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(54) ELECTRONIC ATOMIZATION DEVICE

(57) Disclosed in the present application is an electronic atomization device. The electronic atomization device comprises: a first housing having a first open end and a second open end opposite thereto; a first sealing member arranged at the first open end; a second sealing member arranged at the second open end; an e-liquid storage cavity used for storing an e-liquid matrix and comprising a first e-liquid storage space formed in the first sealing member, a second e-liquid storage space formed in the second sealing member and a third e-liquid storage space located therebetween; and an e-liquid storage member arranged in the third liquid storage space and used for adsorbing the e-liquid matrix so as to keep at least a part of the e-liquid matrix in the third e-liquid storage space. According to the electronic atomization device provided by the present application, the volume of the e-liquid storage cavity is increased by means of the e-liquid storage space formed in the sealing member, and the user experience is improved. **In** addition, the e-liquid matrix is prevented from being accumulated at one end of the e-liquid storage member to cause e-liquid leakage.

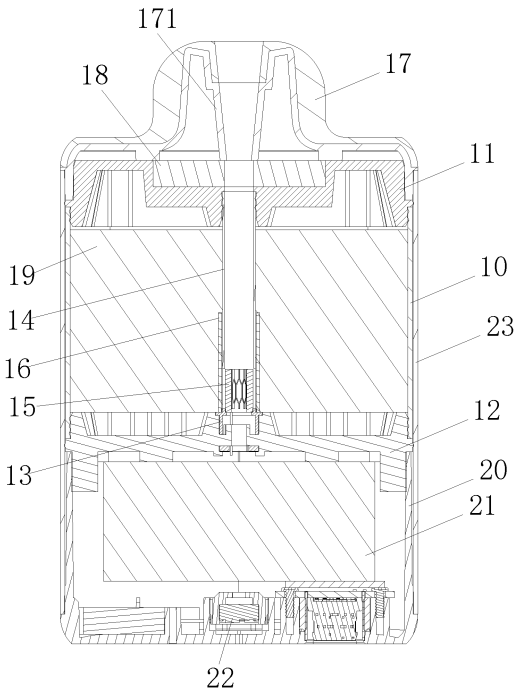

FIG. 2

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Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Chinese Patent Application No. 202222116148.4, filed with China National Intellectual Property Administration on August 10, 2022 and entitled "ELECTRONIC ATOMIZATION DEVICE", which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] Embodiments of the present application relates to the field of electronic atomization technologies, and in particular, to an electronic atomization device.

BACKGROUND

[0003] An electronic atomization device is an electronic product that generates an aerosol by atomizing an e-liquid matrix for a user to inhale. In an existing electronic atomization device, e-liquid storage cotton for storing an e-liquid matrix is mounted between an upper silicone component and a lower silicone component, and then a suction nozzle is mounted at the upper silicone component.

[0004] A problem of the device is that the e-liquid matrix is easily accumulated at one end of the e-liquid storage cotton to cause e-liquid leakage.

SUMMARY

[0005] The present application mainly aims to provide an electronic atomization device, to solve a problem that an e-liquid matrix in the existing electronic atomization device is easily accumulated at one end of e-liquid storage cotton, thereby causing e-liquid leakage.

[0006] One aspect of the present application provides an electronic atomization device, configured to atomize an e-liquid matrix to generate an aerosol. The electronic atomization device includes:

a first housing having a first open end and a second open end opposite to the first open end;
a first sealing member arranged at the first open end;
a second sealing member arranged at the second open end;
an e-liquid storage cavity configured to store an e-liquid matrix; the e-liquid storage cavity including a first e-liquid storage space formed in the first sealing member, a second e-liquid storage space formed in the second sealing member, and a third e-liquid storage space located between the first e-liquid storage space and the second e-liquid storage space; and
an e-liquid storage member arranged in the third e-liquid storage space and configured to adsorb the e-liquid matrix, to keep at least a portion of the e-liquid matrix in the third e-liquid storage space.

[0007] Another aspect of the present application provides an electronic atomization device, configured to atomize an e-liquid matrix to generate an aerosol. The electronic atomization device includes:

a first housing having an open end;
a sealing member arranged at the open end;
an e-liquid storage cavity configured to store an e-liquid matrix; the e-liquid storage cavity being limited and formed by the first housing and the sealing member, and the e-liquid storage cavity including a first portion substantially located in the first housing and a second portion formed in the sealing member; and
an e-liquid storage member accommodated in the first portion and not extending to the second portion; the e-liquid storage member being configured to adsorb the e-liquid matrix, to hold at least a portion of the e-liquid matrix in the first portion.

[0008] According to the electronic atomization device provided by the present application, a volume of the e-liquid storage cavity is increased through the e-liquid storage space formed in the sealing member, and a user experience is enhanced. In addition, the e-liquid matrix is prevented from being accumulated at one end of the e-liquid storage member to cause e-liquid leakage.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The objective implementation, functional features and advantages of the present application are further illustrated with reference to the accompanying drawings by using the embodiments. One or more embodiments are exemplarily described with reference to the corresponding figures in the accompanying drawings, and the descriptions are not to be construed as limiting the embodiments. Elements in the accompanying drawings that have same reference numerals are represented as similar elements, and unless otherwise particularly stated, the figures in the accompanying drawings are not drawn to scale.

FIG. 1 is a schematic diagram of an electronic atomization device according to an embodiment of the present application;
FIG. 2 is a cross-sectional view of an electronic atomization device according to an embodiment of the present application;
FIG. 3 is a schematic diagram of a first sealing member according to an embodiment of the present application;
FIG. 4 is a schematic diagram of a second sealing member according to an embodiment of the present application;

FIG. 5 is a schematic diagram of a base according to an embodiment of the present application; and
FIG. 6 is a schematic exploded view of an atomization core according to an embodiment of the present application.

DETAILED DESCRIPTION

[0010] It should be understood that the specific embodiments described herein are merely used to explain the present application but are not intended to limit the present application. For ease of understanding of the present application, the present application is described below in more detail with reference to the accompanying drawings and specific implementations. It should be noted that, when an element is expressed as "being fixed to" another element, the element may be directly on the another element, or one or more intermediate elements may exist between the element and the another element. When one component is expressed as "being connected to" another component, the component may be directly connected to the another component, or one or more intermediate components may exist between the component and the another component. The terms "upper", "lower", "left", "right", "inner", "outer", and similar expressions used in this specification are merely used for an illustrative purpose.

[0011] Unless otherwise defined, meanings of all technical and scientific terms used in this specification are the same as that usually understood by a person skilled in the technical field to which the present application belongs. Terms used in this specification of the present disclosure herein are merely intended to describe objectives of the specific implementations, but are not intended to limit the present application. A term "and/or" used in this specification includes any or all combinations of one or more related listed items.

[0012] As shown in FIG. 1 to FIG. 6, an electronic atomization device 100 includes an upper housing 10, a first sealing member 11, a second sealing member 12, a base 13, a conveying tube 14, an atomization core 15, a sleeve 16, a suction nozzle 17, an e-liquid absorption member 18, a e-liquid storage member 19, a lower housing 20, a battery cell 21, an air flow sensor 22, and a shell 23.

[0013] Upper and lower ends of the upper housing 10 are open ends. The first sealing member 11 is arranged at an upper end of the upper housing 10, and the second sealing member 12 is arranged at a lower end of the upper housing 10.

[0014] The first sealing member 11 and the second sealing member 12 are both made of sealing materials, such as silica gel.

[0015] An outer side wall of the first sealing member 11 has a protruding portion 111 that extends in a radial direction, and a portion of the first sealing member 11 located below the protruding portion 111 extends into the upper housing 10. The outer side wall of the first sealing member 11 is abutted against an inner side wall of the upper housing 10 to achieve sealing. Further, the outer side wall of the first sealing member 11 has a convex ring, to achieve a good sealing effect with the inner side wall of the upper housing 10. An end surface of the upper end of the upper housing 10 is abutted against a lower surface of the protruding portion 111 to achieve sealing.

[0016] Similarly, an outer side wall of the second sealing member 12 has a protruding portion 121 that extends in the radial direction, and a portion of the second sealing member 12 located above the protruding portion 121 extends into the upper housing 10. The outer side wall of the second sealing member 12 is abutted against the inner side wall of the upper housing 10 to achieve sealing. Further, the outer side wall of the second sealing member 12 has a convex ring, to achieve a good sealing effect with the inner side wall of the upper housing 10. An end surface of the lower end of the upper housing 10 is abutted against an upper surface of the protruding portion 121 to achieve sealing.

[0017] The first sealing member 11 has a through hole 112, and the second sealing member 12 has a through hole 122. A lower end of the base 13 is accommodated or held in the through hole 122. An upper end of the conveying tube 14 is accommodated or held in the through hole 112, and a lower end of the conveying tube 14 is accommodated in the base 13 and is abutted against an end surface of an upper end of the atomization core 15. In this way, a vent tube formed by the base 13 and the conveying tube 14 jointly form an air flow channel of the electronic atomization device 100.

[0018] The base 13 internally has an accommodating cavity configured to accommodate the atomization core 15. A side wall of the base 13 has an e-liquid passing hole 131 that communicates an e-liquid storage cavity to the atomization core 15, and a sleeve 16 sleeves the base 13 and the conveying tube 14. The sleeve 16 can absorb the e-liquid matrix stored in the e-liquid storage cavity and convey the e-liquid matrix to the atomization core 15 through the e-liquid passing hole 131. In another example, the sleeve 16 may alternatively be omitted.

[0019] The atomization core 15 is close to the second sealing member 12. The atomization core 15 includes an e-liquid guide element 151 and a heating element 152. The e-liquid guide element 151 may be, for example, a cotton fiber, a metal fiber, a ceramic fiber, a glass fiber, or cellular ceramic, and is preferably made of the cotton fiber and constructed into a tubular structure extending in a longitudinal direction of the electronic atomization device 100. The heating element 152 is a heating mesh made of a resistive material. The heating element 152 may be arranged on an inner wall of the e-liquid guide element 151.

[0020] In other examples, the atomization core 15 may extend in a transverse direction of the electronic atomization device 100. For example: the heating element 152 transversely passes through the base 13 after being wrapped around the e-liquid guide element 151. The

heating element 152 is arranged in the base 13, and two ends of the e-liquid guide element 151 may extend into the e-liquid storage cavity.

[0021] An aerosol generated by heating and atomization by the atomization core 15 may be conveyed to the suction nozzle 17 through the conveying tube 14.

[0022] A portion of the first sealing member 11 located above the protruding portion 111 extends into the suction nozzle 17, and an end surface of a lower end of the suction nozzle 17 is abutted against an upper surface of the protruding portion 111 to achieve sealing. The suction nozzle 17 has a connection tube 171 extending downward from a mouth piece end, and the connection tube 171 communicates with the through hole 112. In this way, the aerosol generated by heating and atomization by the atomization core 15 may flow out of the mouth piece end through the conveying tube 14, the through hole 112, and the connection tube 171. In a further implementation, the first sealing member 11 has a first groove 113. The e-liquid absorption member 18 is arranged in the first groove 113. The e-liquid absorption member 18 has a channel for an air flow to pass through. In this way, the e-liquid absorption member 18 can absorb the e-liquid matrix that is condensed in the suction nozzle 17.

[0023] A gap between the upper housing 10, the first sealing member 11, the second sealing member 12, the base 13, and the conveying tube 14 forms the e-liquid storage cavity (not shown) for storing the e-liquid matrix.

[0024] The first sealing member 11 further has a second groove 114, and the second groove 114 limits or forms a first e-liquid storage space of the e-liquid storage cavity. The second sealing member 12 has a groove 123, and the groove 123 limits or forms a second e-liquid storage space of the e-liquid storage cavity. A portion of the e-liquid storage cavity between the first e-liquid storage space and the second e-liquid storage space limits or forms a third e-liquid storage space. The first e-liquid storage space, the third e-liquid storage space, and the second e-liquid storage space are arranged in sequence in the longitudinal direction of the electronic atomization device 100.

[0025] The e-liquid storage member 19 is arranged or accommodated in the third e-liquid storage space, and the e-liquid storage member 19 does not extend into the first e-liquid storage space or the second e-liquid storage space. The e-liquid storage member 19 is preferably made of a cotton fiber. The e-liquid storage member 19 is configured to adsorb the e-liquid matrix, to hold at least a portion of the e-liquid matrix in the third e-liquid storage space. The e-liquid storage member 19 has a through hole (not shown) penetrating through an upper end and a lower end of the e-liquid storage member, to sleeve the base 13 and the conveying tube 14. The e-liquid storage member 19 may be in contact with an end surface of a lower end of the first sealing member 11 and/or an end surface of an upper end of the second sealing member 12, to be maintained between the first sealing member 11 and the second sealing member 12.

[0026] In other examples, the first sealing member 11 does not form the first e-liquid storage space, namely, the e-liquid storage cavity includes a portion of the e-liquid storage space basically located in the upper housing 10 and the other portion of the e-liquid storage space formed in the second sealing member 12. On the contrary, it is also feasible that the second sealing member 12 does not form the second e-liquid storage space and the first sealing member 11 forms the first e-liquid storage space.

[0027] A volume of the first e-liquid storage space and a volume of the second e-liquid storage space are both less than a volume of the third e-liquid storage space. Preferably, the volume of the first e-liquid storage space is greater than the volume of the second e-liquid storage space. Generally, the volume of the first e-liquid storage space and the volume of the second e-liquid storage space are both between 1 ml and 4 ml. Preferably, the volumes are between 1 ml and 3 ml. A ratio of the volume of the third e-liquid storage space to the volume of the first e-liquid storage space is between 5 and 8. Preferably, the ratio is between 5 and 7. A ratio of the volume of the third e-liquid storage space to the volume of the second e-liquid storage space is similar to the above ratio. Specifically for example, the volume of the third e-liquid storage space may be 10 ml; the volume of the second e-liquid storage space may be 2 ml; and the volume of the first e-liquid storage space may be 3 ml. In this way, the first e-liquid storage space formed in the first sealing member 11 and the second e-liquid storage space formed in the second sealing member 12 enlarge the volume of the e-liquid storage cavity in the existing electronic atomization device, thereby enhancing the user experience.

[0028] A side wall of the first e-liquid storage space is inclined to the longitudinal direction of the electronic atomization device 100, and a side wall of the second e-liquid storage space is inclined to the longitudinal direction of the electronic atomization device 100. An angle between the side wall of the first e-liquid storage space and the longitudinal direction of the electronic atomization device 100 is between 10° and 20° (preferably, between 12° and 20°; further preferably, between 14° and 20°; still further preferably, between 14° and 18°; further preferably, 14° to 16°). An angle between the side wall of the second e-liquid storage space and the longitudinal direction of the electronic atomization device 100 is between 10° and 20° (preferably, between 12° and 20°; still further preferably, between 14° and 20°; still further preferably, between 14° and 18°; still further preferably, 14° to 16°). In this way, when the electronic atomization device 100 is placed vertically (as shown in FIG. 2), a portion of the e-liquid matrix in the e-liquid storage cavity may be stored in the second e-liquid storage space, and the e-liquid matrix stored in the first e-liquid storage space may flow towards the e-liquid storage member through the inclined side wall. When the electronic atomization device 100 is placed upside down (after the direction shown in FIG. 2 is rotated 180°), the portion of the e-liquid

matrix in the e-liquid storage cavity may be stored in the first e-liquid storage space, and the e-liquid matrix stored in the second e-liquid storage space may flow towards the e-liquid storage member through the inclined side wall. In this way, the e-liquid matrix can be prevented from being accumulated at one end of the e-liquid storage member 19 to cause leakage of the e-liquid matrix from the e-liquid passing hole 131.

[0029] Further, a first capillary slot 114a is provided in a side wall of the first e-liquid storage space, and the first capillary slot 114a extends from a top wall of the first e-liquid storage space in a direction towards the second e-liquid storage space. A second capillary slot 123a is provided in a side wall of the second e-liquid storage space; and the second capillary slot 123a extends from a bottom wall of the second e-liquid storage space in a direction towards the first e-liquid storage space. A width of the first capillary slot 114a is between 0.1 mm and 1 mm (preferably, between 0.1 mm and 0.8 mm; preferably, between 0.1 mm and 0.7 mm; preferably, between 0.2 mm and 0.7 mm; preferably, between 0.4 mm and 0.7 mm; preferably, 0.5 mm and 0.7 mm), and a width of the second capillary slot 123a is between 0.1 mm to 1 mm (preferably, between 0.1 mm and 0.8 mm; preferably, between 0.1 mm and 0.7 mm; preferably, between 0.2 mm and 0.7 mm; preferably, between 0.4 mm and 0.7 mm; preferably, between 0.5 mm and 0.7 mm).

[0030] An upper end of the lower housing 20 is an open end, and a lower end is a closed end. An end surface of the upper end of the lower housing 20 is abutted against a lower surface of the protruding portion 121 to achieve sealing. The shell 23 sleeves the upper housing 10 and the lower housing 20. An end surface of an upper end of the shell 23 is abutted against a surface of a portion, which protrudes outwards in the radial direction, of the suction nozzle 17. An end surface of a lower end of the shell 23 is abutted against a surface of a portion, which protrudes outwards in the radial direction, of the lower housing 20. Both the protruding portion 111 and the protruding portion 121 may be abutted against an inner surface of the shell 23 to achieve sealing. The upper housing 10, the lower housing 20, and the shell 23 form a housing assembly of the electronic atomization device 100. In other examples, it is also feasible that no shell 23 is provided. In other examples, the upper housing 10, the lower housing 20, and the shell 23 may be integrally formed.

[0031] The battery cell 21 is arranged in the lower housing 20 and is located below the second sealing member 12. The battery cell 21 supplies electric power for operating the electronic atomization device 100. The battery cell 21 may be a rechargeable battery or a disposable battery. Preferably, the rechargeable battery is used.

[0032] An air inlet is provided in the closed end of the lower housing 20. External air flows into the electronic atomization device 100 through the air inlet, and then flows into the atomization core 15 through the through hole 122. The external air and the aerosol generated by heating and atomization flow out of the mouth piece end of the suction nozzle 17 together after passing through the conveying tube 14, the through hole 112, and the suction nozzle 17 in sequence.

[0033] An accommodating cavity is further arranged in the lower housing 20, and the air flow sensor 22 is accommodated in the accommodating cavity. The air flow sensor 22, for example, a microphone, controls, when sensing that the electronic atomization device 100 is vaped, the atomization core 15 to start to work.

[0034] It should be noted that, in the examples shown in FIG. 1 to FIG. 6, the electronic atomization device 100 is integrated. In other examples, the electronic atomization device 100 may be a cylinder or an atomizer used in combination with a power supply device. For example, the electronic atomization device 100 and the power supply device are detachably connected. The upper housing 10, the first sealing member 11, the second sealing member 12, the base 13, the conveying tube 14, the atomization core 15, the sleeve 16, the suction nozzle 17, the e-liquid absorption member 18, and the e-liquid storage member 19 may be arranged in the electronic atomization device 100. The lower housing 20, the battery cell 21, and the air flow sensor 22 are arranged in the power supply device.

[0035] It should be noted that, the specification of the present application and the accompanying drawings thereof illustrate preferred embodiments of the present application. However, the present application may be implemented in various different forms, and is not limited to the embodiments described in this specification. These embodiments are not intended to be an additional limitation on the content of the present application, and are provided for the purpose of providing a more thorough and comprehensive understanding of the content disclosed in the present application. Moreover, the foregoing technical features are further combined to form various embodiments not listed above, and all such embodiments shall be construed as falling within the scope of the present application. Further, a person of ordinary skill in the art can make improvements or transformations according to the above description, and all these improvements and transformations should fall within the scope of protection of the claims attached to the present application.

Claims

1. An electronic atomization device, configured to atomize an e-liquid matrix to generate an aerosol, **characterized in that** the electronic atomization device comprises:

   a first housing having a first open end and a second open end opposite to the first open end;
   a first sealing member arranged at the first open

end;
a second sealing member arranged at the second open end;
an e-liquid storage cavity configured to store an e-liquid matrix, the e-liquid storage cavity comprising a first e-liquid storage space formed in the first sealing member, a second e-liquid storage space formed in the second sealing member, and a third e-liquid storage space located between the first e-liquid storage space and the second e-liquid storage space; and
an e-liquid storage member arranged in the third e-liquid storage space and configured to adsorb the e-liquid matrix, to keep at least a portion of the e-liquid matrix in the third e-liquid storage space.

2. The electronic atomization device according to claim 1, wherein the first e-liquid storage space, the third e-liquid storage space, and the second e-liquid storage space are arranged in sequence in a longitudinal direction of the electronic atomization device.

3. The electronic atomization device according to claim 1, wherein a volume of the first e-liquid storage space and a volume of the second e-liquid storage space are both less than a volume of the third e-liquid storage space.

4. The electronic atomization device according to claim 1, wherein a ratio of a volume of the third e-liquid storage space to a volume of the first e-liquid storage space is between 5 and 8; and/or a ratio of the volume of the third e-liquid storage space to a volume of the second e-liquid storage space is between 5 and 8.

5. The electronic atomization device according to claim 1, wherein a volume of the first e-liquid storage space and a volume of the second e-liquid storage space are both between 1 ml and 4 ml.

6. The electronic atomization device according to claim 1, wherein a side wall of the first e-liquid storage space is inclined to a longitudinal direction of the electronic atomization device; and/or a side wall of the second e-liquid storage space is inclined to a longitudinal direction of the electronic atomization device.

7. The electronic atomization device according to claim 1, wherein a first capillary slot is provided in a side wall of the first e-liquid storage space, and the first capillary slot extends from a top wall of the first e-liquid storage space in a direction towards the third e-liquid storage space; and/or
a second capillary slot is provided in a side wall of the second e-liquid storage space, and the second capillary slot extends from a bottom wall of the second e-liquid storage space in a direction towards the third e-liquid storage space.

8. The electronic atomization device according to claim 7, wherein a width of the first capillary slot or the second capillary slot is between 0.1 mm and 1 mm.

9. The electronic atomization device according to claim 1, wherein the first sealing member has a first through hole, and the second sealing member has a second through hole; the electronic atomization device further comprises a vent tube forming an air flow channel and an atomization core configured to atomize an e-liquid matrix;
one end of the vent tube is held in the first through hole, and the other end of the vent tube is held in the second through hole; the atomization core is arranged in the air flow channel; and an e-liquid passing hole that communicates the e-liquid storage cavity to the atomization core is provided in a side wall of the vent tube.

10. The electronic atomization device according to claim 9, wherein the first sealing member is provided with a e-liquid absorption member, and the e-liquid absorption member has a channel for an air flow to pass through.

11. The electronic atomization device according to claim 1, wherein an outer side wall of the first sealing member has a first protruding portion that extends in a radial direction, and an outer side wall of the second sealing member has a second protruding portion that extends in the radial direction;
an end surface of the first open end abuts against a lower surface of the first protruding portion to achieve sealing; and an end surface of the second open end abuts against an upper surface of the second protruding portion to achieve sealing.

12. The electronic atomization device according to claim 11, further comprising a suction nozzle, a second housing, and a battery cell configured to provide electric power, wherein:

an end surface of a lower end of the suction nozzle abuts against an upper surface of the first protruding portion to achieve sealing; an end surface of an upper end of the second housing abuts against a lower surface of the second protruding portion to achieve sealing; and
the battery cell is arranged in the second housing.

13. An electronic atomization device, configured to atomize an e-liquid matrix to generate an aerosol, **characterized in that** the electronic atomization device

comprises:

a first housing having an open end;
a sealing member arranged at the open end;
an e-liquid storage cavity configured to store an e-liquid matrix, the e-liquid storage cavity being defined and formed by the first housing and the sealing member, and the e-liquid storage cavity comprising a first portion substantially located in the first housing and a second portion formed in the sealing member; and
an e-liquid storage member accommodated in the first portion and not extending to the second portion, the e-liquid storage member configured to adsorb the e-liquid matrix to retain at least a portion of the e-liquid matrix in the first portion.

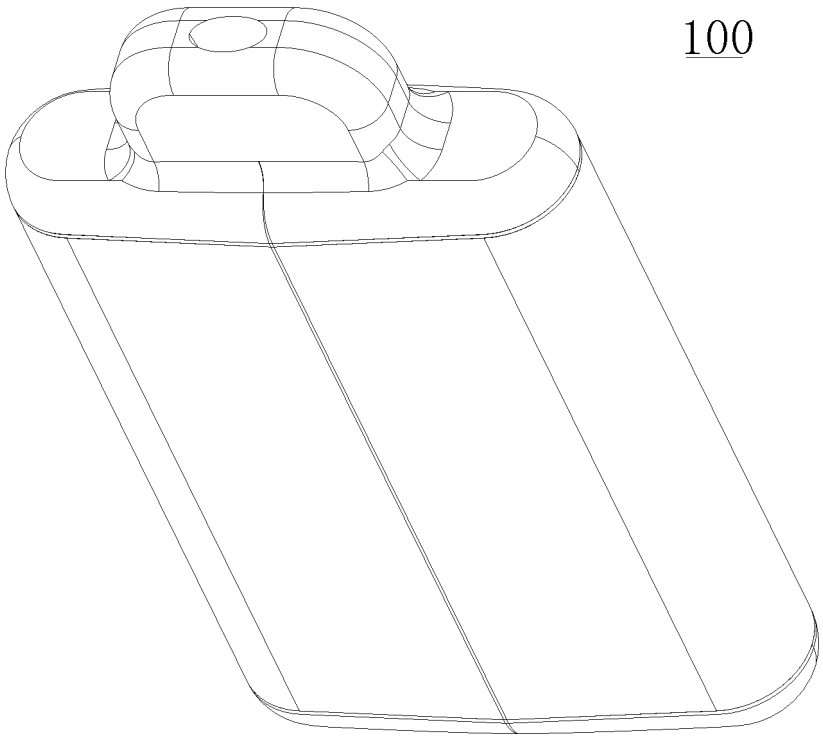

FIG. 1

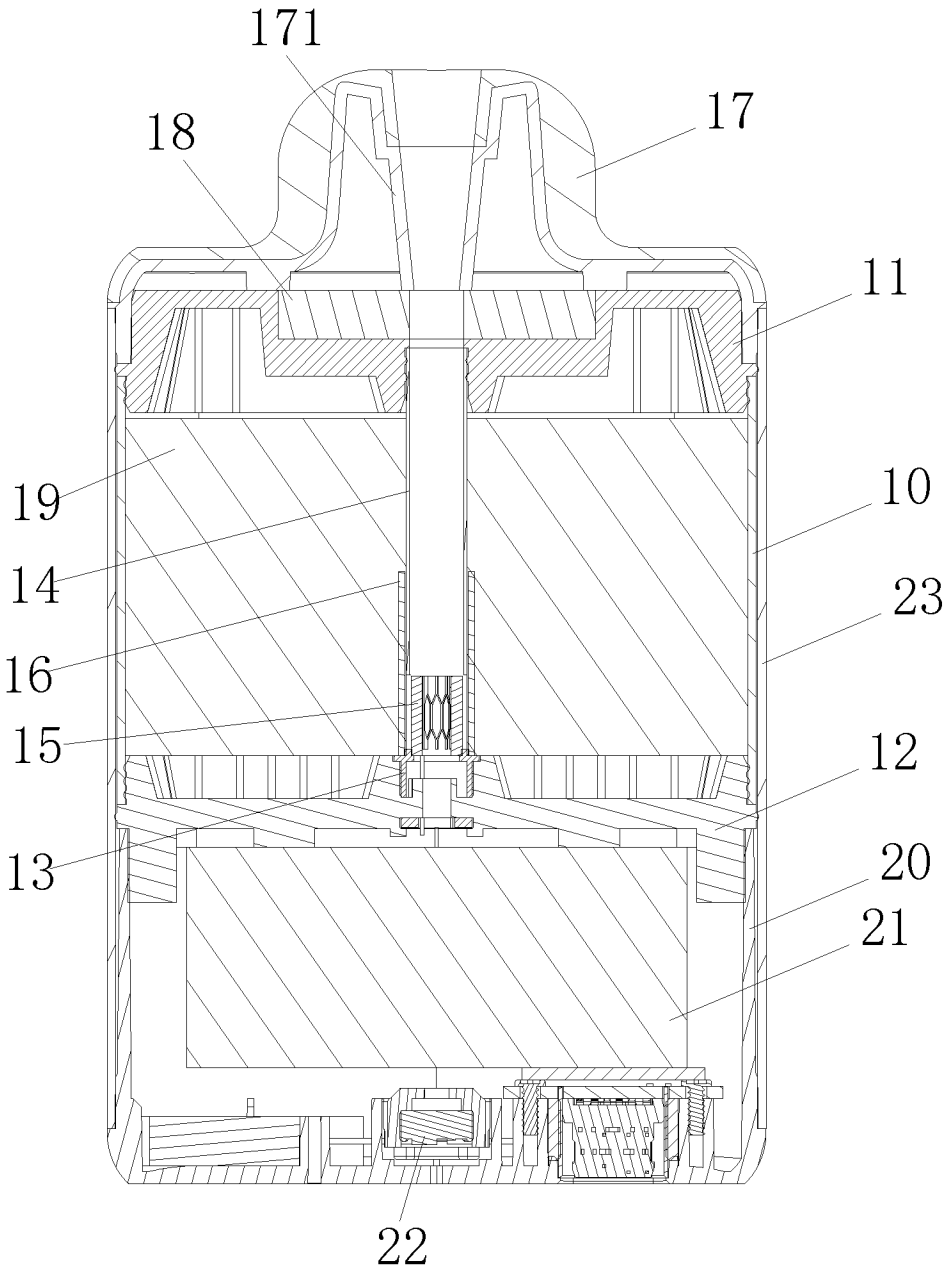

FIG. 2

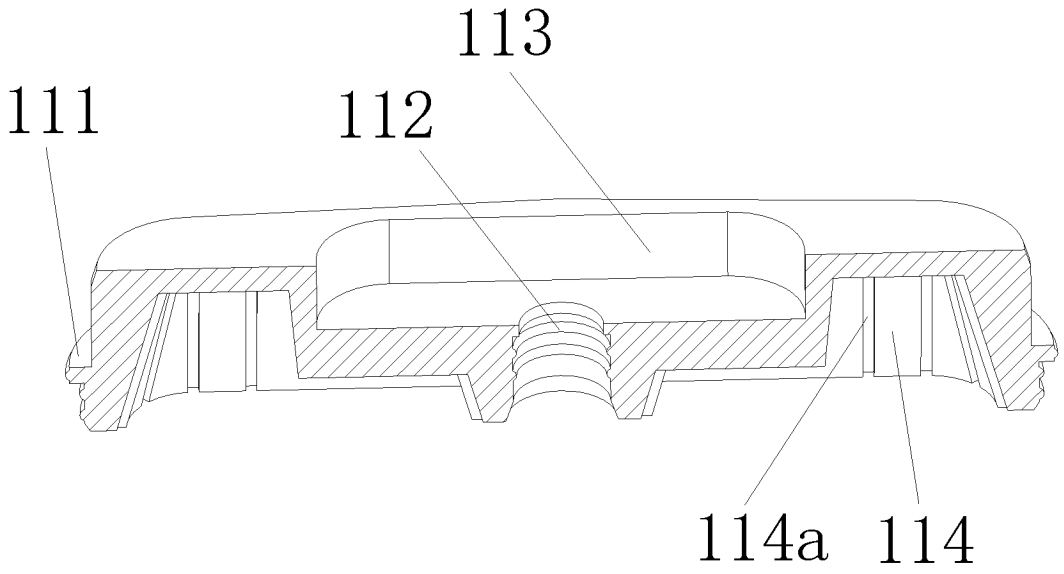

FIG. 3

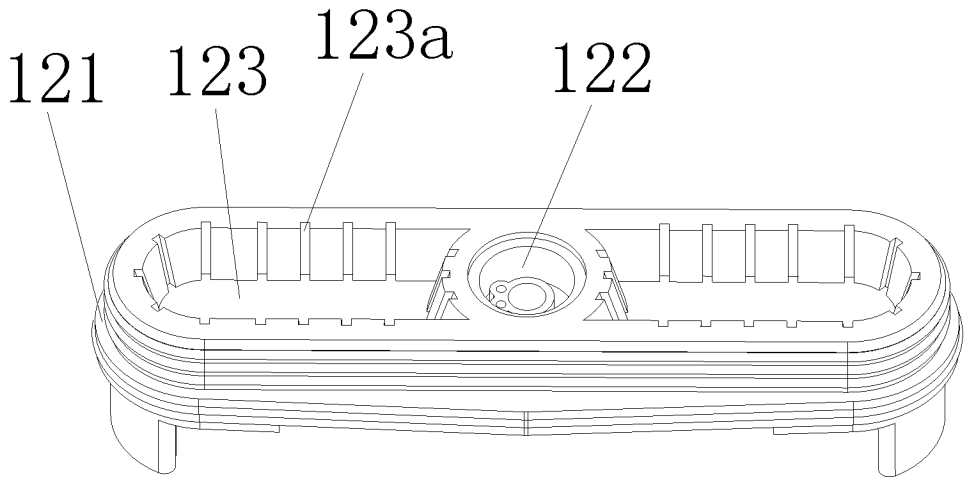

FIG. 4

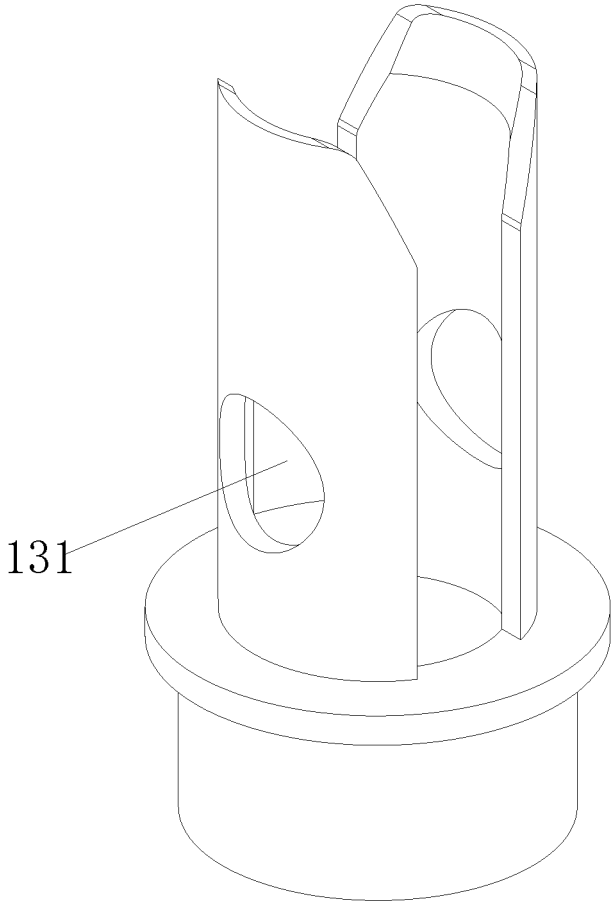

FIG. 5

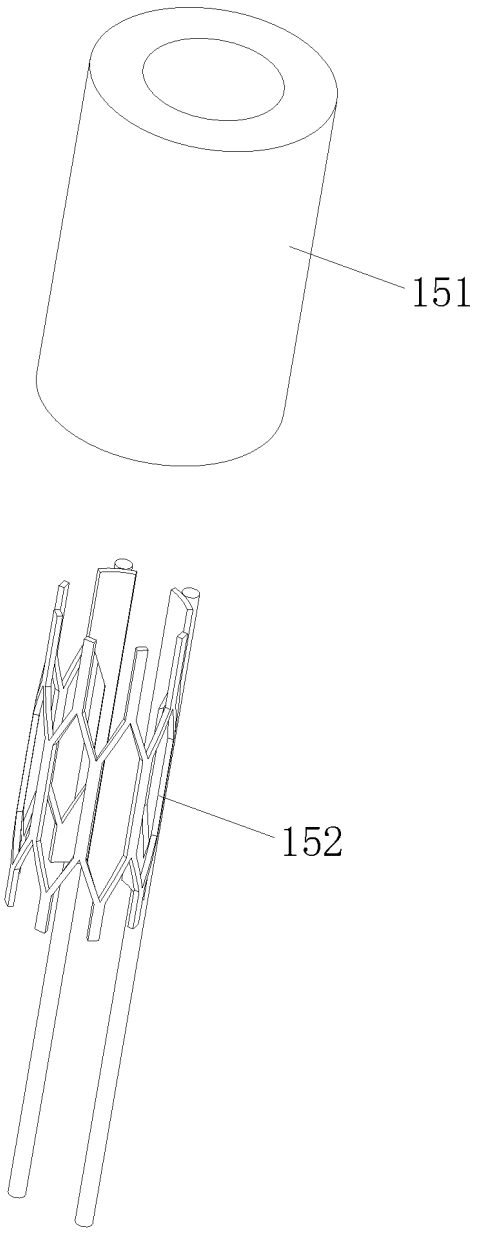

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2023/109944

A. CLASSIFICATION OF SUBJECT MATTER

A24F40/40(2020.01)i; A24F40/10(2020.01)i; A24F40/42(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)

IPC: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)

CNTXT; WPABSC; ENTXTC; ENTXT; CNKI: 电子烟, 气溶胶, 雾化, 储液, 储油, 棉, 毛细, 密封, 吸附, 锁, 保持, 基质, 烟液, 烟油, 凹, 槽, 腔, cigarette, aerosol, atomizing, absorbing, matrix, keep, capillary, storage, space, cavity

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 218474054 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 14 February 2023 (2023-02-14) claims 1-13	1-13
X	CN 215684783 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 01 February 2022 (2022-02-01) description, paragraphs [0032]-[0045], and figures 1-8	1-13
A	CN 111838771 A (O-NET AUTOMATION TECHNOLOGY (SHENZHEN) LIMITED) 30 October 2020 (2020-10-30) entire document	1-13
A	CN 215531648 U (SHENZHEN CLOUD NINE TECHNOLOGY CO., LTD.) 18 January 2022 (2022-01-18) entire document	1-13
A	CN 215958310 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 08 March 2022 (2022-03-08) entire document	1-13

☑ 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	Date of mailing of the international search report
16 October 2023	**18 November 2023**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2023/109944

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A	CN 216701658 U (JOYETECH (SHENZHEN) ELECTRONICS CO., LTD.) 10 June 2022 (2022-06-10) entire document	1-13
A	CN 113679107 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 23 November 2021 (2021-11-23) entire document	1-13
A	WO 2022111358 A1 (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 02 June 2022 (2022-06-02) entire document	1-13
A	WO 2018176395 A1 (HUIZHOU KIMREE TECHNOLOGY CO., LTD. SHENZHEN BRANCH) 04 October 2018 (2018-10-04) entire document	1-13

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2023/109944

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 218474054 U	14 February 2023	None	
CN 215684783 U	01 February 2022	None	
CN 111838771 A	30 October 2020	None	
CN 215531648 U	18 January 2022	None	
CN 215958310 U	08 March 2022	None	
CN 216701658 U	10 June 2022	None	
CN 113679107 A	23 November 2021	None	
WO 2022111358 A1	02 June 2022	None	
WO 2018176395 A1	04 October 2018	None	

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REFERENCES CITED IN THE DESCRIPTION

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