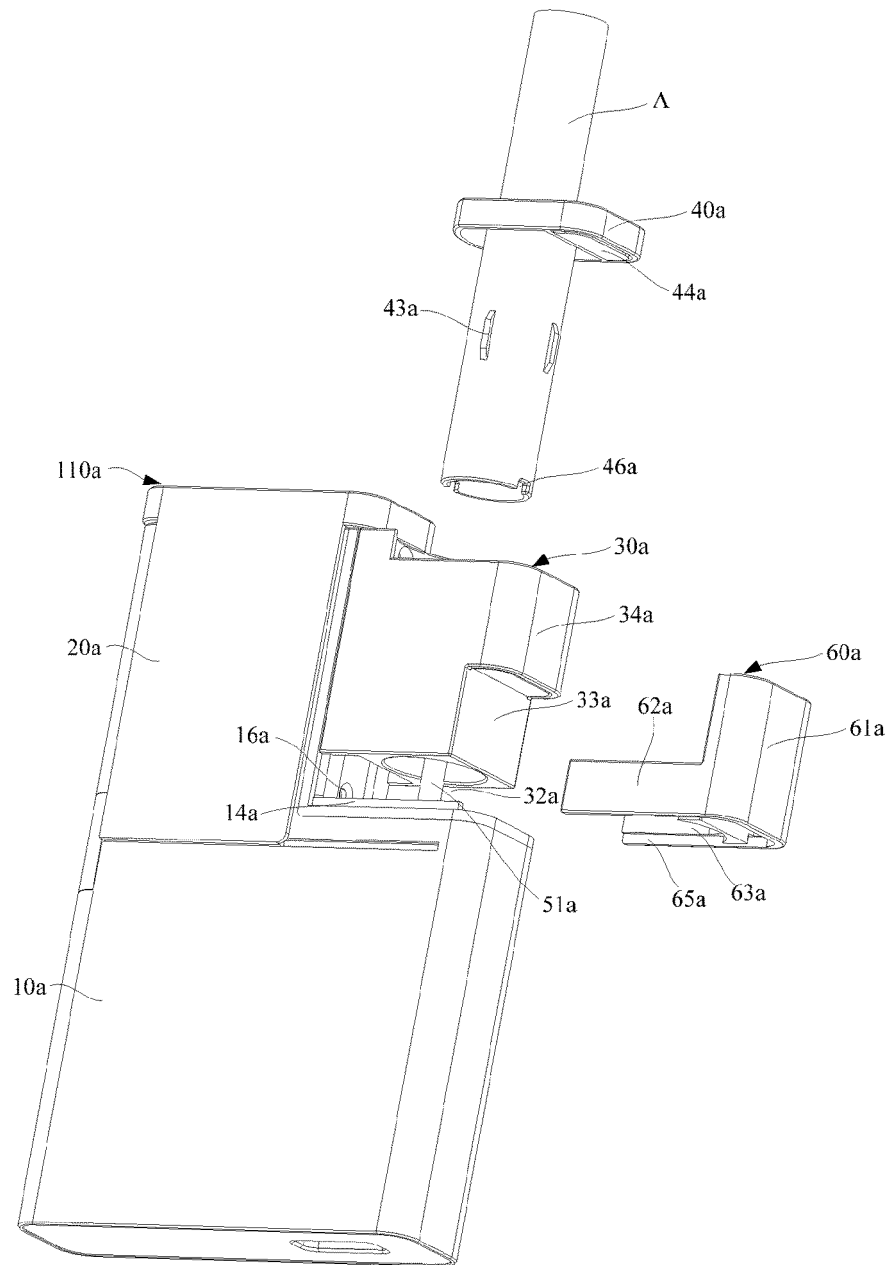


FIG. 17

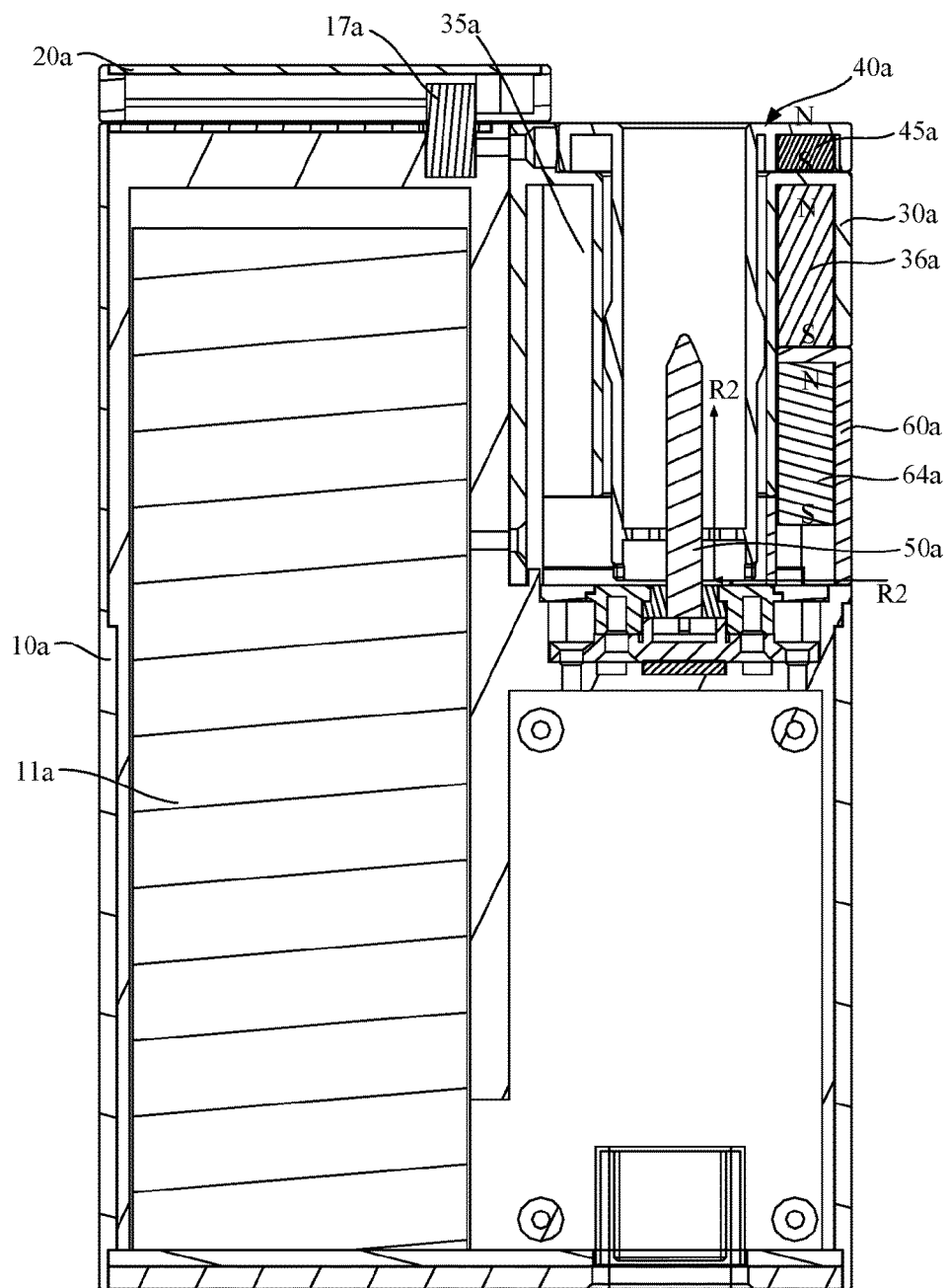


FIG. 18

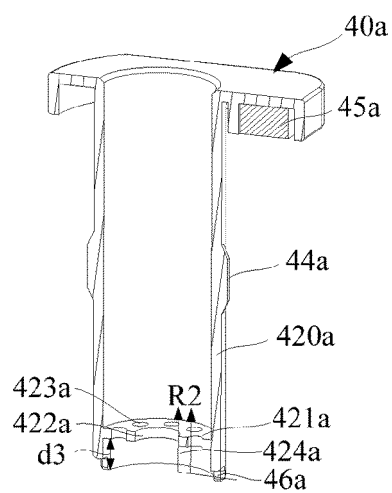


FIG. 19

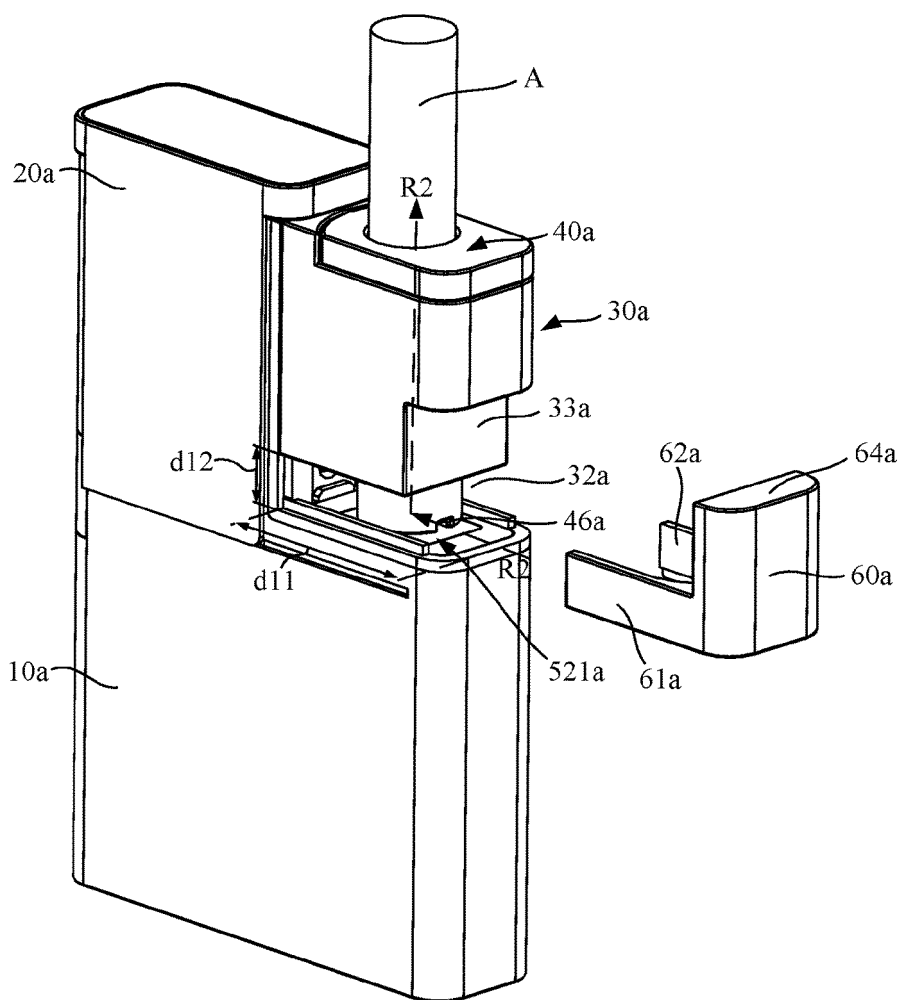


FIG. 20

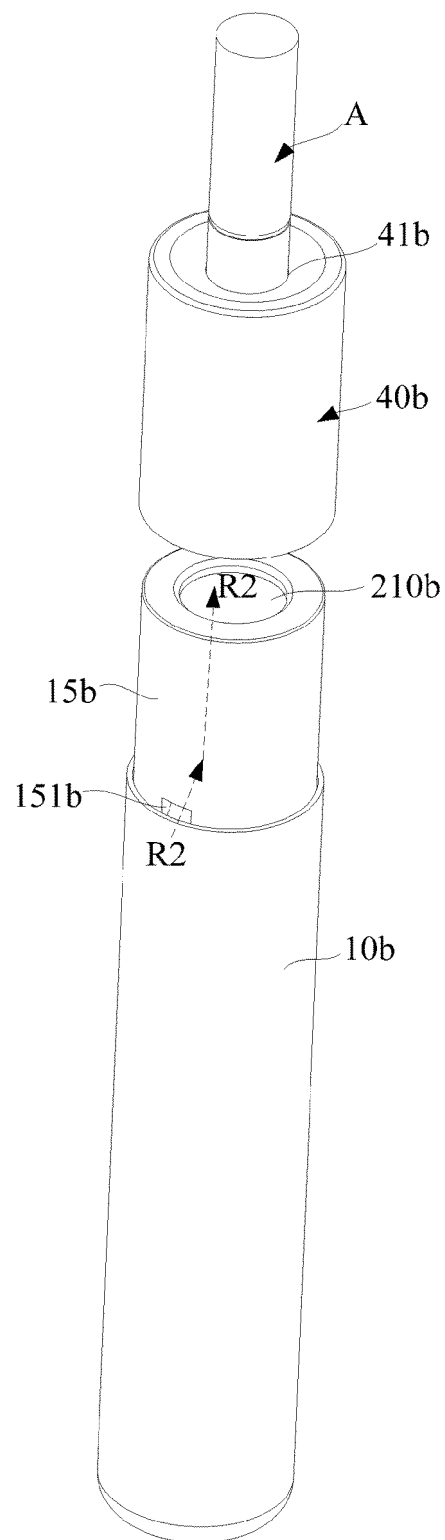


FIG. 21

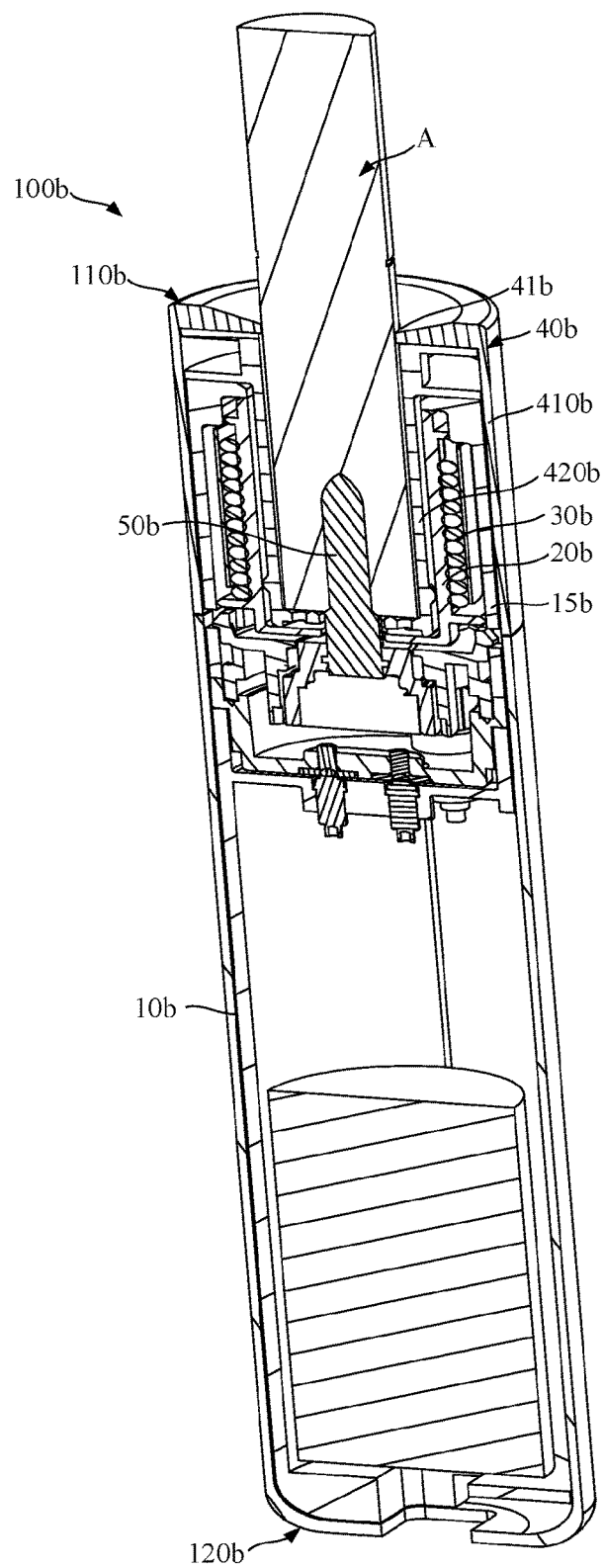


FIG. 22

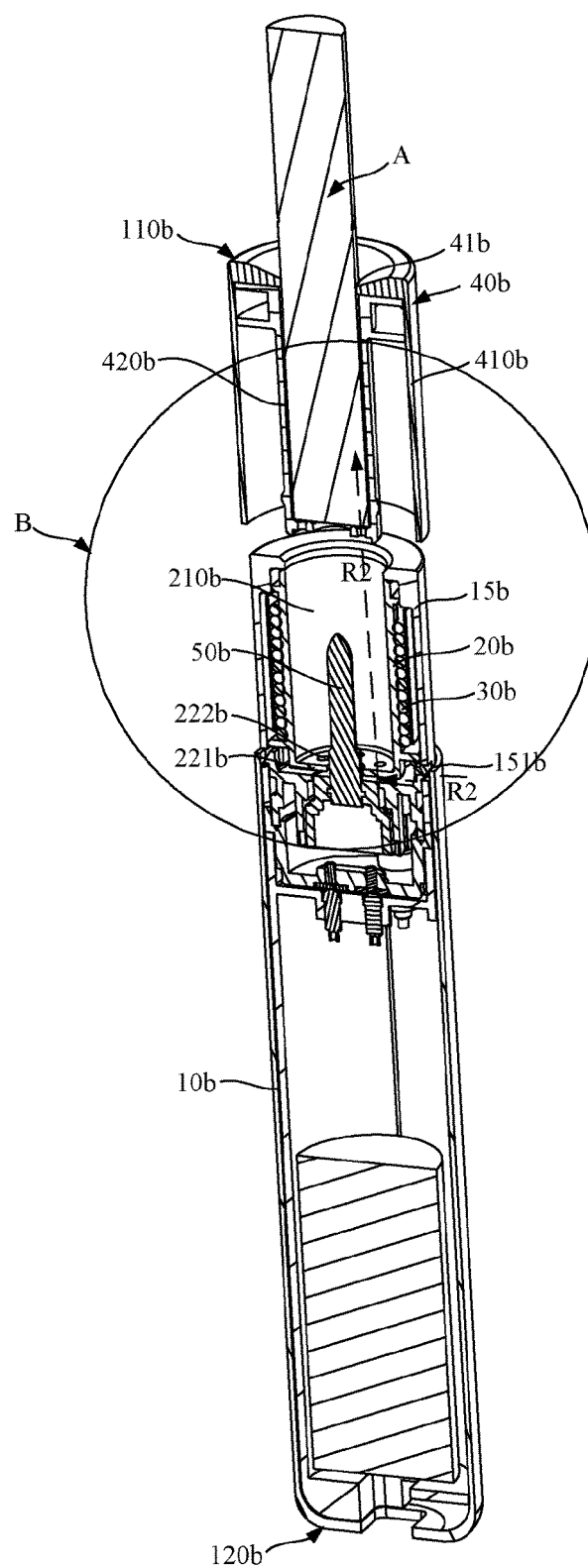


FIG. 23

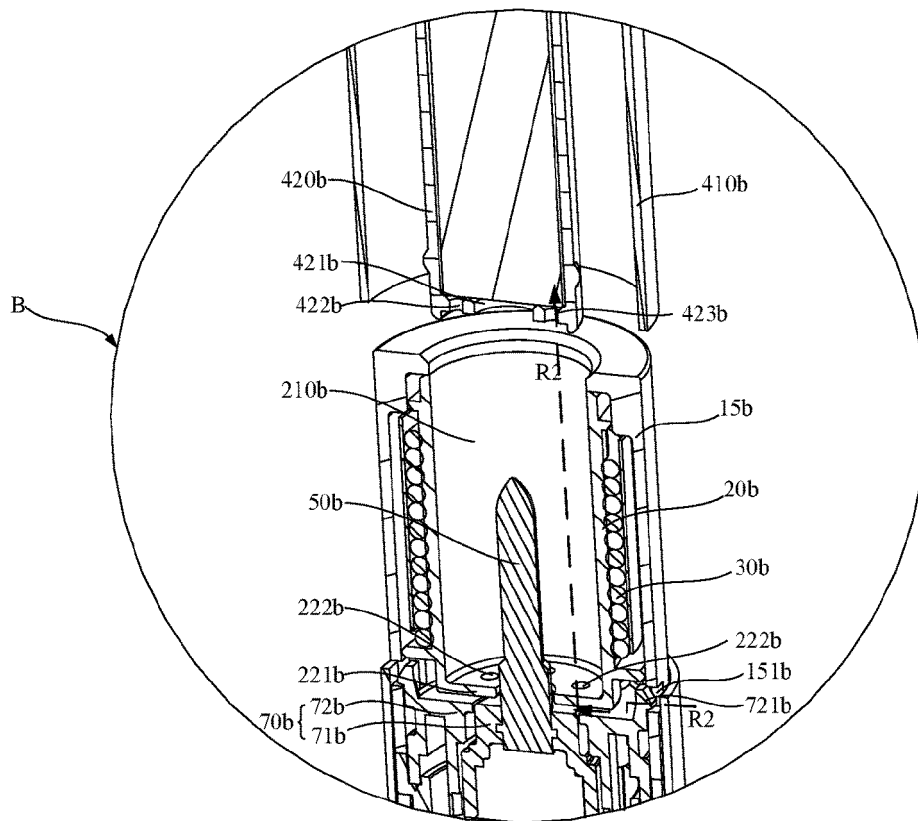


FIG. 24

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/109779

A. CLASSIFICATION OF SUBJECT MATTER

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

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)

CNABS; CNTXT; CNKI; VEN; USTXT; WOTXT; EPTXT; IEEE: 深圳市合元科技有限公司, 电子烟, 雾化器, 气溶胶, 气雾, 制品盒, 烟盒, 容器, 加热, 雾化, 电池, 电芯, 方形, 电路, 芯片, 加热器, heat+, assemb+, atomizat+, cigarett+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 215958316 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 08 March 2022 (2022-03-08) claims 1-33, and description, paragraphs [0051]-[0233], and figures 1-24	1-33
PX	CN 216147259 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 01 April 2022 (2022-04-01) description, paragraphs [0071]-[0233], and figures 1-24	1-33
PX	CN 216701662 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 10 June 2022 (2022-06-10) description, paragraphs [0064]-[0227], and figures 1-24	1-33
PX	CN 216147260 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 01 April 2022 (2022-04-01) description, paragraphs [0093]-[0256], and figures 1-24	1-33
X	CN 213604392 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 06 July 2021 (2021-07-06) abstract, and description, paragraphs [0034]-[0047], and figures 1-4	1-15

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

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“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

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“&” document member of the same patent family

Date of the actual completion of the international search

08 September 2022

Date of mailing of the international search report

19 October 2022

Name and mailing address of the ISA/CN

China National Intellectual Property Administration (ISA/
CN)
No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing
100088, China

Authorized officer

Facsimile No. (86-10)62019451

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2022/109779

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C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 213344346 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 04 June 2021 (2021-06-04) abstract, and description, paragraphs [0025]-[0063], and figures 1-7	16-33
A	CN 212306813 U (SHENZHEN MAISHI TECHNOLOGY CO., LTD.) 08 January 2021 (2021-01-08) entire document	1-33

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/CN2022/109779

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
CN	215958316	U	08 March 2022	None			
CN	216147259	U	01 April 2022	None			
CN	216701662	U	10 June 2022	None			
CN	216147260	U	01 April 2022	None			
CN	213604392	U	06 July 2021	WO	2022063233	A1	31 March 2022
CN	213344346	U	04 June 2021	WO	2022012599	A1	20 January 2022
CN	212306813	U	08 January 2021	CN	111387566	A	10 July 2020
				WO	2021190011	A1	30 September 2021

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

REFERENCES CITED IN THE DESCRIPTION

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