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

(57) This application provides a vaporizer and an aerosol generation apparatus. The vaporizer includes a housing, where the housing has a liquid storage cavity and a first air outlet channel; a fixing bracket, mounted inside the housing, where the fixing bracket has a liquid guide portion extending toward the liquid storage cavity, where at least a part of a surface of the liquid guide portion that faces toward the first air outlet channel is recessed to form a first recessed portion; and a vaporization assembly, fixedly mounted on the fixing bracket, and being in fluid communication with the liquid storage cavity through the liquid guide portion, where the vaporization assembly is configured to vaporize the liquid substrate to form the aerosol. In the vaporizer, a structural design of the fixing bracket and a design of the air outlet channel are simplified, so that the whole structure is simpler.

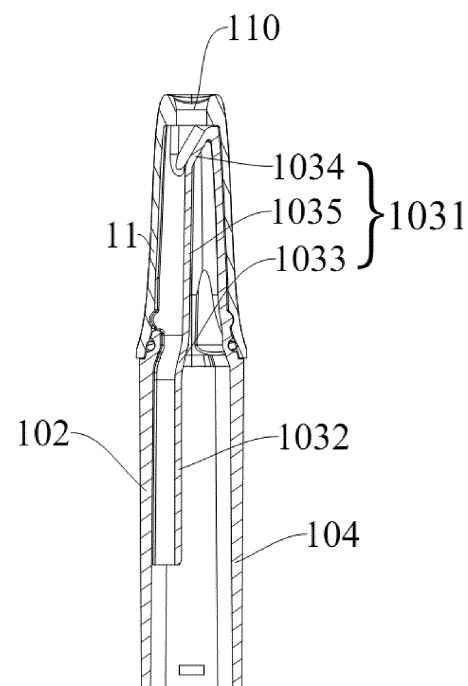


FIG. 4

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Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Chinese Patent Application No. 202110487341.6, entitled "VAPORIZER AND AEROSOL GENERATION APPARATUS" filed with the China National Intellectual Property Administration on May 5, 2021, which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] This application belongs to the field of vaporization technologies, and relates to a vaporizer and an aerosol generation apparatus.

BACKGROUND

[0003] An aerosol generation apparatus includes two parts: a vaporizer and a power supply apparatus. An end portion of the power supply apparatus is connected to the vaporizer to supply power to the vaporizer. A vaporizer with a typical structure includes a cartridge, a vaporization assembly, a fixing member for fixing a vaporization assembly, and a sealing member, where there is an air outlet channel in a middle position of the whole cartridge.

[0004] For example, in the Chinese Patent Application No. 201821397292.7, an aerosol that is formed by vaporizing a liquid substrate in a cartridge by a vaporization assembly needs to bypass a side surface of a fixing member, and then enters an air outlet channel through an air outlet hole at an upper end of a fixing base. The whole airflow path is tortuous. In addition, because the air outlet channel is located at a center of the cartridge, a complex structure needs to be designed on the fixing member and the sealing member to ensure that the liquid substrate is guided into the vaporization assembly and an airflow is output into the air outlet channel.

SUMMARY

[0005] To resolve the problem that a vaporizer in the related art has a complex structure, embodiments of this application provide a vaporizer, including a housing, where the housing has a liquid storage cavity configured to store a liquid substrate and a first air outlet channel for outputting an aerosol; and a fixing bracket, mounted inside the housing, where the fixing bracket has a liquid guide portion extending toward the liquid storage cavity, where at least a part of a surface of the liquid guide portion that faces toward the first air outlet channel is recessed to form a first recessed portion; and a vaporization assembly, fixedly mounted on the fixing bracket, and being in fluid communication with the liquid storage cavity through the liquid guide portion, where the vaporization assembly is configured to vaporize the liquid substrate

to form the aerosol.

[0006] Preferably, in the foregoing technical solution, the liquid guide portion has a liquid guide cavity, and the liquid guide cavity is in communication with the liquid storage cavity in a longitudinal direction of the housing.

[0007] Preferably, in the foregoing technical solution, a cross-sectional shape of the liquid guide portion in a direction perpendicular to an axial direction of the housing is the same as a cross-sectional shape of the liquid storage cavity in the direction perpendicular to the axial direction of the housing, and the cross-sectional shape includes an irregular ring shape.

[0008] Preferably, in the foregoing technical solution, the fixing bracket further includes an accommodating portion, and the accommodating portion is capable of accommodating at least a part of a surface of the vaporization assembly; the fixing bracket further includes a separation portion configured to separate the accommodating portion from the liquid guide portion; and at least one first liquid guide hole in communication with the liquid guide cavity is provided on the separation portion.

[0009] Preferably, in the foregoing technical solution, the accommodating portion includes a first side wall that is arranged at least partially around the vaporization assembly, at least a part of a surface of the first side wall is arranged at intervals, to form an air outlet in communication with the first air outlet channel, and the air outlet is in communication with the first air outlet channel in the longitudinal direction of the housing.

[0010] Preferably, in the foregoing technical solution, the liquid guide portion is accommodated in the liquid storage cavity, and the accommodating portion is located outside the liquid storage cavity.

[0011] Preferably, in the foregoing technical solution, the housing includes a housing front-surface and a housing rear-surface that are arranged opposite to each other, and a housing side-surface that is formed between the housing front-surface and the housing rear-surface; and the first air outlet channel is close to the housing front-surface or the housing rear-surface.

[0012] Preferably, in the foregoing technical solution, a wall configured to separate the liquid storage cavity from the first air outlet channel is arranged in the housing, and the wall includes first curved surface at least partially extending longitudinally.

[0013] Preferably, in the foregoing technical solution, the housing further includes a second curved surface arranged opposite to the first curved surface, and a curvature of the second curved surface is less than a curvature of the first curved surface; and the second curved surface and the first curved surface jointly define and form the first air outlet channel.

[0014] Preferably, in the foregoing technical solution, at least a part of the wall is transversely abutted against the first recessed portion.

[0015] Preferably, in the foregoing technical solution, a mouthpiece is further included, where the mouthpiece covers at least a part of a surface of the housing; and the

mouthpiece and the wall jointly define and form a second air outlet channel for outputting the aerosol, and the second air outlet channel is in communication with the first air outlet channel longitudinally; and a mouthpiece opening for outputting the aerosol is provided on the mouthpiece, and the mouthpiece opening is in communication with the second air outlet channel.

[0016] Preferably, in the foregoing technical solution, the first curved surface includes a first section that is at least partially arranged inclined, and a second section that at least partially extends in the longitudinal direction of the housing, where the first section is configured to define the second air outlet channel; and the second section is configured to define the first air outlet channel.

[0017] Preferably, in the foregoing technical solution, the first section includes an inclined section, and an angle between the inclined section and a longitudinal axis of the housing is an acute angle.

[0018] Preferably, in the foregoing technical solution, a sealing sleeve is further included. The sealing sleeve is sleeved on the liquid guide portion, and a second recessed portion matching the first recessed portion is arranged on the sealing sleeve.

[0019] Preferably, in the foregoing technical solution, the second recessed portion is located between the wall and the first recessed portion.

[0020] Preferably, in the foregoing technical solution, a sealing member is further included, where the sealing member is arranged between the fixing bracket and the vaporization assembly; and several convex ribs are arranged on a surface of the sealing member facing toward the vaporization assembly.

[0021] Preferably, in the foregoing technical solution, an air inlet member for the external air to enter is further included, where at least a part of the air inlet portion extends in a longitudinal direction of the housing, and at least a part of a surface of the air inlet member is abutted against the sealing member.

[0022] This application further provides an aerosol generation apparatus, including the foregoing vaporizer and a power supply apparatus providing electric drive for the vaporizer.

[0023] Beneficial effects of this application is optimizing structural designs of the fixing bracket and the air outlet channel, so that the whole structure of the vaporizer is simpler.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024]

FIG. 1 is a schematic structural diagram of an aerosol generation apparatus according to an embodiment of this application;

FIG. 2 is a three-dimensional diagram of a vaporizer according to an embodiment of this application;

FIG. 3 is a cross-sectional view of a housing from one perspective according to an embodiment of this

application;

FIG. 4 is a cross-sectional view of a housing from another perspective according to an embodiment of this application;

FIG. 5 is a side cross-sectional view of a vaporizer according to an embodiment of this application;

FIG. 6 is an exploded view of a vaporizer from one perspective according to an embodiment of this application;

FIG. 7 is an exploded view of a vaporizer from another perspective according to an embodiment of this application;

FIG. 8 is a three-dimensional diagram of a fixing bracket from one perspective according to an embodiment of this application;

FIG. 9 is a three-dimensional diagram of a fixing bracket from another perspective according to an embodiment of this application;

FIG. 10 is a three-dimensional diagram of a sealing member from one perspective according to an embodiment of this application;

FIG. 11 is a three-dimensional diagram of a sealing member from another perspective according to an embodiment of this application;

FIG. 12 is a three-dimensional diagram of an end cap according to an embodiment of this application; and

FIG. 13 is a cross-sectional view of a housing from still another perspective according to an embodiment of this application.

DETAILED DESCRIPTION

[0025] This application is further described with reference to the embodiments below.

[0026] This application provides an aerosol generation apparatus, which, as shown in FIG. 1 and FIG. 2, includes a vaporizer 100 and a power supply apparatus 200. A liquid substrate is stored in the vaporizer 100, and the liquid substrate may be vaporized to form an aerosol. The power supply apparatus 200 provides power supply for the vaporizer 100. The vaporizer 100 may be fixedly or separably connected to the power supply apparatus 200. In an embodiment of this application, the vaporizer 100 is separably connected to the power supply apparatus 200. A buckle 13 is arranged on a side wall of a housing 10 of the vaporizer 100, and the vaporizer 100 is stably connected to the power supply apparatus 200 by the buckle 13. The power supply apparatus 200 may be divided into two parts longitudinally. A first part 201 can accommodate at least a part of a surface of the vaporizer 100, and a second part 202 can accommodate other components, such as a battery, a control module, and a charging module, included in the power supply apparatus.

[0027] Referring to FIG. 2 and FIG. 3, the vaporizer 100 includes the housing 10 that longitudinally extends and a mouthpiece 11 at least partially covering a surface

of the housing 10. An end portion of the mouthpiece 11 has a mouthpiece opening 110 for outputting an aerosol to the outside of the vaporizer 100. The housing 10 may be divided into two sections longitudinally, which are respectively a first-section housing 101 and a second-section housing 102. The mouthpiece 11 is sleeved on the first-section housing 101, and a protrusion 1011 is arranged on a part of an outer surface of the first-section housing 101, a shallow groove matching the protrusion 1011 is provided at a corresponding position of the mouthpiece 11, and the shallow groove is fixedly connected to the protrusion 1011. Further, located below the protrusion 1011, a sealing ring 16 is further sleeved on an upper end of the second-section housing 102, to fix the mouthpiece 11 on an outer surface of the housing 10, thereby maintaining a sealed connection between the mouthpiece 11 and the housing 10. It may be understood that the mouthpiece 11 and the housing 10 may be integrally formed through injection molding. The second-section housing 102 has a hollow inner cavity 1021 in which another component of the vaporizer 100 may be fixedly mounted.

[0028] Referring to FIG. 4, FIG. 5, and FIG. 13, the first-section housing 101 has a wall 107 inside. The wall 107 may be formed by recessing a part of a surface of the first-section housing 101 inward, or may be separately arranged and connected to the first-section housing 101. The wall 107 includes a first curved surface 103 at least partially extending in a longitudinal direction of the housing 10, and the first curved surface 103 extends from an end portion into the inner cavity of the second-section housing 102. The first curved surface 103 may be divided into two sections longitudinally. A first section 1031 of the first curved surface 103 forms a groove on the surface of the first-section housing 101, and a second section 1032 of the first curved surface 103 extends into the inner cavity of the second-section housing 102. The second-section housing 102 is enclosed and formed by a second curved surface 104. At least a part of a surface of the second curved surface 104 is covered over the first curved surface 103, the second curved surface 104 is arranged opposite to the first curved surface 103, and a curvature of the second curved surface 104 is less than a curvature of the first curved surface 103. The second section 1032 of the first curved surface 103 and the second curved surface 104 jointly define and form a first air outlet channel 141 for outputting the aerosol, and the first section 1031 of the first curved surface 103 and the mouthpiece 11 jointly define and form a second air outlet channel 142 for outputting the aerosol. The first air outlet channel 141 is in communication with the second air outlet channel 142 in the longitudinal direction of the housing 10, and the first air outlet channel 141 and the second air outlet channel 142 are close to a front side of or a rear side of the outer surface of the housing 10. The second air outlet channel 142 is in communication with the mouthpiece opening 110. At least a part of the inner cavity 1021 of the second-section housing 102 forms a liquid

storage cavity 12 for storing the liquid substrate. The liquid storage cavity 12 is longitudinally separated from the first air outlet channel 141 by the wall 107.

[0029] Further, referring to FIG. 3 and FIG. 4, at least a part of the first section 1031 of the first curved surface 103 is arranged inclined, and forms an acute angle with a long-axis direction of the housing 10. Specifically, a connection section between the first section 1031 and the second section 1032 is a first inclined section 1033, and a first angle between the first inclined section 1033 and a long axis of the housing 10 is an acute angle. A connection section between the first section 1031 and an outer wall of the first-section housing 101 is a second inclined section 1034, and a second angle between the second inclined section 1034 and the long axis of the housing is also an acute angle. The first section 1031 includes the first inclined section 1033, the second inclined section 1034, and an intermediate section 1035 connecting the first inclined section 1033 and the second inclined section 1034. The intermediate section 1035 may form a third angle with the long axis of the housing 10, or may be arranged parallel to the long-axis direction of the housing 10, where the third angle is also an acute angle. The first inclined section 1033 and the second inclined section 1034 are arranged in the first section 1031 of the first curved surface 103, so that a mold can be conveniently manufactured. In addition, because the first air outlet channel 141 and the second air outlet channel 142 are both arranged close to the front side or the rear side of the outer surface of the housing 10, the first section 1031 of the first curved surface 103 is arranged inclined toward the mouthpiece opening 110, so that after being output from the first air outlet channel 141, the aerosol is output from the shortest second air outlet channel 141 as soon as possible to the mouthpiece opening 110, which improves vaporization efficiency.

[0030] Referring to FIG. 2 to FIG. 7, the outer surface of the housing 10 includes a housing front-surface 1051 and a housing rear-surface 1052 that are arranged opposite to each other, and a housing side-surface 106 that is formed between the housing front-surface 1051 and the housing rear-surface 1052. The liquid storage cavity 12 and the first air outlet channel 141 are both located on the housing front-surface 1051 or the housing rear-surface 1052. The first curved surface 103 is close to a front surface of the first-section housing 101, which is more beneficial for the aerosol to be output through the shortest path to the mouthpiece opening 110, thereby preventing the aerosol from forming a condensate inside the first air outlet channel 141 and the second air outlet channel 142.

[0031] A vaporization assembly 40 that can vaporize the liquid substrate to form an aerosol and a fixing bracket 20 for fixedly mounting the vaporization assembly 40 are fixedly mounted in the second-section housing 102. Referring FIG. 5 to FIG. 9, the fixing bracket 20 is fixedly mounted below the liquid storage cavity 12, and has a liquid guide portion 21 arranged facing toward the liquid

storage cavity 12. At least a part of the liquid guide portion 21 extends into the liquid storage cavity 12, and an inner wall of the liquid guide portion 21 encloses and forms a liquid guide cavity 211 that is in fluid communication with the liquid storage cavity 12. A part of a surface of the liquid guide portion 21 in contact with the second section 1032 of the first curved surface 103 is recessed inward to form a first recessed portion 22, and the first recessed portion 22 is transversely abutted against a part of an outer surface of the wall 107. In addition, a cross-sectional shape of the liquid guide cavity 211 in a direction perpendicular to an axial direction of the housing 10 is the same as a cross-sectional shape of the liquid storage cavity 12 in the direction perpendicular to the axial direction of the housing 10. In this embodiment, because the housing 10 is flat, and the first curved surface 103 is recessed inward, the cross-sectional shape of the liquid guide cavity 211 corresponding to the liquid storage cavity 12 is an irregular ring. When shapes of the housing 10 and the first curved surface 103 change, the corresponding cross-sectional shape is adjusted accordingly.

[0032] To enhance sealing performance, a sealing sleeve 15 is sleeved on an outer wall surface of an upper end of the liquid guide portion 21. The sealing sleeve 15 is arranged close to the liquid storage cavity 12, and is preferably made of flexible silicone, so that a sealed connection is formed between the liquid guide portion 21 and an inner wall of the housing 10. Because a part of the surface of the liquid guide portion 21 is recessed inward, the corresponding sealing sleeve 15 has a second recessed portion 151. Further, to prevent the liquid substrate from leaking downward, a plurality of capillary grooves 201 are arranged transversely on the whole outer wall surface of the fixing bracket 20. It may be understood that the capillary grooves 201 may alternatively be arranged longitudinally or staggered transversely and longitudinally. The capillary groove 201 can further prevent the liquid substrate from leaking downward. In addition, the capillary groove 201 can absorb a condensate formed through condensation of the aerosol on the outer wall of the fixing bracket 20 or leaking from an inner wall of the air outlet channel, to keep the condensate inside the capillary groove 201.

[0033] The fixing bracket 20 further includes an accommodating portion 23 that can accommodate the vaporization assembly 40. The accommodating portion 23 includes a first side wall 231 surrounding at least a part of a surface of the vaporization assembly 40. The first side wall 231 encloses and forms a first accommodating cavity 232. The fixing bracket 20 further includes a separation portion 24 separating the liquid guide cavity 211 from the accommodating cavity 231. The wall 107 longitudinally extends into the inner cavity 1021 of the second-section housing, and is stopped by an upper end surface 241 of the separation portion 24.

[0034] The vaporization assembly 40 includes a porous body 41 and a heating element 42 that heats the liquid substrate absorbed by the porous body 41. The

porous body 41 may be made of a hard capillary structure such as porous ceramic, porous glass ceramic, and porous glass. The porous body 41 can absorb the liquid substrate. In this application, a porous ceramic material is preferred, which is generally formed by sintering components, such as an aggregate, an adhesive, and a pore former at a high temperature, and has a large quantity of pore structures inside, where the pore structures are in communication with each other and in communication with a surface of the material. The liquid substrate may penetrate into the porous body through a surface of the porous body, and be vaporized by the heating element 42 to form an aerosol. The heating element 42 may be a heating coating layer, a heating sheet, or a heating mesh. The heating coating layer may include, but is not limited to, an electromagnetic induction heating coating, an infrared induction heating coating, and the like. The heating sheet or the heating mesh is embedded and mounted on the surface of the porous body. In this application, the heating element is preferably formed on the surface of the porous body 40 by mixing conductive raw material powder with a printing aid into a slurry and then, sintering after printing, and has effects of high vaporization efficiency, a small heat loss, and preventing or greatly reducing dry burning. In some embodiments, the heating element 42 may be made of a material such as stainless steel, nickel chromium alloy, iron chromium aluminum alloy, or metallic titanium.

[0035] A shape of the porous body 41 is constructed into a substantially block-shaped structure in this embodiment, a top surface of the porous body 41 is substantially H-shaped, a left side surface and a right side surface of the porous body 41 are substantially U-shaped, a front surface, a rear surface, and a bottom surface of porous body 41 are square, and a through trough 411 is formed in the middle of the porous body 41. The through trough may be configured to temporarily store the liquid substrate, to improve a speed of diffusion of the liquid substrate inside the porous body 41. A specific shape of the porous body 41 may change according to a requirement, and is not limited to a specific shape. A surface of a bottom wall of the whole through trough 411 forms a liquid absorbing surface, the heating element 42 is shaped on a bottom surface, and the bottom surface is a vaporization surface 412.

[0036] A sealing member 30 is further arranged between the accommodating portion 23 and the vaporization assembly 40. The sealing member 30 is preferably made of flexible silicone, so that a sealed and fixed connection is formed between the accommodating portion 22 and the vaporization assembly 40. Referring to FIG. 10 and FIG. 11, the sealing member 30 includes an upper surface 301 in contact with the separation portion 24 and a second side wall 302 abutting against an inner wall of the accommodating portion 23. Two convex edges 31 are symmetrically arranged on the second side wall 302, and the two convex edges 31 extend in the longitudinal direction of the housing. Two first shallow grooves 233

are correspondingly provided on inner walls of the accommodating portion 23 on two sides, so side surfaces on which the fixing bracket 20 and the sealing member 30 are in contact with each other are engaged with each other. The sealing sleeve 15, the sealing member 30, and the fixing bracket 20 may be separately prepared and be fixed and assembled, or the sealing sleeve 15 or the sealing member 30 is formed or the both are jointly formed on the fixing bracket 20 through a liquid-silicone secondary injection molding process, and directly integrally formed through injection molding, which is convenient for subsequent assembly and provides sealing reliability.

[0037] The side wall 302 of the sealing member 30 encloses and forms a second accommodating cavity 33 accommodating at least a part of a surface of the porous body 41. To conveniently seal and fix the porous body 41, the inner wall of the sealing member 30 has several convex ribs 34 that match an edge shape of the porous body 41 and that are closed form a ring. An outer surface of the porous body 41 may be directly abutted against the convex rib 34, to come into tight contact with the sealing member 30.

[0038] Referring to FIG. 5 to FIG. 7, the liquid guide cavity 211 of the liquid guide portion 21 is in contact with and in fluid communication with the liquid storage cavity 12. Two first liquid guide holes 244 are provided on left and right sides of the separation portion 24, and two second liquid guide holes 35 are provided at corresponding positions on an upper surface of the sealing member 30. The liquid substrate in the liquid storage cavity 12 can enter the through trough 411 of the porous body through the liquid guide cavity 211, the first liquid guide hole 244, and the second liquid guide hole 35. Because the liquid guide portion 21 is directly arranged as an open liquid guide cavity 211, a contact area and a transfer area of the liquid are significantly increased, which greatly improves transfer efficiency of the liquid substrate. Quantities of the first liquid guide holes 244 and the second liquid guide holes 35 may be adjusted according to a specific structure, and are not limited herein.

[0039] Referring to FIG. 5, FIG. 6, FIG. 7, and FIG. 12, an end cap 50 is fixedly mounted on an other end of the housing 10 facing away from the mouthpiece opening 110, and a bottom end of the end cap 50 can cover an opening end of the second-section housing 102. The end cap 50 includes a main body portion 51 and connecting arms 52 arranged on two sides of the main body portion 51. A buckle 511 for being fixed to the housing 10 is arranged on an outer wall surface of the main body portion 51, a sealing ring 16 is sleeved above the buckle 511, and the end cap 50 can be sealed and fixed in the housing 10 by the buckle 511 and the sealing ring 16. Notches 521 are provided on both the connecting arms 52 on the two sides, two outer wall surfaces on two sides of the accommodating portion 23 of the fixing bracket protrude outward to form buckles 234, and the end cap 50 is fixedly connected to the fixing bracket 20 by the

notches 521 and the buckles 234 on the two sides. Two electrode column holes 513 are provided on the main body portion 51 of the end cap 50, and an electrode 60 may be fixedly mounted in the electrode column hole 513, and longitudinally extends to the heating element 42 on the vaporization surface 412 for connection. The vaporizer 100 and the power supply apparatus 200 are electrically connected to each other by respective electrodes 60.

[0040] The vaporization surface 412 and the main body portion 51 of the end cap jointly define and form a vaporization cavity 43. The accommodating portion 23 includes a first side wall 231 arranged around the porous body 41, and the first side wall 231 is arranged at intervals, forming an air outlet 25. One end of the air outlet 25 is connected to the vaporization cavity 43, and an other end of the air outlet 25 is connected to the first air outlet channel 141. The second side wall 302 of the sealing member 30 is also arranged at intervals at a position opposite to the air outlet 25, to expose at least a part of the surface of the porous body 41. At least a part of the air outlet 25 longitudinally extends and is stopped by an upper surface 241 of the separation portion, and is in communication with the first air outlet channel 141 longitudinally. The aerosol formed on the vaporization surface 412 can directly enter the air outlet 25, and enters the first air outlet channel 141 through the air outlet 25 in the longitudinal direction of the housing 10. Because the first air outlet channel 141 is arranged on the front surface of the housing 10, and the air outlet 25 arranged on the fixing bracket 20 is directly in communication with the first air outlet channel 141 longitudinally, after being output from the air outlet 25, the aerosol does not need to bypass the surface of the fixing bracket 20, the aerosol formed on the vaporization surface 412 can enter the first air outlet channel 141 through a shorter airflow path, and the first air outlet channel 141 and the second air outlet channel 142 are arranged nearly parallel to the longitudinal direction of the housing 10. A distance of the whole path of outputting the aerosol is short, so that the condensate is not easily formed. Preferably, a capillary groove or a blocking portion that can buffer liquid may be arranged on the first curved surface 103 of the wall 107, to further prevent the condensate from being output to the outside of the vaporizer 100 through the mouthpiece opening 110.

[0041] Only a separate liquid guide hole needs to be designed on the whole fixing bracket 20 and the sealing member 30, and it is unnecessary to further design an air outlet hole in communication with the air outlet channel 14, which simplifies the structures of the fixing bracket 30 and the sealing member 30. In addition, the fixing bracket 20, the sealing member 30, and the sealing sleeve 15 fixed on the liquid guide portion 21 may be integrally formed through liquid-silicone injection molding, which leads to convenient mounting, and simplifies the structural design of the whole vaporizer 100 and mounting procedures. An air inlet member 53 for the ex-

ternal air to enter is further arranged in the housing 10. The air inlet member 53 may be separately arranged, or may be arranged on the end cap 50, which is not limited herein. Preferably, the air inlet member 53 is arranged between the two electrode column holes 513, and longitudinally extends upward from at least a part of an inner side wall of the main body portion 51 to be abutted against a part of an inner surface of the sealing member 30. Further, a top end surface of the air inlet member 53 is arranged protruding from a top end surface of the main body portion 51 of the end cap, and a part of an inner wall surface of the sealing member 30 is recessed inward, to form a second shallow groove 36. The second shallow groove 36 can accommodate at least a part of a surface of the air inlet member 53. Because an air outlet end of the air inlet member 53 is arranged facing toward the vaporization surface 412, and the top end surface of the air inlet member 53 is close to the vaporization surface 412, so that the external air can be fast transferred to the vaporization surface 412, thereby improving the vaporization efficiency.

[0042] The inner wall surface of the main body portion 51 encloses and forms a buffer region 514, and the buffer region 514 is arranged opposite to the vaporization surface 412 of the porous body 41. The condensate formed when the aerosol in the vaporization cavity 43 is cooled may be stored in the buffer region 514. The air inlet member 53 includes two air inlet holes 531, and the external air may directly enter the vaporization cavity 43 through the air inlet hole 531. To prevent the condensate from leaking from the air inlet hole 531, a projection plane of the air inlet hole 531 perpendicular to the longitudinal direction of the housing 10 does not overlap with a projection plane of the vaporization surface 412 perpendicular to the longitudinal direction of the housing 10. An arc-shaped liquid guide inclined surface 532 is arranged downward from the top end surface of the air inlet member 531. The liquid guide inclined surface 532 is arranged facing toward the buffer region 514, and the condensate near the air inlet hole 531 may enter the buffer region 514 along the liquid guide inclined surface 532. The two air inlet holes 531 are located on the liquid guide inclined surface 532, and it is difficult for the liquid to enter the air inlet holes 531 along a surface around the air inlet holes 531. A part of a wall surface of the air inlet member 53 is recessed inward, to form a liquid guide groove 533. The liquid guide groove 533 is in communication with the liquid guide inclined surface 532 sequentially, and the liquid substrate directly enters the liquid guide groove 533 along the liquid guide inclined surface 532, and flows into the buffer region 514.

[0043] Further, the air inlet member 53 is arranged on one side of the porous body 41, and the air outlet 25 of the fixing bracket 20 for outputting the aerosol is provided on an other side surface of the porous body 41, so that the one side is for air inlet, the other side is for air outlet, and a cool airflow and a hot airflow are transferred through different regions, thereby reducing formation of

the condensate and improving the vaporization efficiency.

[0044] In the vaporizer 100, because the first air outlet channel 141 and the second air outlet channel 141 are defined and formed by the first curved surface 103 that is formed by recessing a part of the housing 10, are close to the front surface or the rear surface of the housing 10, and are separated from the liquid storage cavity 12, the aerosol can directly enter the first air outlet channel 141 longitudinally through the air outlet 25 on the front surface of the vaporization assembly without bypassing the fixing bracket 20, which improves the vaporization efficiency. An air outlet hole in communication with the first air outlet channel 141 does not need to be separately provided on the fixing bracket 20 and the sealing member 30, which optimizes the structures of the fixing bracket 20 and the sealing member 30.

[0045] This literal description discloses this application using examples, including the best mode, and also enables a person skilled in the art to make and use this application. The patentable scope of this application is limited by the claims and may include other examples conceived by a person skilled in the art. Such other examples are intended to fall within the scope of the claims if such other examples have structural elements that do not differ from the literal language of the claims, or if such other examples include equivalent structural elements that do not differ substantially from the literal language of the claims. All citations referenced herein are incorporated herein by reference to an extent of not causing inconsistency.

Claims

1. A vaporizer, comprising:

a housing, wherein the housing has a liquid storage cavity configured to store a liquid substrate and a first air outlet channel for outputting an aerosol; and
a fixing bracket, mounted inside the housing, wherein the fixing bracket has a liquid guide portion extending toward the liquid storage cavity, wherein
at least a part of a surface of the liquid guide portion that faces toward the first air outlet channel is recessed to form a first recessed portion; and
a vaporization assembly, fixedly mounted on the fixing bracket, and being in fluid communication with the liquid storage cavity through the liquid guide portion, wherein the vaporization assembly is configured to vaporize the liquid substrate to form the aerosol.

2. The vaporizer according to claim 1, wherein the liquid guide portion has a liquid guide cavity, and the liquid

guide cavity is in communication with the liquid storage cavity in a longitudinal direction of the housing.

3. The vaporizer according to claim 1, wherein a cross-sectional shape of the liquid guide portion in a direction perpendicular to an axial direction of the housing is the same as a cross-sectional shape of the liquid storage cavity in the direction perpendicular to the axial direction of the housing, and the cross-sectional shape comprises an irregular ring shape.

4. The vaporizer according to claim 2, wherein the fixing bracket further comprises an accommodating portion, and the accommodating portion is capable of accommodating at least a part of a surface of the vaporization assembly;

the fixing bracket further comprises a separation portion configured to separate the accommodating portion from the liquid guide portion; and at least one first liquid guide hole in communication with the liquid guide cavity is provided on the separation portion.

5. The vaporizer according to claim 4, wherein the accommodating portion comprises a first side wall that is arranged at least partially around the vaporization assembly, at least a part of a surface of the first side wall is arranged at intervals, to form an air outlet in communication with the first air outlet channel, and the air outlet is in communication with the first air outlet channel in the longitudinal direction of the housing.

6. The vaporizer according to claim 4, wherein the liquid guide portion is accommodated in the liquid storage cavity, and the accommodating portion is located outside the liquid storage cavity.

7. The vaporizer according to claim 1, wherein the housing comprises a housing front-surface and a housing rear-surface that are arranged opposite to each other, and a housing side-surface that is formed between the housing front-surface and the housing rear-surface; and the first air outlet channel is close to the housing front-surface or the housing rear-surface.

8. The vaporizer according to claim 1, wherein a wall configured to separate the liquid storage cavity from the first air outlet channel is arranged in the housing, and the wall comprises a first curved surface at least partially extending in a longitudinal direction of the housing.

9. The vaporizer according to claim 8, wherein the housing further comprises a second curved surface arranged opposite to the first curved surface, and a

curvature of the second curved surface is less than a curvature of the first curved surface; and the second curved surface and the first curved surface jointly define and form the first air outlet channel.

10. The vaporizer according to claim 8, wherein at least a part of the wall is transversely abutted against the first recessed portion.

11. The vaporizer according to claim 8, further comprising a mouthpiece, wherein the mouthpiece covers at least a part of a surface of the housing; and the mouthpiece and the wall jointly define and form a second air outlet channel for outputting the aerosol, and the second air outlet channel is in communication with the first air outlet channel longitudinally; and a mouthpiece opening for outputting the aerosol is provided on the mouthpiece, and the mouthpiece opening is in communication with the second air outlet channel.

12. The vaporizer according to claim 11, wherein the first curved surface comprises a first section that is at least partially arranged inclined, and a second section that at least partially extends in the longitudinal direction of the housing, wherein the first section is configured to define the second air outlet channel; and the second section is configured to define the first air outlet channel.

13. The vaporizer according to claim 12, wherein the first section comprises an inclined section, and an angle between the inclined section and a longitudinal axis of the housing is an acute angle.

14. The vaporizer according to claim 8, further comprising a sealing sleeve, wherein the sealing sleeve is arranged on the liquid guide portion, and a second recessed portion matching the first recessed portion is arranged on the sealing sleeve.

15. The vaporizer according to claim 14, wherein the second recessed portion is located between the wall and the first recessed portion.

16. The vaporizer according to claim 1, further comprising a sealing member, wherein

the sealing member is arranged between the fixing bracket and the vaporization assembly; and several convex ribs are arranged on a surface of the sealing member facing toward the vaporization assembly.

17. The vaporizer according to claim 16, further comprising an air inlet member for external air to enter, wherein at least a part of the air inlet member extends

in a longitudinal direction of the housing, and at least a part of a surface of the air inlet member is abutted against the sealing member.

18. An aerosol generation apparatus, comprising the vaporizer according to any one of claims 1 to 17, and a power supply apparatus providing electric drive for the vaporizer.

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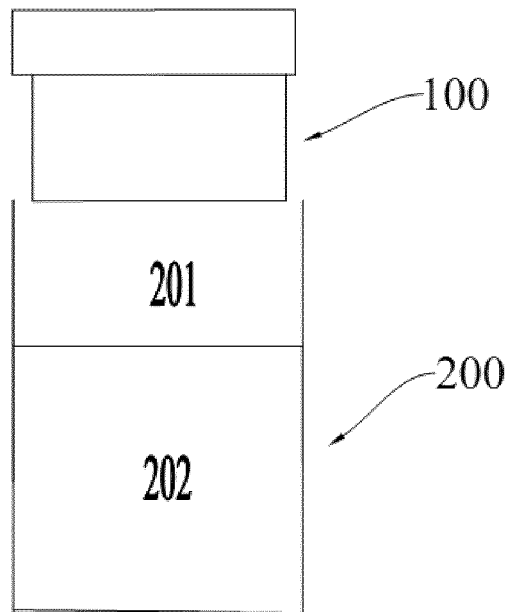


FIG. 1

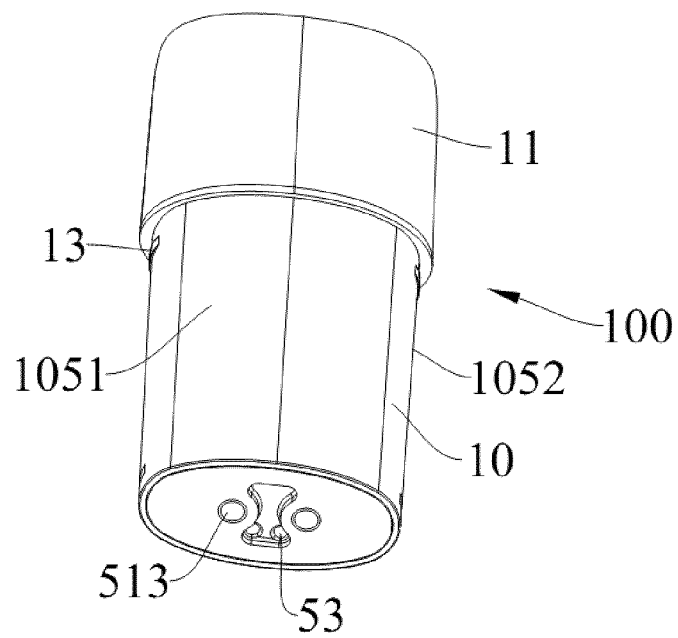


FIG. 2

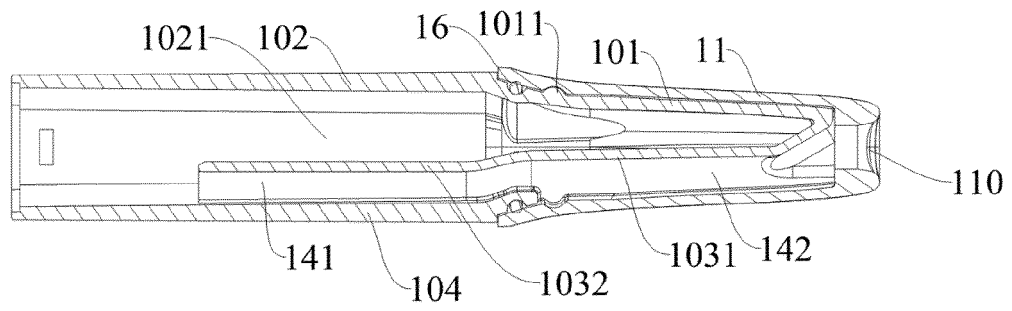


FIG. 3

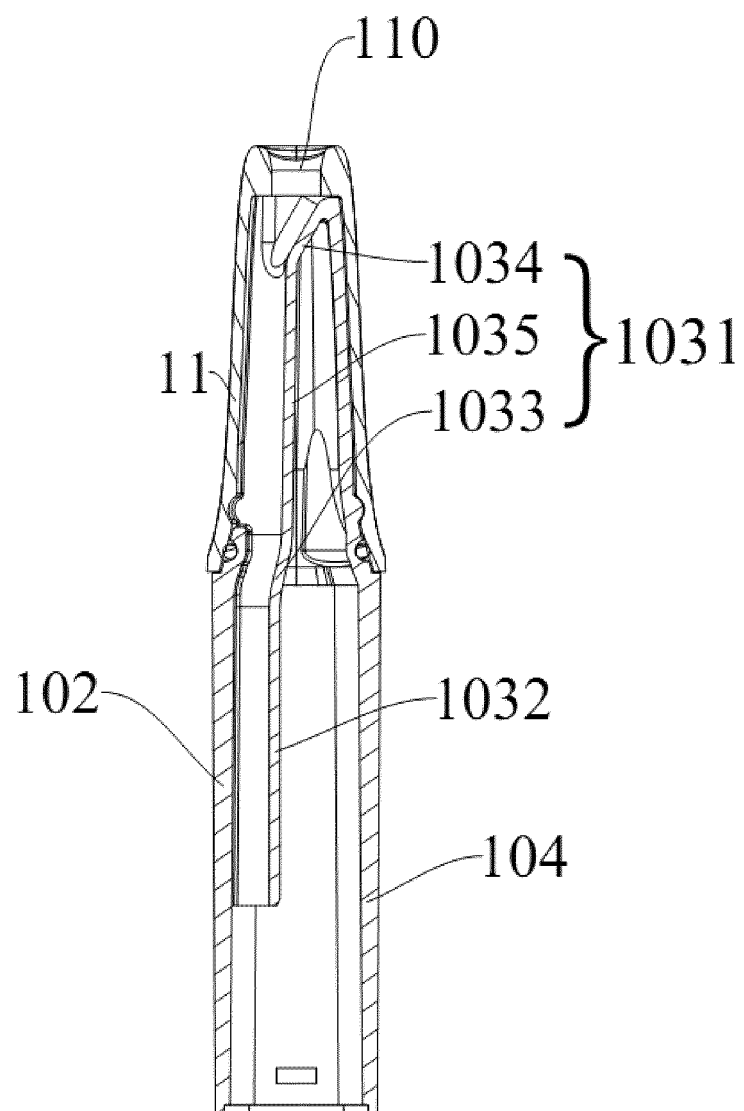


FIG. 4

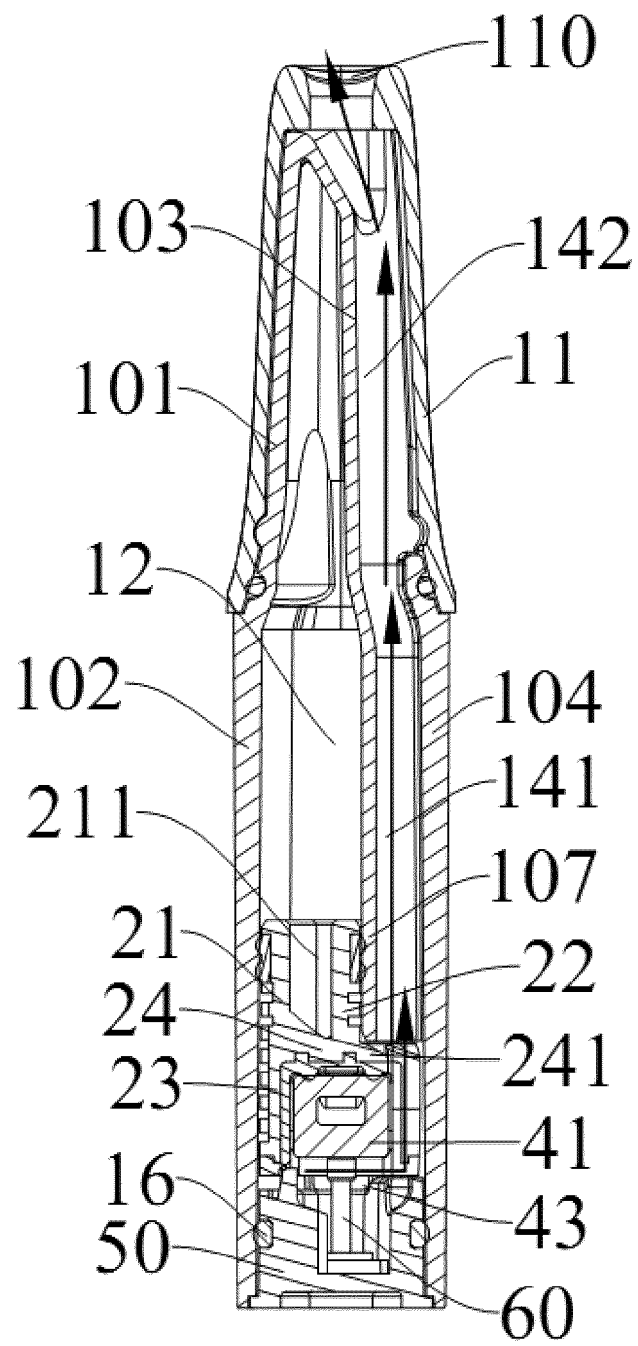


FIG. 5

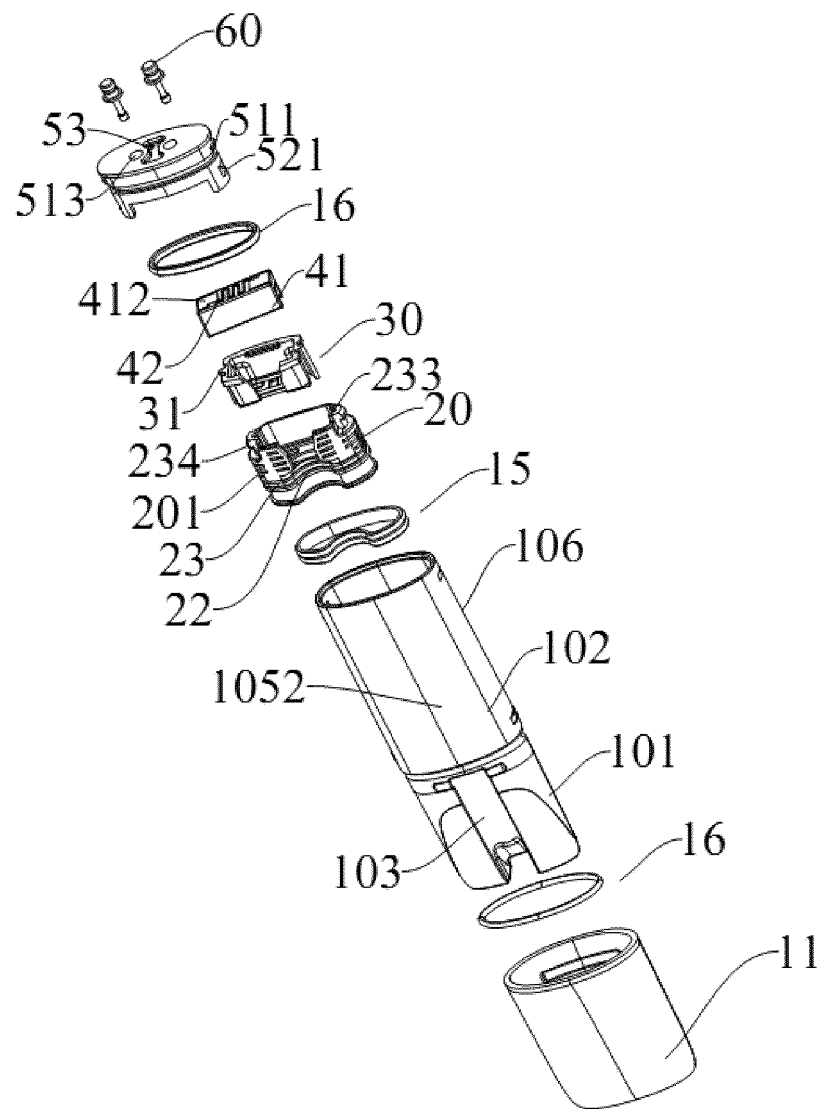


FIG. 6

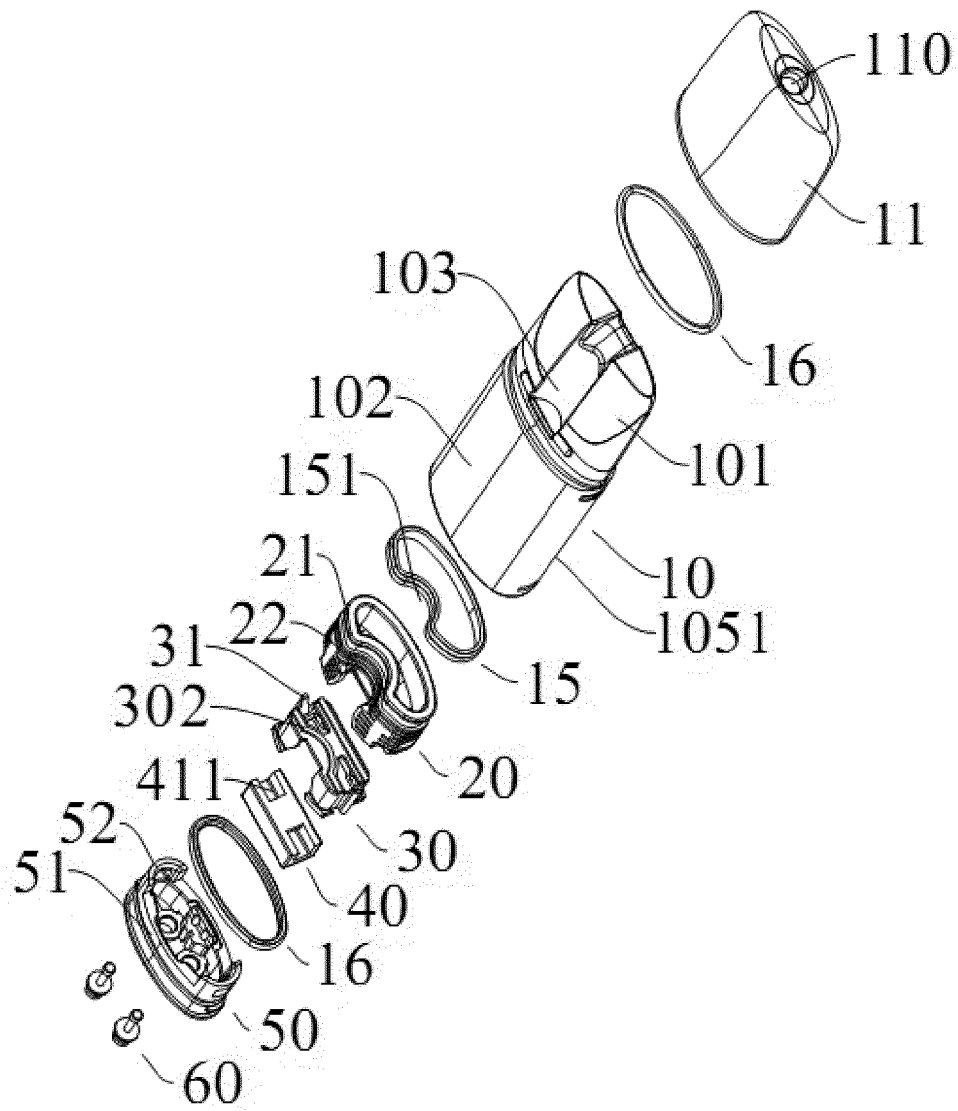


FIG. 7

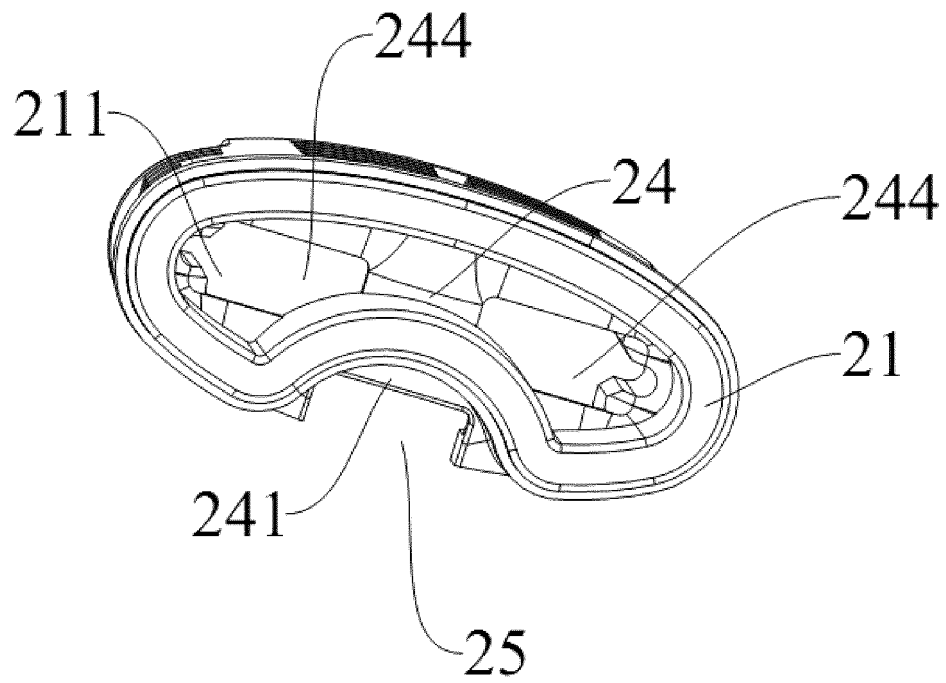


FIG. 8

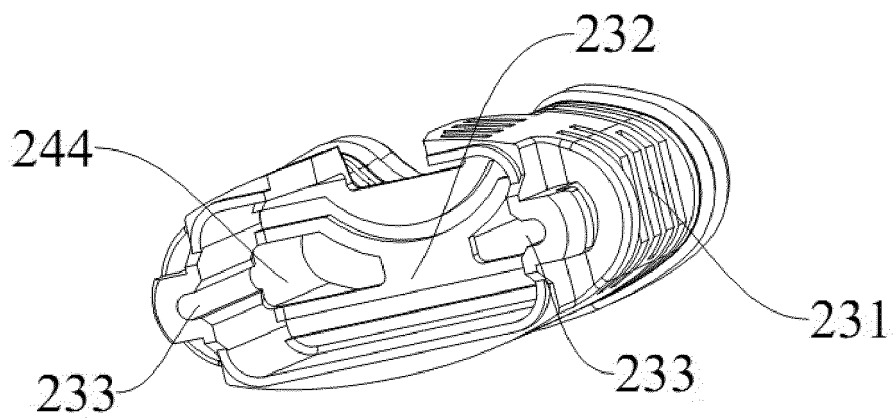


FIG. 9

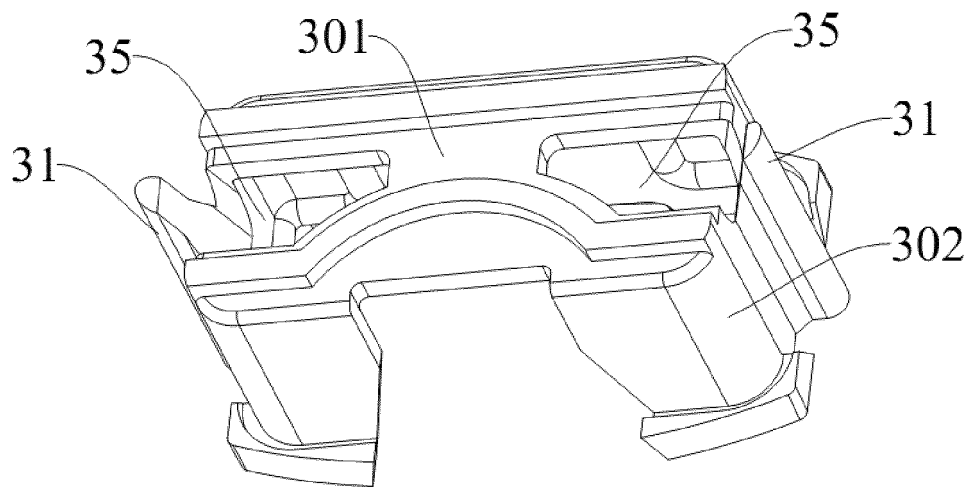


FIG. 10

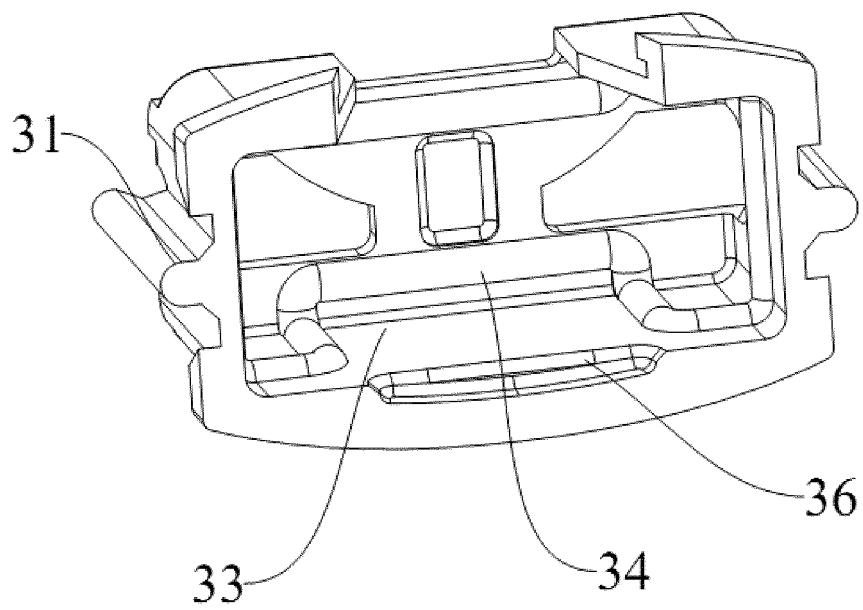


FIG. 11

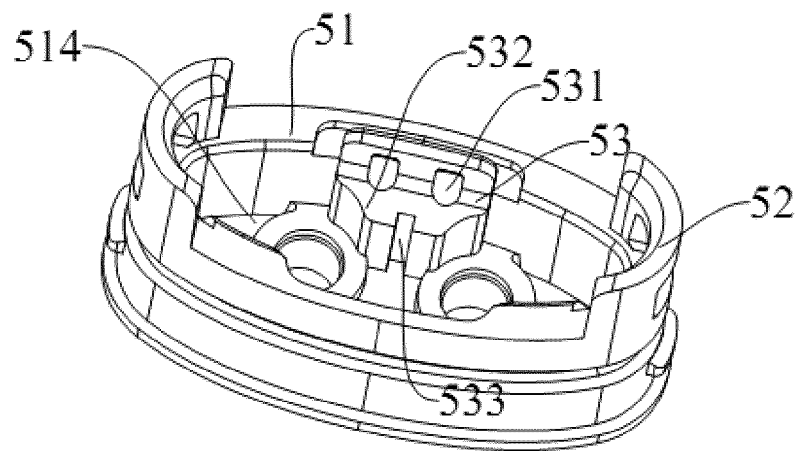


FIG. 12

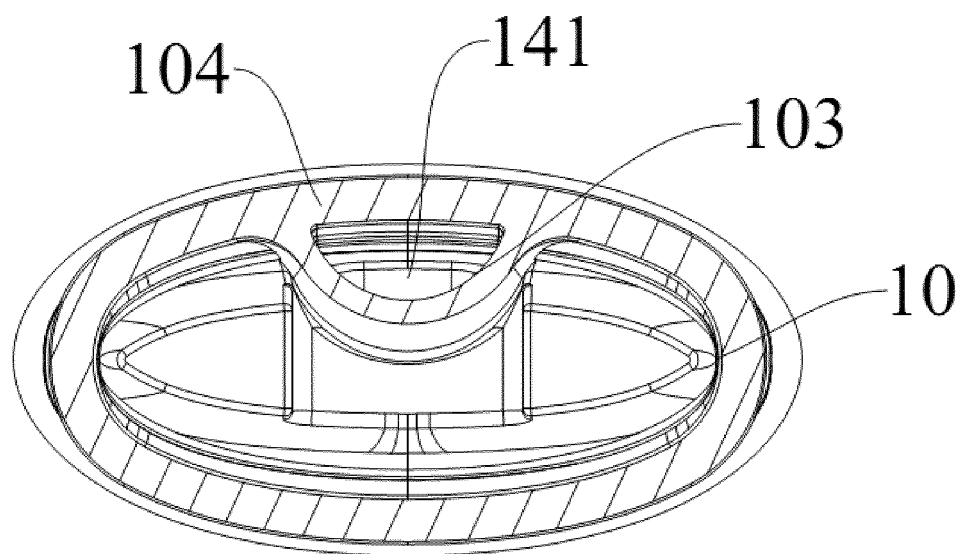


FIG. 13

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/090507

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/40(2020.01)i; A24F 40/48(2020.01)i; A24F 40/10(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; VEN; ENTXTC: 雾化器, 电子烟, 导流, 导油, 导液, 传导, 引导, cigarette, atomiz+, guid+, airflow, channel

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 215347068 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 31 December 2021 (2021-12-31) description, paragraphs [0004]-[0058], and figures 1-13	1-18
PX	CN 215958327 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 08 March 2022 (2022-03-08) description, paragraphs [0004]-[0052], and figures 1-12	1-18
X	CN 211048396 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 21 July 2020 (2020-07-21) description, paragraphs [0003]-[0044], and figures 1-7	1-3, 7-10, 14-18
X	CN 102326869 A (CHEN ZHIPING) 25 January 2012 (2012-01-25) description, paragraphs [0006]-[0047], and figures 1-5	1-3, 7-10, 14-18
X	US 2019373949 A1 (SHENZHEN SMOORE TECHNOLOGY LTD.) 12 December 2019 (2019-12-12) description, paragraphs [0019]-[0042], and figures 1-6	1-3, 7-10, 14-18
X	WO 2020186486 A1 (O-NET AUTOMATION TECHNOLOGY (SHENZHEN) LIMITED) 24 September 2020 (2020-09-24) description, paragraphs [0034]-[0073], and figures 1-8	1-3, 7-10, 14-18

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

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Date of the actual completion of the international search

01 June 2022

Date of mailing of the international search report

04 July 2022

Name and mailing address of the ISA/CN

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Facsimile No. (86-10)62019451

Authorized officer

Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/090507

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	US 2021112865 A1 (LANTO ELECTRONIC LIMITED) 22 April 2021 (2021-04-22) entire document	1-18
A	CN 212590252 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 26 February 2021 (2021-02-26) entire document	1-18
A	CN 212911671 U (CHANGZHOU PAITENG ELECTRONIC TECHNOLOGY SERVICE CO., LTD.) 09 April 2021 (2021-04-09) entire document	1-18
A	CN 212852491 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 02 April 2021 (2021-04-02) entire document	1-18

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2022/090507

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US 2021112865 A1	22 April 2021	TW M598056 U	11 July 2020
CN 212590252 U	26 February 2021	None	
CN 212911671 U	09 April 2021	None	
CN 212852491 U	02 April 2021	None	

REFERENCES CITED IN THE DESCRIPTION

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