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

(57) This application discloses a vaporizer and an aerosol generation device. The vaporizer includes a housing and a liquid storage cavity provided in the housing, and a vaporization assembly. The vaporization assembly is located on one side of the liquid storage cavity. The vaporization assembly includes a heating element and a liquid guide element; and the liquid guide element includes a main body portion and at least one extension portion, and the heating element is connected to the main body portion. At least one liquid guide hole and an accommodation cavity configured to buffer a liquid substrate are defined in the vaporization assembly. The extension portion may extend into the accommodation cavity, and the accommodation cavity is arranged away from the liquid storage cavity. In the vaporizer, the extension portion that may be configured to guide excessive liquid substrates is arranged on the liquid guide element, which can prevent excessive liquid substrates from accumulating near the heating element. In addition, the extension portion extends into the accommodation cavity, and the accommodation cavity may further buffer the excessive liquid substrates.

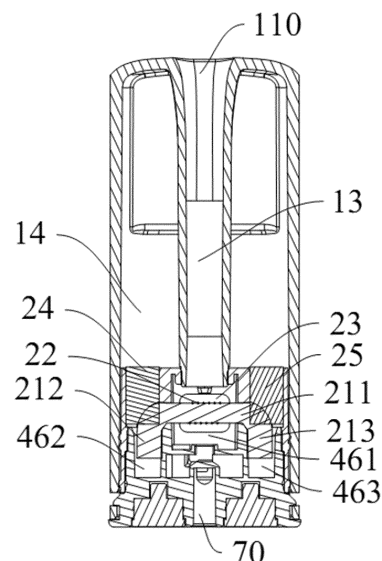


FIG. 3

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Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Chinese Patent Application No. 202110718192.X, entitled "VAPORIZER AND AEROSOL GENERATION DEVICE" and filed on June 28, 2021 with the National Intellectual Property Administration, which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] Embodiments of this application relate to the field of aerosol generation devices, and in particular, to a vaporizer and an aerosol generation device.

BACKGROUND

[0003] An aerosol generation device includes a vaporizer and a power supply device. The vaporizer includes a liquid storage cavity and a vaporization assembly for vaporizing a liquid substrate to generate an aerosol. As an example, an existing vaporization assembly includes a heating element and a liquid guide element, where the liquid guide element is generally made of a capillary element with better liquid guide performance, such as liquid guide cotton. A part of the liquid guide element absorbs the liquid substrate, and then transfers the liquid substrate to the heating element. However, a liquid guide rate of the liquid guide element often cannot precisely match vaporization efficiency of the heating element. When the liquid guide rate is excessively high, heat generated by the heating element is limited per unit time, and the liquid substrate accumulated on the liquid guide element and close to an accessory of the heating element cannot be vaporized in time, generating a sputtering sound of droplets, forming large droplets dispersed in the aerosol, and affecting user's inhaling experience.

SUMMARY

[0004] To resolve a problem of excessive supply of liquid substrates in a vaporizer in the related art, embodiments of this application provide a vaporizer, including a housing and a liquid storage cavity that is provided in the housing and that is configured to store a liquid substrate, a vaporization assembly configured to vaporize the liquid substrate, and an accommodation cavity configured to buffer the liquid substrate. The vaporization assembly includes a heating element and a liquid guide element, the liquid guide element includes a main body portion and at least one extension portion, and the heating element is connected to the main body portion. The extension portion extends from the main body portion into the accommodation cavity, and the accommodation cavity is farther away from the liquid storage cavity than the heating element in a longitudinal direction of the housing.

[0005] Preferably, in the foregoing technical solution, the extension portion at least partially extends away from the liquid storage cavity in the longitudinal direction of the housing.

5 **[0006]** Preferably, in the foregoing technical solution, a vaporization cavity is defined in the vaporization assembly, the main body portion is at least partially located inside the vaporization cavity, and the extension portion is located outside the vaporization cavity.

10 **[0007]** Preferably, in the foregoing technical solution, the extension portion extends from the main body portion in a direction away from the liquid storage cavity.

[0008] Preferably, in the foregoing technical solution, the extension portion extends substantially perpendicularly to the main body portion.

15 **[0009]** Preferably, in the foregoing technical solution, the main body portion is constructed to be obliquely placed at an angle in an axial direction of the housing.

[0010] Preferably, in the foregoing technical solution, the heating element includes a tubular heating body or a spiral coil surrounding the main body portion.

20 **[0011]** Preferably, in the foregoing technical solution, the vaporizer further includes at least one liquid guide hole, the liquid guide hole is configured to provide a path for transferring the liquid substrate in the liquid storage cavity to the liquid guide element, a capillary element is accommodated in the liquid guide hole, and the capillary element at least partially extends in the longitudinal direction of the housing and is in contact with the liquid guide element.

25 **[0012]** Preferably, in the foregoing technical solution, a position of the accommodation cavity corresponds to a position of the liquid guide hole, and the accommodation cavity is in fluid communication with the liquid guide hole.

30 **[0013]** Preferably, in the foregoing technical solution, the extension portion includes a first extension portion and a second extension portion, and the first extension portion and the second extension portion are arranged at two ends of the main body portion.

35 **[0014]** Preferably, in the foregoing technical solution, the liquid guide hole includes a first liquid guide hole and a second liquid guide hole; a first capillary element is accommodated in the first liquid guide hole, and a second capillary element is accommodated in the second liquid guide hole; and the first capillary element and the second capillary element are respectively in contact with the two ends of the main body portion.

40 **[0015]** Preferably, in the foregoing technical solution, the first capillary element extends from an end portion of the main body portion in a direction away from the first extension portion, and the second capillary element extends from an end portion of the main body portion in a direction away from the second extension portion.

45 **[0016]** Preferably, in the foregoing technical solution, the vaporizer further includes a holder, the holder includes at least one support arm configured to fix the liquid guide element, and the accommodation cavity is defined

on the holder.

[0017] Preferably, in the foregoing technical solution, the vaporizer further includes a seal member, and the holder and the seal member jointly define at least one fixing hole to fix the liquid guide element.

[0018] This application further provides a vaporizer, including a housing and a liquid storage cavity that is arranged in the housing and that is configured to store a liquid substrate, and a vaporization assembly configured to vaporize the liquid substrate. The vaporization assembly includes a heating element and a liquid guide element; and the liquid guide element includes a main body portion and at least one extension portion, and the heating element is connected to the main body portion, where the extension portion extends from the main body portion in a direction away from the liquid storage cavity.

[0019] This application further provides an aerosol generation device, including the vaporizer and a power supply device for providing electric drive for the vaporizer.

[0020] Beneficial effects of this application are as follows: A liquid guide element of a vaporization assembly further includes an extension portion away from a liquid storage cavity. In this way, a liquid substrate on a heating element that cannot be vaporized in time may be introduced into the extension portion, to prevent excessive liquid substrates from accumulating near the heating element and generating a sputtering sound of droplets. In addition, the extension portion extends into an accommodation cavity, and the accommodation cavity is farther away from the liquid storage cavity than the heating element and may be configured to further buffer the excessive liquid substrates.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] One or more embodiments are exemplarily described with reference to the corresponding figures in the accompanying drawings, and the exemplary 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 structural diagram of an aerosol generation device according to an embodiment of this application;

FIG. 2 is a perspective view of a vaporizer according to an embodiment of this application;

FIG. 3 is a cross-sectional view of a vaporizer according to Embodiment 1 of this application;

FIG. 4 is an exploded view of a vaporizer according to an embodiment of this application;

FIG. 5 is a perspective view of a seal member according to an embodiment of this application from a top view;

FIG. 6 is a perspective view of a holder according to an embodiment of this application from an angle of

view;

FIG. 7 is a perspective view of a seal member according to an embodiment of this application from a bottom view;

FIG. 8 is a perspective view of a seal member according to an embodiment of this application from another bottom view;

FIG. 9 is a side cross-sectional view of fixing a holder and a seal member according to an embodiment of this application from an angle of view;

FIG. 10 is a side cross-sectional view of fixing a holder and a seal member according to an embodiment of this application from another angle of view;

FIG. 11 is a cross-sectional view of a vaporizer according to Embodiment 2 of this application;

FIG. 12 is a cross-sectional view of a vaporizer according to Embodiment 3 of this application;

FIG. 13 is a perspective view of a holder according to an embodiment of this application from another angle of view;

FIG. 14 is a side cross-sectional view of a vaporizer according to an embodiment of this application; and

FIG. 15 is a perspective view of a holder and a seal member after fixing according to an embodiment of this application.

DETAILED DESCRIPTION

[0022] For ease of understanding of this application, this application is described in more detail below with reference to the accompanying drawings and specific implementations.

[0023] It is to be noted that, all directional indications (for example, up, down, left, right, front, back, horizontal, vertical, and the like) in the embodiments of this application are only used for explaining relative position relationships, movement situations or the like between the various components in a specific posture (as shown in the accompanying drawings). If the specific posture changes, the directional indications change accordingly. The "connection" may be a direct connection, or may be an indirect connection. The "arrange", "arranged", and "arrangement" may be direct arrangement, or may be indirect arrangement.

[0024] In addition, the terms such as "first" and "second" involved in this application are merely used for descriptive purposes and shall not be understood as indicating or implying relative importance or implying a quantity of indicated technical features. Therefore, features defining "first" and "second" may explicitly or implicitly include at least one of the features.

[0025] An embodiment of this application provides an aerosol generation device. Referring to FIG. 1, the aerosol generation device includes a vaporizer 100 and a power supply device 200. The vaporizer 100 stores a liquid substrate and may vaporize the liquid substrate to generate an aerosol. The power supply device 200 provides power drive for the vaporizer 100. The vaporizer

100 and the power supply device 200 may be fixedly connected or may be detachably connected. The vaporizer 100 and the power supply device 200 provided in this embodiment of this application are detachably connected, including magnetic connection and snap-on connection. A specific connection manner is not limited herein. The power supply device 200 may be divided into two parts in a longitudinal direction. At least a part of a surface of the vaporizer 100 may be accommodated in a first part 201, and a battery, a control module, a charging module, and other components that constitute the power supply device 200 may be accommodated in a second part 202.

[0026] Further, referring to FIG. 1 to FIG. 4, an embodiment of this application provides a flat vaporizer 100, including a substantially flat housing 10. The housing 10 has a suction nozzle end 11 and a connection end 12 that are arranged opposite to each other in the longitudinal direction. The suction nozzle end 11 has a suction nozzle opening 110 for aerosol output. The connection end 12 is open to facilitate mounting of functional components inside the vaporizer 100. An air outlet tube 13 is formed by longitudinally extending along the suction nozzle opening 110 toward an interior of the housing 10. A space between an outer wall surface of the air outlet tube 13 and an inner wall surface of the housing 10 forms a liquid storage cavity 14, where the liquid storage cavity 14 is configured to store a liquid substrate. In some examples, the liquid storage cavity 14 is filled with a medium for maintaining the liquid substrate, for example, a suitable medium may be a fiber material.

[0027] A vaporization assembly 20 is fixedly mounted inside the housing 10 below the air outlet tube 13. Referring to FIG. 3 and FIG. 4, the vaporization assembly 20 includes a liquid guide element 21 that may be configured to absorb and transfer a liquid substrate and a heating element 22 that heats and vaporizes the liquid substrate absorbed by the liquid guide element 21 to generate an aerosol. The liquid guide element 21 is substantially cylindrical or rod-shaped. The liquid guide element may usually be made of a flexible material such as natural cotton, artificial fiber cotton, glass fiber, non-woven fabric, or the like, and may preferably be made of one-piece artificial fiber cotton, which transfers the liquid substrate through an internal capillary structure. The heating element 22 uses a spiral heating coil made of a material such as nickel alloy, nickel-chromium alloy, or iron-chromium-aluminum alloy with strong electrical conductivity. The heating coil is fixedly wound around a middle part of the liquid guide element 21. It may be understood that, the heating element 22 may also be a grid-like tubular heating body surrounding an outer surface of the liquid guide element 21.

[0028] Further, referring to FIG. 2 to FIG. 10, the vaporization assembly 20 further includes a holder 40 configured to fix and support the liquid guide element 21 and the heating element 22, where the holder 40 is made of a molded hard plastic material. The holder 40 includes an end cap 41 configured to cover an opening of the

connection end 12 of the housing 10, a support portion 42 configured to fix the liquid guide element 21, and a connection portion 43 connected between the end cap 41 and the support portion 42. The connection portion 43 is substantially arranged adjacent to an inner wall of the housing 10. A side wall of the connection portion 43 has two buckles 431. A side surface of the housing 10 is provided with two positioning holes 15 matching the buckles 431. The holder 40 is fixedly connected to the interior of the housing 10 by using the buckles 431. The support portion 42 has a first side wall 421 and a second side wall 422 that are arranged opposite to each other and close to a front surface of the housing 10, and a first support arm 423 and a second support arm 424 that are connected between the first side wall 421 and the second side wall 422. The first support arm 423 and the second support arm 424 are respectively provided with a first notch 441 and a second notch 442, and the first notch 441 and the second notch 442 are provided opposite to each other. The first notch 441 and the second notch 442 are substantially U-shaped, and contour shapes of bottom ends of the first notch 441 and the second notch 442 match a part of a surface of the liquid guide element 21. The liquid guide element 21 may be fixed on the first support arm 423 and the second support arm 424.

[0029] Further, to enhance sealing performance of the liquid storage cavity 14, a seal member 30 is arranged between the inner wall of the housing 10 and a part of an outer surface of the holder 40. Referring to FIG. 4 to FIG. 8, the seal member 30 is substantially sleeve-shaped, and has a top wall 31 facing the liquid storage cavity 14 and an enclosure wall 32 surrounding the inner wall surface of the housing 10. The enclosure wall 32 encloses a hollow first cavity 33. The enclosure wall 32 is sleeved on the support portion 42 of the holder 40 and at least a part of an outer surface of the connection portion 43. The top wall 31 is provided with three fixing holes, where a first liquid guide hole 311 and a second liquid guide hole 312 are respectively on two sides, and an air guide hole 313 is located in the middle. The air guide hole 313 has a same external dimension as the air outlet tube 13, and extends toward the first cavity 33 to a depth to sleeve on an air inlet end of the air outlet tube 13. In addition, two positioning buckles 314 are arranged at a bottom of the air guide hole 313, and the two positioning buckles 314 are arranged opposite to each other, to facilitate positioning of a lower end of the air outlet tube 13. A bottom wall surface of the air outlet tube 13 is thinned to form an assembly notch, to facilitate positioning of an upper end of the seal member 30.

[0030] Further, the first liquid guide hole 311 and the second liquid guide hole 312 extend toward an inner cavity 33 to a depth, and the first liquid guide hole 311 and the second liquid guide hole 312 are configured to provide a flow path for transferring the liquid substrate in the liquid storage cavity 14 to the liquid guide element 21. A first wall 3151 and a second wall 3152 close to the first wall 3151 that are arranged around the first liquid guide hole

311 are located in the first cavity 33. The first wall 3151 and the second wall 3152 extend from the top wall 31 of the seal member 30 toward the first cavity 33, and at least a part of a wall surface of the first wall 3151 is arranged parallel to the second wall 3152. A gap is formed between the first wall and the second wall, and a width of the gap is the same as a width of the first support arm 423 on the holder 40, that is, the first support arm 423 may be fixedly mounted between the first wall 3151 and the second wall 3152. In addition, the first wall 3151 and the second wall 3152 are also provided with a third notch 341 and a fourth notch 342, and contour shapes of the third notch 341 and the fourth notch 342 are the same as a shape of at least a part of the outer surface of the liquid guide element 21. Two first grooves 451 are symmetrically provided on the first support arm 423 on the holder 40, and the two first grooves 451 are respectively connected to two ends of the first notch 441 to form an irregular quadrilateral with a notch. The quadrilateral matches a contour shape of the second wall 3152. Two sides of the second wall 3152 are fixed in the two first grooves 451 on the first support arm 423 and just close most of the first notch 441 of the first support arm 423, and a remaining part and the fourth notch 341 on the second wall 3152 enclose a first fixing hole 61. Referring to FIG. 9, the first fixing hole 61 is substantially circular and just allows one end of the liquid guide element 21 to pass through.

[0031] Symmetrically, a third wall 3161 and a fourth wall 3162 close to the third wall 3161 are arranged round the second liquid guide hole 312, and at least a part of a wall surface of the third wall 3161 is arranged parallel to the fourth wall 3162. A gap is formed between the third wall and the fourth wall, and a width of the gap is the same as a width of the second support arm 424 on the holder 40, that is, the second support arm 424 may be fixedly mounted between the third wall 3161 and the fourth wall 3162. In addition, the third wall 3161 and the fourth wall 3162 are also provided with a fifth notch 343 and a sixth notch 344. Two second grooves 452 are symmetrically provided on the second support arm 424 on the holder 40, and the two second grooves 452 are connected to two ends of the second notch 442 on the second support arm 424 to form an irregular quadrilateral with a notch. The quadrilateral matches a contour shape of the fourth wall 3162. Two sides of the fourth wall 3162 are fixed in the two second grooves 452 on the second support arm 424 and just close most of the second notch 442 of the second support arm 424, and a remaining part and the sixth notch 344 on the fourth wall 3162 enclose a second fixing hole 62. Referring to FIG. 10, the second fixing hole 62 is substantially circular and just allows an other end of the liquid guide element 21 to pass through.

[0032] Further, the first side wall 421, the second side wall 422, the first support arm 423, and the second support arm 424 of the support portion 42 of the holder 40 enclose an open second cavity 461, and the first wall 3151 and the third wall 3161 of the seal member 30 enclose an open third cavity 331. When the seal member

30 is arranged at a top of the support portion 42 of the holder 40, an opening of the second cavity 461 is covered by the top wall 31 of the seal member, and the second cavity 461 and the third cavity 331 jointly define an enclosed vaporization cavity 23. One end of the vaporization cavity 23 is in communication with the air outlet tube 13, and two ends of the liquid guide element 21 are just fixed in the first fixing hole 61 and the second fixing hole 62.

[0033] To promote the transfer of the liquid substrate in the liquid storage cavity 14 to the liquid guide element 21, a first capillary element 24 and a second capillary element 25 are respectively accommodated in the first liquid guide hole 311 and the second liquid guide hole 312. The first capillary element 24 at least partially extends along the housing 10 in a longitudinal direction, and is in contact with one side of the liquid guide element 21. Symmetrically, the second capillary element 25 at least partially extends along the housing 10 in the longitudinal direction, and is in contact with an other side of the liquid guide element 21. End portions of both the first capillary element 24 and the second capillary element 25 are in communication with the liquid storage cavity 14.

[0034] Furthermore, wall surfaces of the support portion 42 of the holder 40 further enclose a first accommodation cavity 462 and a second accommodation cavity 463, where the first accommodation cavity 462 and the second accommodation cavity 463 are located on two sides of the second cavity 461. Positions of the first accommodation cavity 462 and the first liquid guide hole 311 correspond to each other, and the first accommodation cavity 462 may be in fluid communication with the first liquid guide hole 311. Positions of the second accommodation cavity 463 and the second liquid guide hole 312 correspond to each other, and the second accommodation cavity 463 may be in fluid communication with the second liquid guide hole 312. The liquid guide element 21 includes a main body portion 211 and a first extension portion 212 and a second extension portion 213 that are arranged at an angle with the main body portion 211. The first extension portion 212 extends from the main body portion 211 to the inside of the first accommodation cavity 462 and is accommodated inside the first accommodation cavity 462. The second extension portion 213 extends from the main body portion 211 to the inside of the second accommodation cavity 463 and is accommodated inside the second accommodation cavity 463. The first accommodation cavity 462 and the second accommodation cavity 463 are farther away from the liquid storage cavity 14 than the heating element 21 in the longitudinal direction. The main body portion 211 is fixed on end portions of the first support arm 423 and the second support arm 424, and the first extension portion 212 and the second extension portion 213 on two sides of the main body portion 21 are located outside the vaporization cavity 23. A liquid substrate absorbed by the main body portion 211 from the first capillary element 24 and the second capillary element 25 on two sides is

vaporized by the heating element 22 to generate an aerosol. When liquid substrates absorbed by the main body portion 211 are excessive and cannot be vaporized in time, the liquid substrates may further be transferred to the first extension portion 212 and the second extension portion 213, to prevent the excessive liquid substrates from gathering in the vaporization cavity 23 and causing e-liquid explosion. When the liquid substrates accumulated in the first extension portion 212 are excessive, the liquid substrates may further enter the first accommodation cavity 462. When the liquid substrates accumulated in the second extension portion 213 are excessive, the liquid substrates may further enter the second accommodation cavity 463.

[0035] Specifically, the first capillary element 24 and the second capillary element 25 are respectively in contact with two ends of the main body portion 211, and are arranged at a right angle with the main body portion 211. The first extension portion 212 and the second extension portion 213 located below the main body portion 211 are also arranged at right angles with the main body portion 211. In this case, the first support arm 423 and the second support arm 424 are arranged relatively parallel to each other, and the main body portion 211 of the liquid guide element 21 and the housing 10 are vertically arranged, to facilitate fixed mounting. When the main body portion 211 absorbs excessive liquid substrates and the heating element 22 cannot vaporize the liquid substrates in time, the liquid substrates may be transferred to the first extension portion 212 and the second extension portion 213 on two sides, and may enter the first accommodation cavity 462 and the second accommodation cavity 463 under the action of gravity.

[0036] Further, this application further provides a second implementation. Referring to FIG. 11, different from the foregoing embodiments, the main body portion 211 of the liquid guide element 21 is arranged obliquely and downwardly, an angle between the first capillary element 24 and the main body portion 211 of the liquid guide element 21 is an obtuse angle, and an angle between the second capillary element and the main body portion 211 is an acute angle; and an angle between the main body portion 211 and the first extension portion 212 is an acute angle, and an angle between the main body portion 211 and the second extension portion 213 is an obtuse angle. Since the main body portion 211 of the liquid guide element 21 is arranged obliquely and downwardly, the excessive liquid substrates transferred from the first capillary element 24 to a liquid absorbing element 21 may be directly guided into the second extension portion 213 in a direction of gravity, to further optimize a liquid guide capability of the extension portion 213 below the main body portion 211, so that excessive liquid substrates may not be accumulated in a region where the liquid guide element 21 fixes the heating element 22. In addition, fixing ends configured to fix the first support arm 423 and the second support arm 424 of the liquid guide element 21 are staggered. Specifically, the fixing end of the sec-

ond support arm 424 is located below the fixing end of the first support arm 423. In addition, a length of the second capillary element 25 is greater than a length of the first capillary element 24, so that the main body portion 211 can just obliquely fixed on the holder 40, and the two ends of the main body portion 211 are respectively in contact with the first capillary element 24 and the second capillary element 25.

[0037] Furthermore, this application further provides a third implementation. Referring to FIG. 12, different from the second implementation provided in this application, the seal member 30 is provided with only one liquid guide hole, the first capillary element 24 is fixedly arranged in the liquid guide hole, and the first capillary element 24 is in contact with an end portion of the main body portion 211 of the liquid guide element 21. A left end of the main body portion 211 is higher than a right end in the longitudinal direction. The first capillary element 24 is connected to the left end of the main body portion 211. A second extension portion 213 is arranged at the right end of the main body portion 211. A capillary element that is not separately arranged above the second extension portion 213 is connected to the main body portion 211, and the second extension portion 213 further extends into the second accommodation cavity 463 in a direction away from the liquid storage cavity 14. It may be understood that, when the liquid substrate has good liquidity, one capillary element 24 can also meet a requirement for a liquid transfer rate of the liquid guide element 21. In addition, only one extension portion 213 needs to be arranged at one end of the main body portion 211, which is beneficial to guiding the excessive liquid substrates absorbed by the main body portion 211 to the second accommodation cavity 463.

[0038] It may be understood that, capillary elements 23 with different quantities may be matched according to specific vaporization efficiency of the heating element 22 of the vaporizer 100 and flow properties of different liquid substrates. In addition, extension portions 212 with different quantities or depths are arranged below the main body portion 211 of the liquid guide element 21. Because the extension portion 212 is located below the main body portion 211, the liquid substrate may be guided to a tail end of the extension portion 212 under the action of gravity, and the main body portion 211 may also absorb sufficient liquid substrates without causing excessive accumulation of the liquid substrates in a heating region. Further, if the excessive liquid substrates are accumulated in the extension portion 212, the liquid substrates may be further buffered inside the first accommodation cavity 462 or the second accommodation cavity 463. As the heating element 22 continuously vaporizes the liquid substrate in the main body portion 211 of the liquid guide element 21, the liquid substrate buffered in the extension portion 212 and/or the first accommodation cavity 462 and/or the second accommodation cavity 463 may be transferred to the main body portion 211 at the same time, to achieve balance between a vaporization rate and

the liquid transfer rate.

[0039] Referring to FIG. 13 and FIG. 14, the holder 40 is provided with an air inlet 70 for external air to enter an interior of the vaporizer 100. The air inlet 70 passes through the end cap 41 and at least partially extends in the longitudinal direction of the housing 10. A vent hole 71 is provided on a bottom surface of the support portion 42 of the holder 40. The vent hole 71 is arranged right opposite to the heating element 22, and an air outlet end of the vent hole 71 is arranged higher than a surrounding plane and forms a bumping structure, making it difficult for condensate formed by cooling the inside of the vaporization cavity 23 to overflow from the vent hole 71. Further, the support portion 42 of the holder 40 extends longitudinally and downwardly along the vent hole 71, and a part of a wall surface of the support portion 42 of the holder 40 protrudes downward to form a blocking portion 47. The blocking portion 47 is located above an air outlet end of the air inlet 70, so that some liquid substrates overflow from the vent hole 71 cannot enter the air inlet 70. In addition, to help external air outputted from the air inlet 70 enter the vent hole 71, a V-shaped flow guide sloped surface 471 is arranged on an end surface of the blocking portion 47, and an external airflow enters a second air guide hole 72 located on a left side of the vent hole 71 along the flow guide sloped surface 471, where the second air guide hole 72 is in communication with the vent hole 71. Moreover, the second air guide hole 72 and the air inlet 70 are completely separated by a part of an inner wall surface of the holder 40, and leaked liquid cannot enter the air inlet 70 through the second air guide hole 72. External air passes through the air inlet 70, bypasses and enters the second air guide hole 72, and then enters the vent hole 71, to further enter the vaporization cavity 23.

[0040] A lower end of the vaporization cavity 23 is in communication with the vent hole 71, an upper end is in communication with a vent tube 13, and an entire space is jointly defined by the holder 40 and the seal member 30 to form an enclosed space that only allows one-way air flow, which can prevent the liquid substrate from leaking from an outlet of the vaporization cavity 23 to the greatest extent. To further improve sealing performance of a whole vaporizer 1200, referring to FIG. 15, the enclosure wall 32 of the seal member 30 substantially covers an outer surface of the support portion 42 of the holder 40 and extends downward to an upper end of a fixing buckle 431 of the holder 40 and the housing 10, and two sealing flanges 36 are arranged on a lower end of the enclosure wall 32, to further form a tight fit with the inner wall of the housing 10, thereby preventing liquid from leaking downward from a gap between the enclosure wall 32 of the seal member 30 and the housing 10.

[0041] Still referring to FIG. 4 and FIG. 6, positive and negative electrode columns 50 are arranged and pass through the end cap 41 of the holder 40, the positive and negative electrode columns are located on two sides of the air inlet 70, and the positive and negative electrode

columns 50 are connected to two ends of the heating element 22 by using wires. Specifically, a bottom end surface of the support portion 42 of the holder 40 is further provided with wire holes 51 for fixing the wires, and the positive and negative wire holes 51 longitudinally extend along the housing 10 to fixing end portions of the positive and negative electrode columns 50, to facilitate a connection between the wires and the positive and negative electrode columns 70.

[0042] It is to be noted that, this 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 modifications according to the foregoing description, and all the improvements and modifications shall fall within the protection scope of the attached claims of this application.

Claims

1. A vaporizer, comprising:

a housing and a liquid storage cavity that is provided in the housing and that is configured to store a liquid substrate;
a vaporization assembly, configured to vaporize the liquid substrate, wherein the vaporization assembly comprises a heating element and a liquid guide element, the liquid guide element comprises a main body portion and at least one extension portion, and the heating element is connected to the main body portion; and
an accommodation cavity, configured to buffer the liquid substrate, wherein the extension portion extends from the main body portion into the accommodation cavity, and the accommodation cavity is farther away from the liquid storage cavity than the heating element in a longitudinal direction of the housing.

2. The vaporizer according to claim 1, wherein the extension portion at least partially extends away from the liquid storage cavity in the longitudinal direction of the housing.

3. The vaporizer according to claim 1, wherein a vaporization cavity is defined in the vaporization assembly, the main body portion is at least partially located inside the vaporization cavity, and the extension portion is located outside the vaporization cavity.

4. The vaporizer according to claim 1, wherein the extension portion extends from the main body portion in a direction away from the liquid storage cavity.

5. The vaporizer according to claim 4, wherein the extension portion extends substantially perpendicularly to the main body portion.
6. The vaporizer according to claim 4, wherein the main body portion is constructed to be obliquely placed at an angle in an axial direction of the housing.
7. The vaporizer according to claim 1, wherein the heating element comprises a tubular heating body or a spiral coil surrounding the main body portion.
8. The vaporizer according to claim 1, wherein the vaporizer further comprises at least one liquid guide hole, the liquid guide hole is configured to provide a path for transferring the liquid substrate in the liquid storage cavity to the liquid guide element, a capillary element is accommodated in the liquid guide hole, and the capillary element at least partially extends in the longitudinal direction of the housing and is in contact with the liquid guide element.
9. The vaporizer according to claim 1, wherein a position of the accommodation cavity corresponds to a position of the liquid guide hole, and the accommodation cavity is in fluid communication with the liquid guide hole.
10. The vaporizer according to claim 8, wherein the extension portion comprises a first extension portion and a second extension portion, and the first extension portion and the second extension portion are arranged at two ends of the main body portion.
11. The vaporizer according to claim 10, wherein the liquid guide hole comprises a first liquid guide hole and a second liquid guide hole; a first capillary element is accommodated in the first liquid guide hole, and a second capillary element is accommodated in the second liquid guide hole; and the first capillary element and the second capillary element are respectively in contact with the two ends of the main body portion.
12. The vaporizer according to claim 11, wherein the first capillary element extends from an end portion of the main body portion in a direction away from the first extension portion, and the second capillary element extends from an end portion of the main body portion in a direction away from the second extension portion.
13. The vaporizer according to claim 1, wherein the vaporizer further comprises a holder, the holder comprises at least one support arm configured to fix the liquid guide element, and the accommodation cavity is defined on the holder.
14. The vaporizer according to claim 13, wherein the vaporizer further comprises a seal member, and the holder and the seal member jointly define at least one fixing hole to fix the liquid guide element.
15. A vaporizer, comprising:
 a housing and a liquid storage cavity that is provided in the housing and that is configured to store a liquid substrate; and
 a vaporization assembly, configured to vaporize the liquid substrate, wherein the vaporization assembly comprises a heating element and a liquid guide element; and the liquid guide element comprises a main body portion and at least one extension portion, and the heating element is connected to the main body portion, wherein the extension portion extends from the main body portion in a direction away from the liquid storage cavity.
16. An aerosol generation device, comprising the vaporizer according to any one of claims 1 to 15 and a power supply device for providing electric drive for the vaporizer.

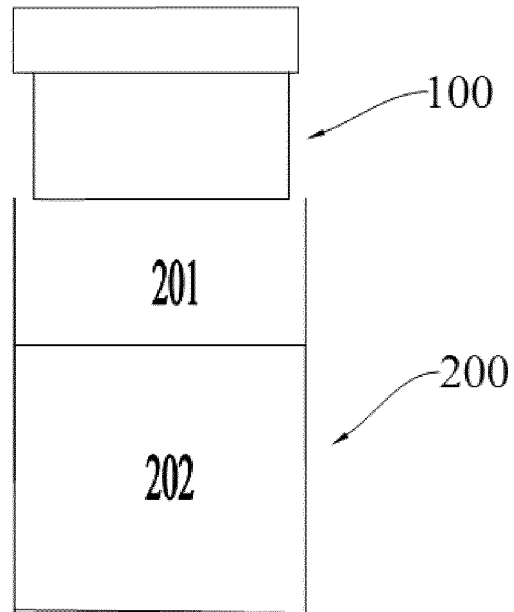


FIG. 1

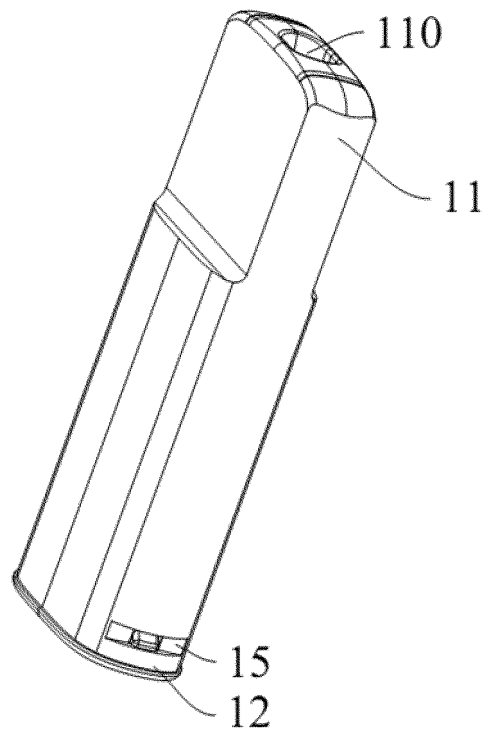


FIG. 2

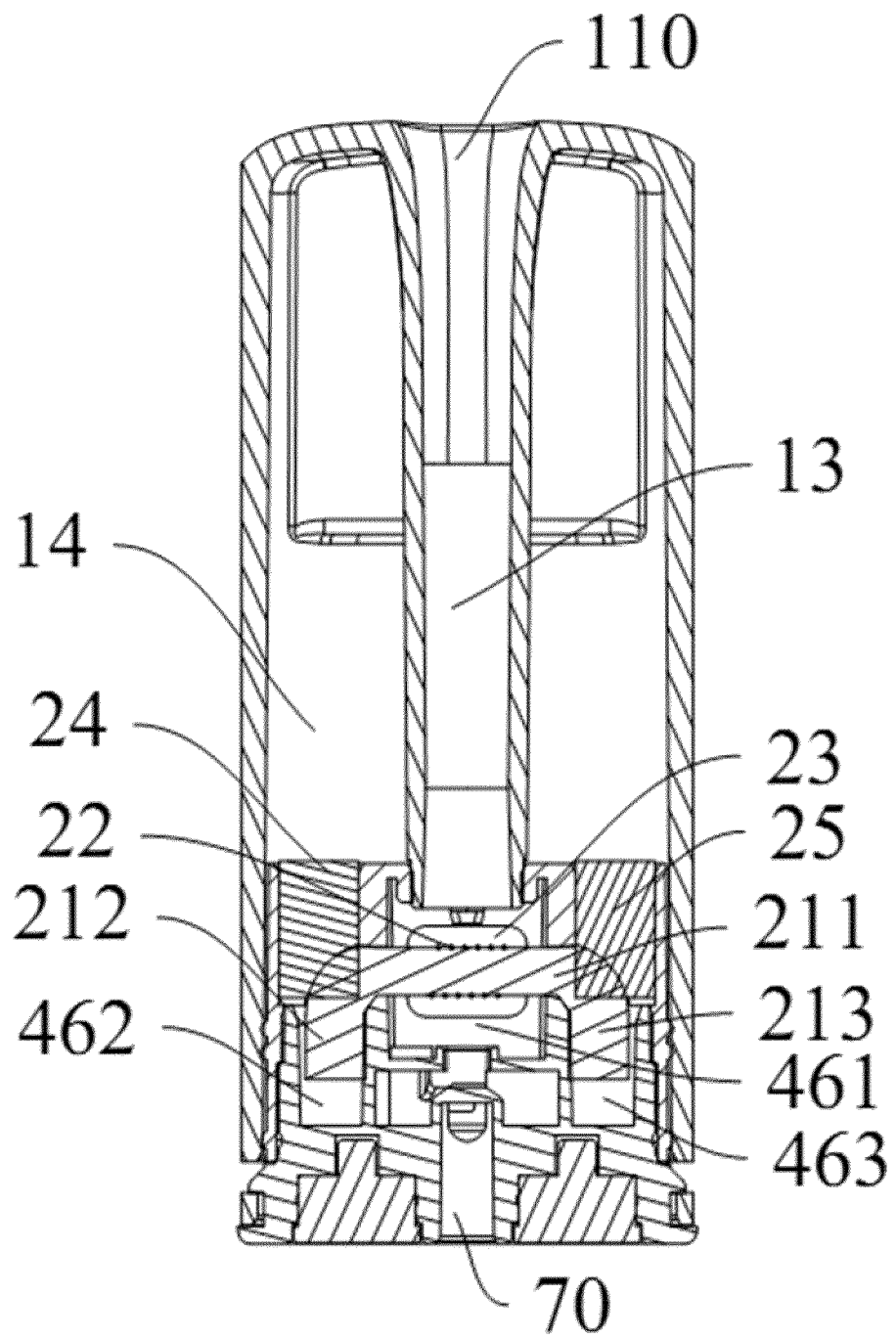


FIG. 3

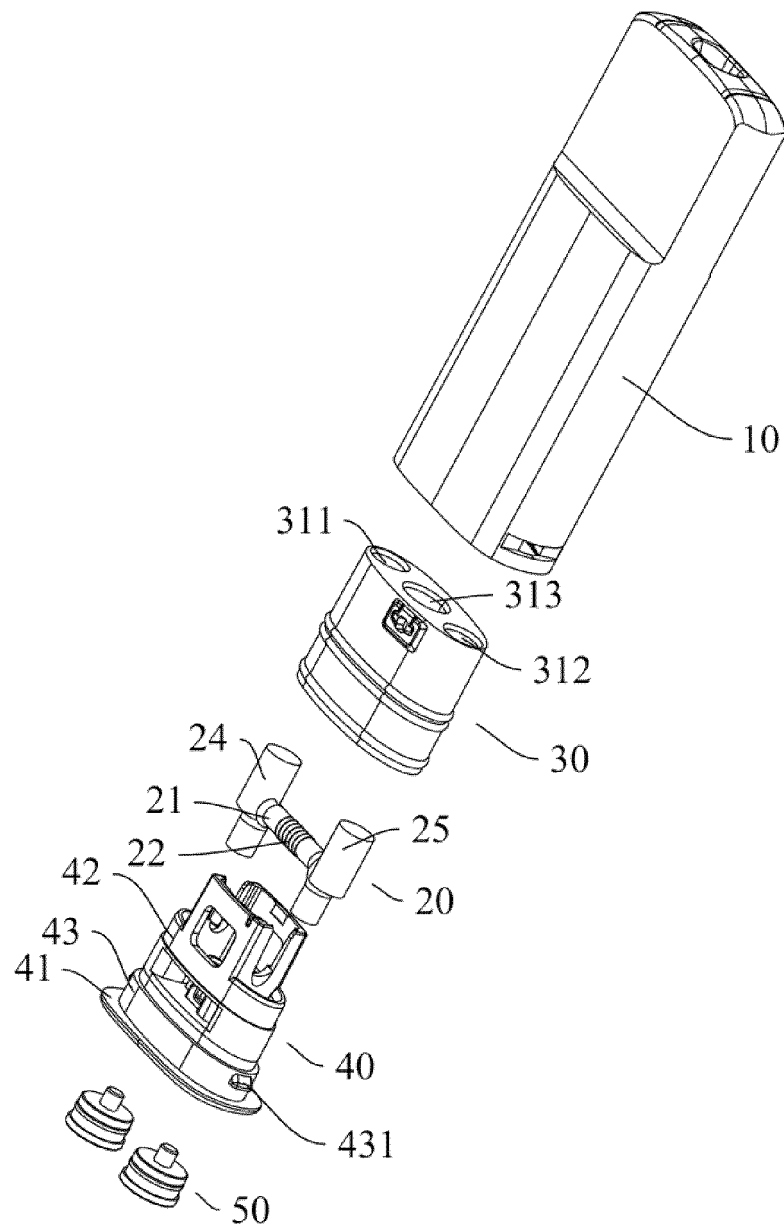


FIG. 4

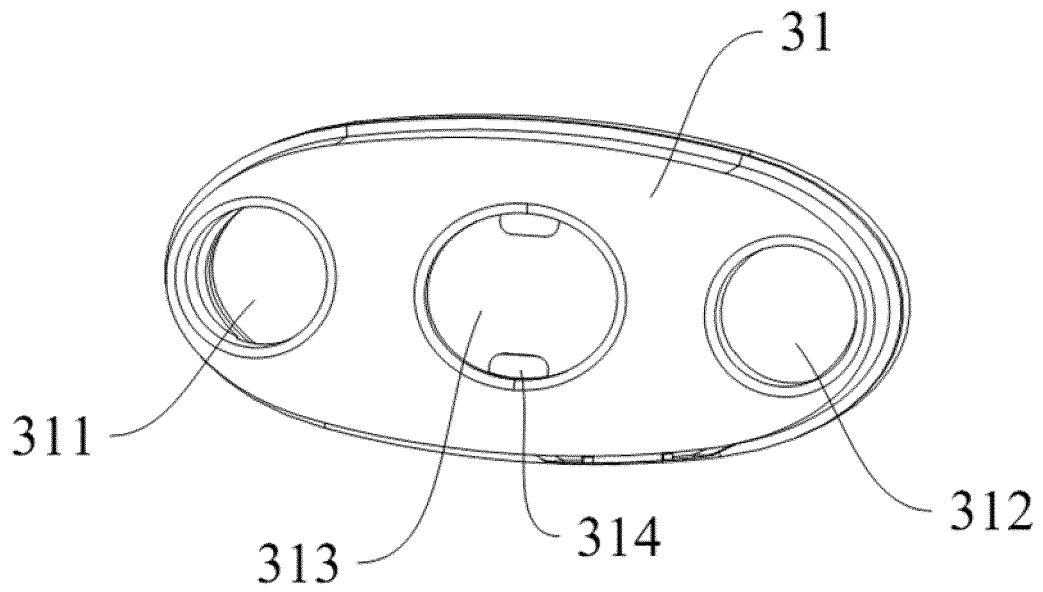


FIG. 5

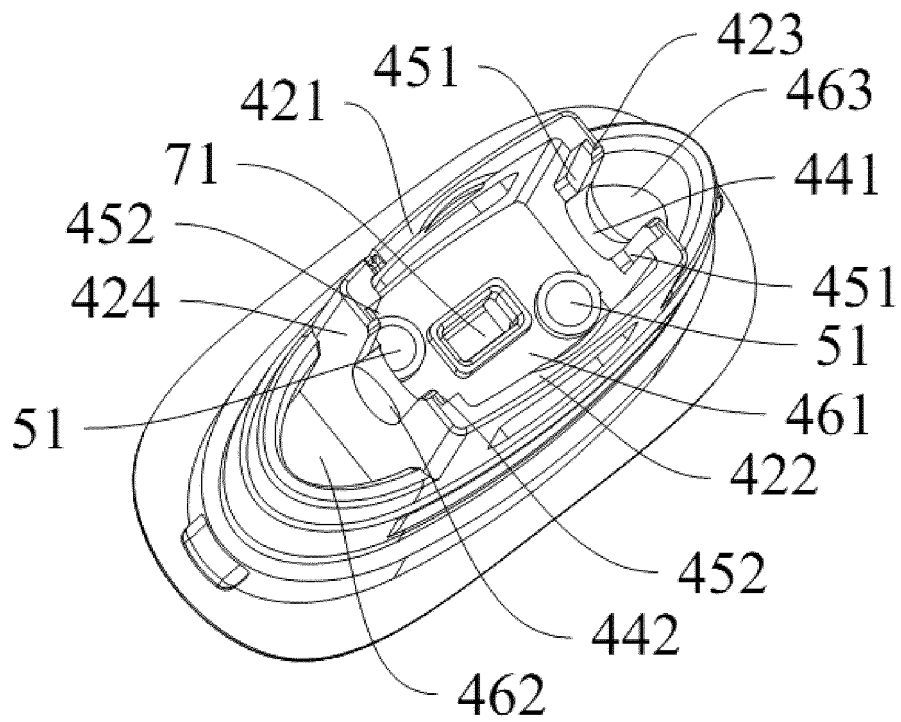


FIG. 6

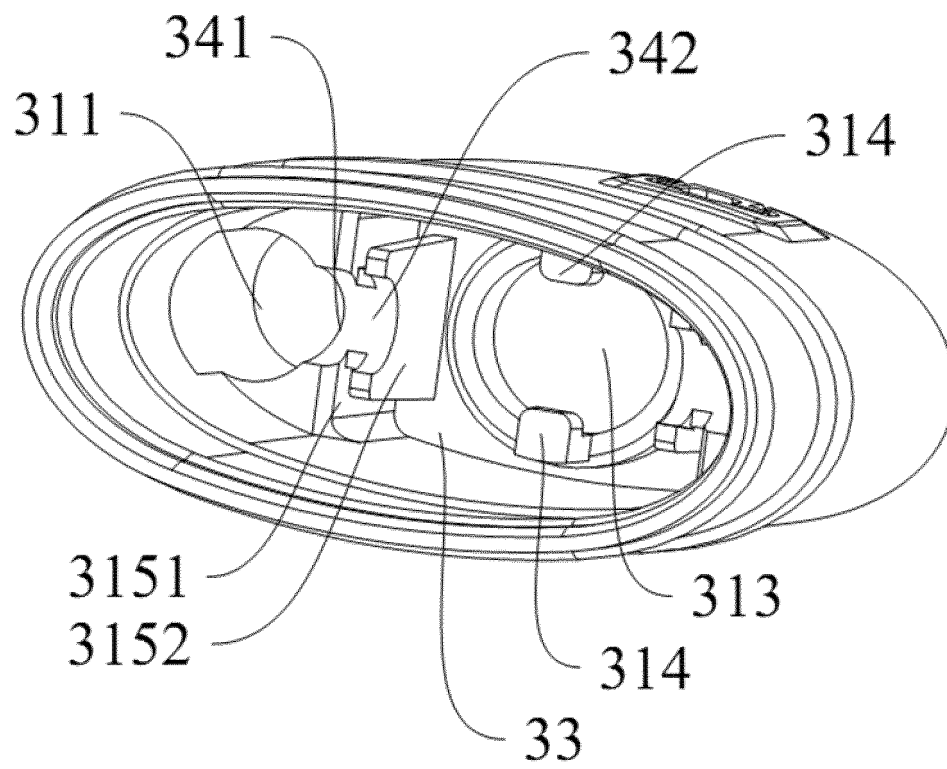


FIG. 7

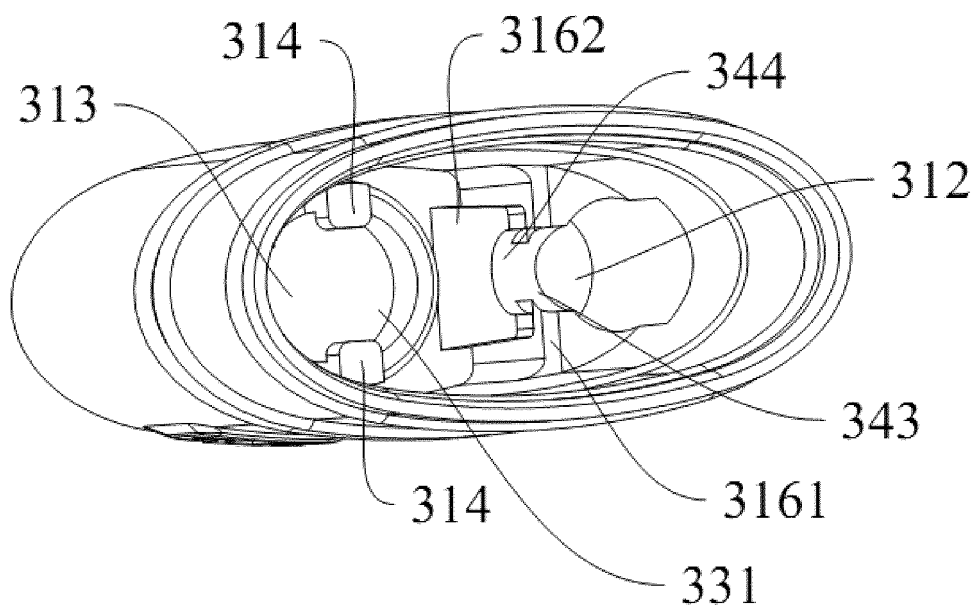


FIG. 8

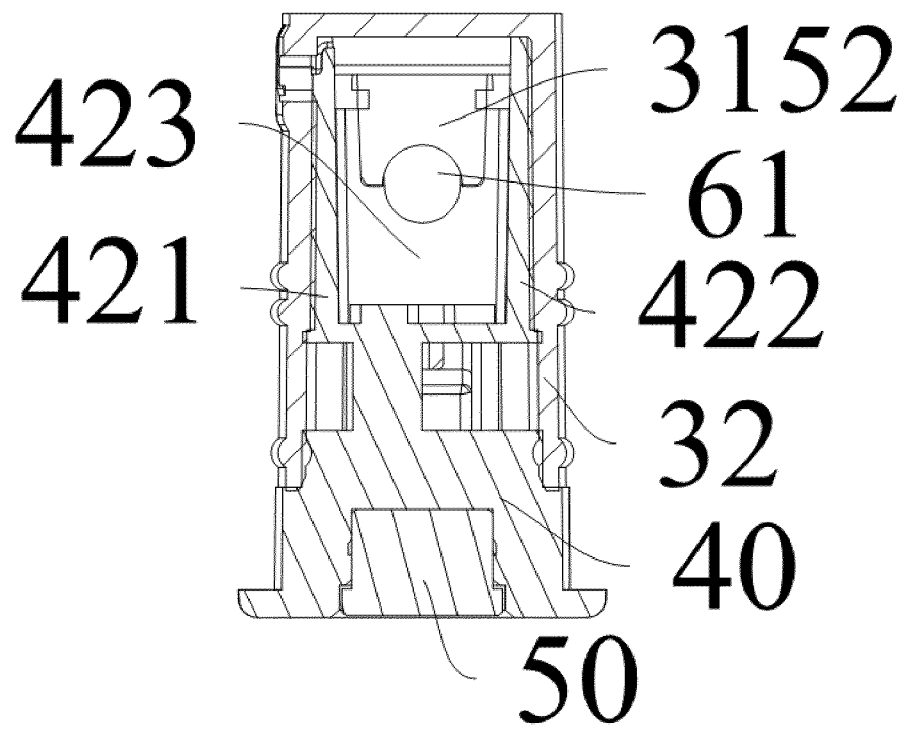


FIG. 9

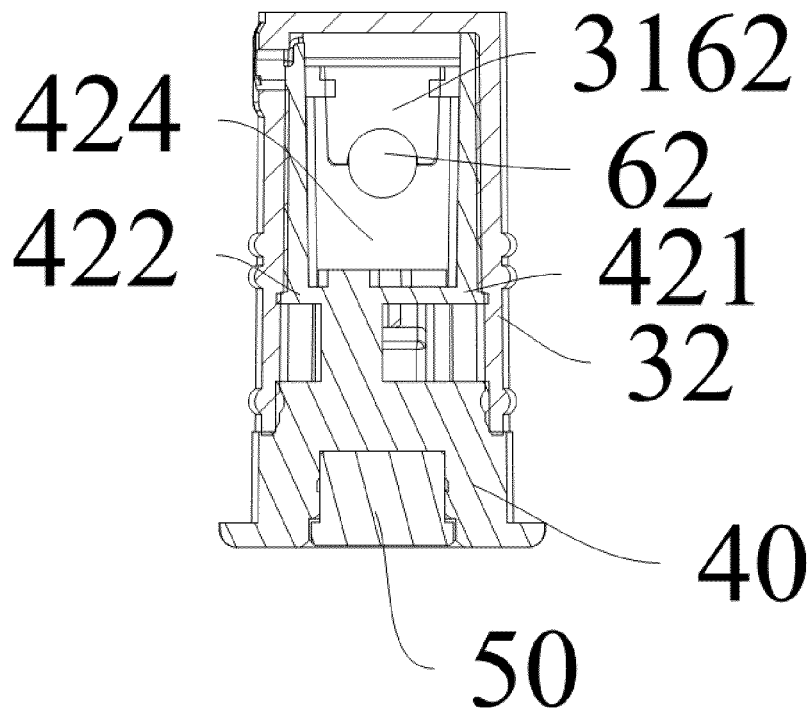


FIG. 10

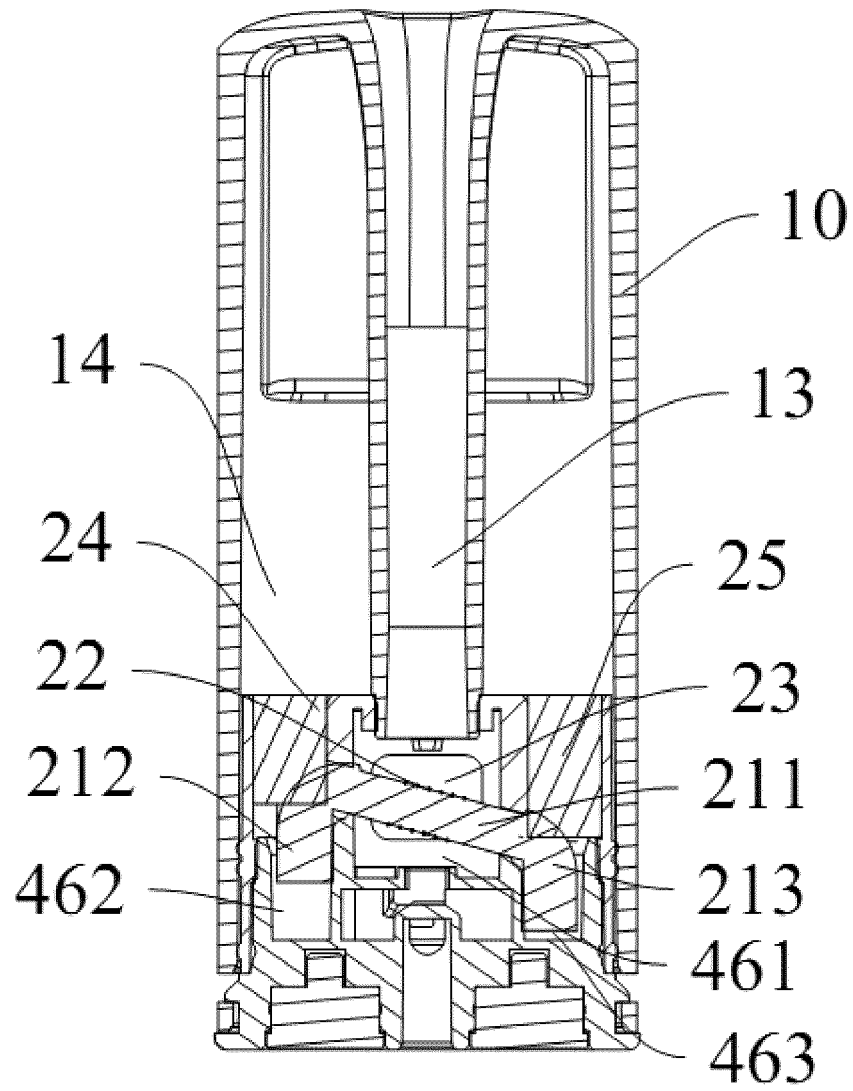


FIG. 11

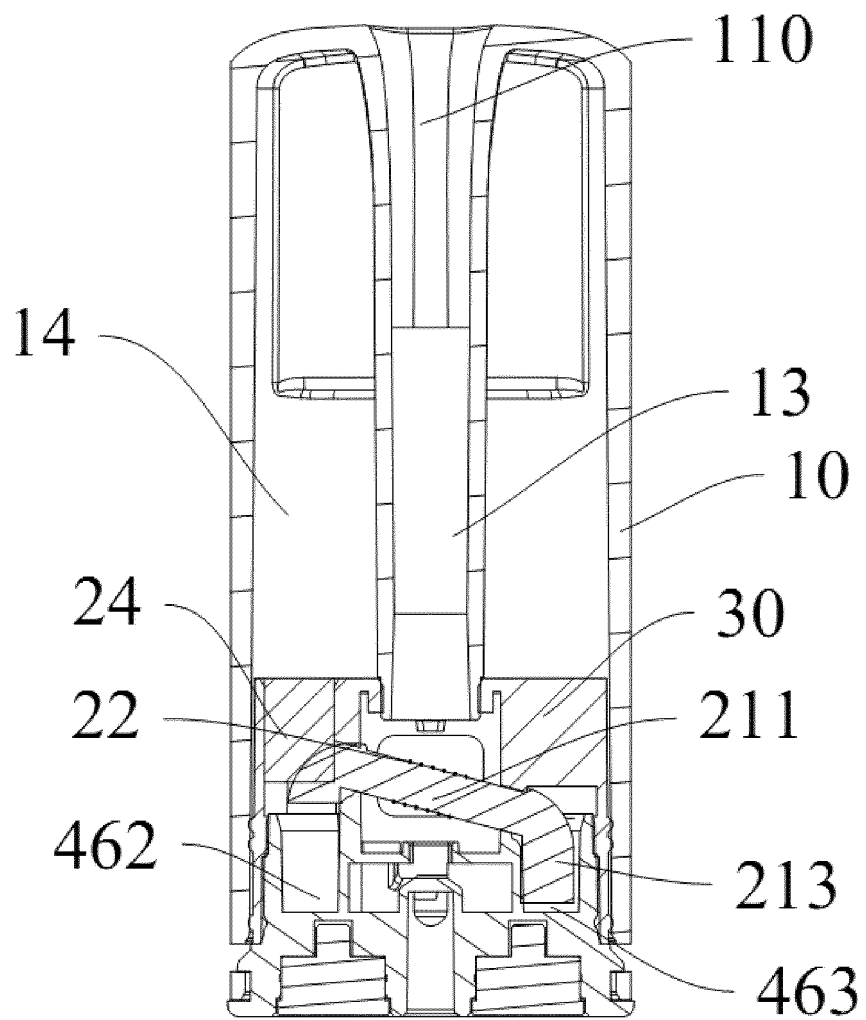


FIG. 12

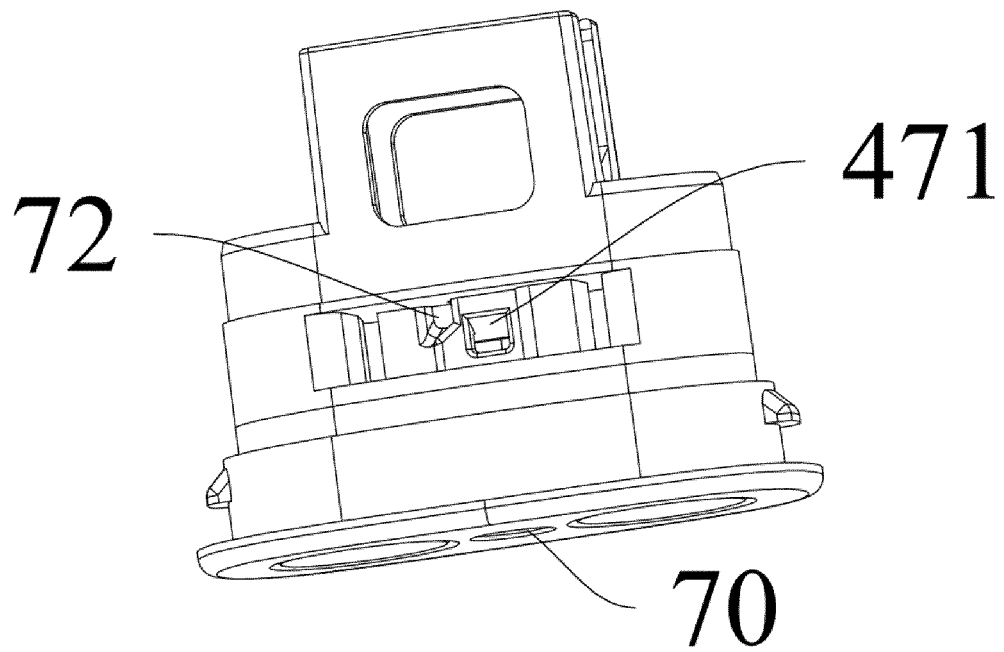


FIG. 13

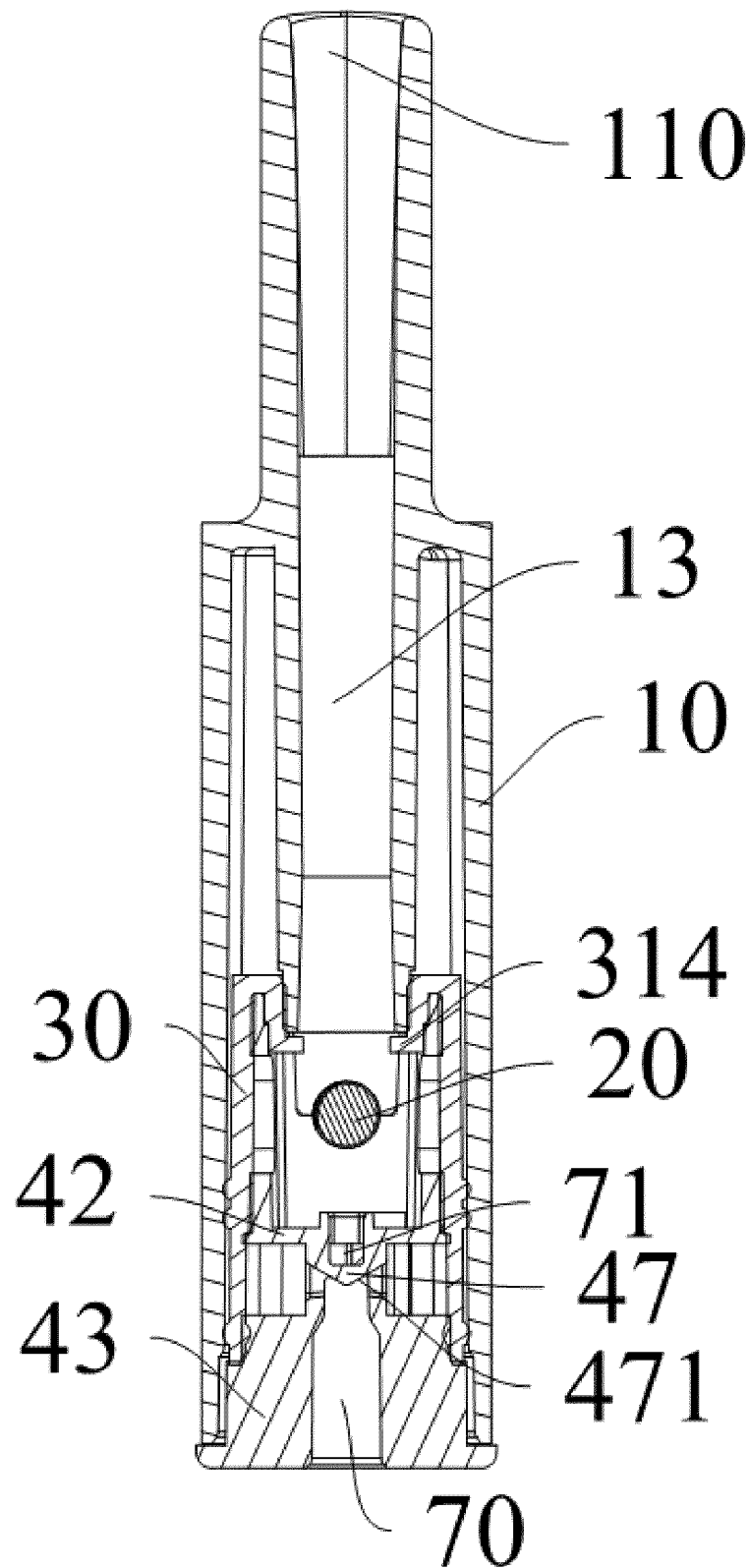


FIG. 14

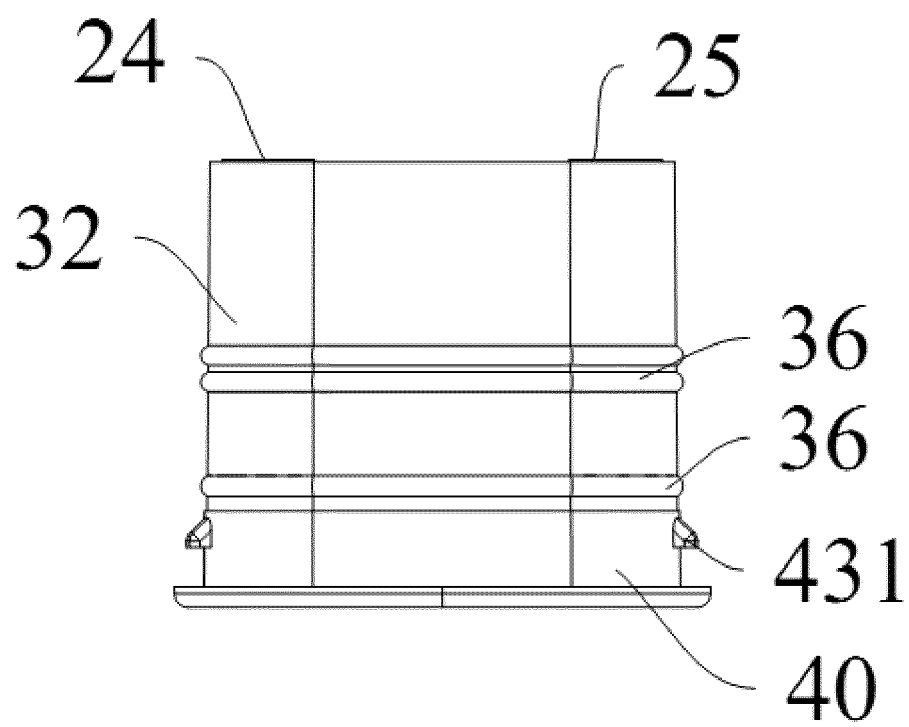


FIG. 15

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/101262

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/10(2020.01)i; A24F 40/42(2020.01)i; A24F 40/46(2020.01)i; A24F 40/40(2020.01)i; A24F 47/00(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; WPABSC; VEN; ENTXTC; JPABS: 深圳市合元科技, 李富毅, 徐中立, 李永海, 雾化, 延伸, 容纳, 容置, 缓流, 缓存, 过量, 液体基质, atomizer, extend+, prolongation, acceptance, buffer, excessive, liquid matrix

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 215684779 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 01 February 2022 (2022-02-01) claims 1-17	1-16
X	CN 212852492 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 02 April 2021 (2021-04-02) description, paragraphs [0047], [0057], [0058], [0061], [0072], [0074], [0076] and [0077], and figures 6 and 9	1-16
A	CN 106418728 A (CHANGZHOU PAITENG ELECTRONIC TECHNOLOGY SERVICE CO., LTD.) 22 February 2017 (2017-02-22) entire document	1-16
A	CN 112493546 A (SHENZHEN HUACHENGDA PRECISION INDUSTRY CO., LTD.) 16 March 2021 (2021-03-16) entire document	1-16
A	US 2019246694 A1 (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 15 August 2019 (2019-08-15) entire document	1-16

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

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

Date of the actual completion of the international search 21 August 2022	Date of mailing of the international search report 13 September 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.

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

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2022/101262

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 215684779 U	01 February 2022	None	
CN 212852492 U	02 April 2021	WO 2021254492 A1	23 December 2021
CN 106418728 A	22 February 2017	None	
CN 112493546 A	16 March 2021	CN 214431802 U	22 October 2021
US 2019246694 A1	15 August 2019	EP 3469937 A2	17 April 2019
		CN 207870276 U	18 September 2018
		US 11096422 B2	24 August 2021
		EP 3469937 A3	07 August 2019

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

REFERENCES CITED IN THE DESCRIPTION

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- CN 202110718192X [0001]