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

(57) Provided in the present utility model are an atomizer and an aerosol generating device, the atomizer comprising a base, on which a gas inlet is opened; a liquid storage member, in which a liquid storage cavity is formed; and an atomization assembly. The atomization assembly comprises a fixed base and an atomization core, the atomization core is matched within an atomization cavity and atomizes an aerosol-forming matrix provided by the liquid storage cavity, and vapor formed after atomization is outputted under the drive of a gas introduced from the gas inlet.; and an air return passage is constructed and formed on the fixed base, and the air return passage communicates between the gas inlet and the liquid storage cavity. In the atomizer of the present utility model, an air return passage is constructed and formed on a fixed base; and after an aerosol-forming matrix within a liquid storage cavity is consumed, outside air may be supplied by means of the air return passage to avoid the formation of negative pressure within the liquid storage cavity, achieving smooth liquid discharging, preventing an atomizing core from drying out, and improving the safety performance of the aerosol generating device.

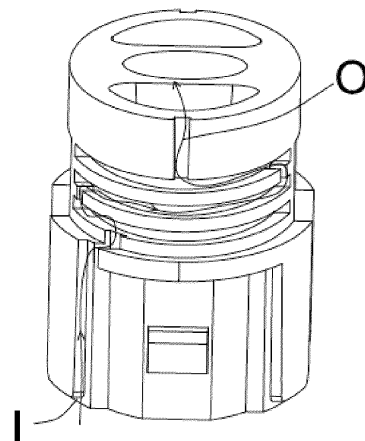


FIG. 5

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Description**TECHNICAL FIELD**

5 [0001] The present application relates to an aerosol generating device, in particular to an atomizer and an aerosol generating device.

BACKGROUND

10 [0002] The aerosol generating device usually includes an atomizer and a power supply device electrically connected to the atomizer. The atomizer can heat and atomize the aerosol-forming substrate stored in the atomizer under the electric drive of the power supply device for inhalation by the user.

[0003] At present, in the structure of the aerosol generating device, the aerosol-forming substrate in the liquid storage chamber of the atomizer is continuously consumed by the atomizing core (for example, a ceramic core), which causes
15 a negative pressure in the liquid storage chamber and leads to poor liquid release. This further leads to insufficient liquid supply to the atomizing core, resulting in bad smell after dry burning, which affects the safe use of the aerosol generating device.

SUMMARY

20 [0004] In view of the above, it is necessary to provide an atomizer that can improve the safety performance of an aerosol generating device.

[0005] It is also necessary to provide an aerosol generating device having the above atomizer.

[0006] An atomizer includes:
25 a bottom seat provided with an air inlet;
a liquid storage member installed on the bottom seat, wherein a liquid storage chamber for storing an aerosol-forming substrate is formed in the liquid storage member; and
an atomizing assembly installed on the bottom seat;
30 wherein the atomizing assembly includes a fixing seat and an atomizing core, an atomizing chamber communicating with the liquid storage chamber and the air inlet is formed in the fixing seat, the atomizing core is installed in the atomizing chamber and atomizes the aerosol-forming substrate provided from the liquid storage chamber, the smoke formed after atomization is outputted under the drive of the air introduced from the air inlet;
wherein an air return passage is formed on the fixing seat, and the air return passage is communicated between
35 the air inlet and the liquid storage chamber.

[0007] In one embodiment, the fixing seat includes a base seat and a liquid sealing member, the base seat is supported on the bottom seat and an inner cavity of the base seat is formed as the atomizing chamber, an outer wall of the base seat is provided with an air return groove; the liquid sealing member is sleeved on the outside of the base seat and
40 surrounds the air return groove to form the air return passage.

[0008] In one embodiment, the air return groove is arranged in a labyrinth along the circumferential direction of the outer wall of the base seat.

[0009] In one embodiment, the top of the base seat is provided with a smoke outlet hole, and the outer wall of the base seat is further provided with a connecting air passage, and the connecting air passage is communicated between
45 the atomizing chamber and the smoke outlet hole.

[0010] In one embodiment, the inlet end of the air return passage is in communication with the lower end of the connecting air passage which is communicated with the atomizing chamber, the outlet end of the air return passage is in communication with the liquid storage chamber.

[0011] In one embodiment, the liquid sealing member is configured to form the bottom of the liquid storage chamber.

50 [0012] In one embodiment, the liquid sealing member is a liquid sealing silicone sleeved outside of the base seat.

[0013] In one embodiment, the bottom seat includes a bottom wall and a side wall formed by extending from the outer edge of the bottom wall in the same direction, two steps protrude from the opposite inner sides of the side wall, the atomizing assembly is supported on the two steps; the atomizer includes a liquid absorbing member, the liquid absorbing member is disposed between the two steps and located below the atomizing assembly.

55 [0014] In one embodiment, the atomizing assembly includes an atomizing core sealing member, and the atomizing core is received in the atomizing core sealing member, both being supported on the two steps; the liquid sealing member is provided with a first liquid inlet hole, the base seat is provided with a second liquid inlet hole, the atomizing core sealing member is provided with a third liquid inlet hole; wherein the first liquid inlet hole, the second liquid inlet hole and the

third liquid inlet hole are communicated with each other to form a liquid inlet passage for releasing the aerosol-forming substrate in the liquid storage chamber to the atomizing core.

[0015] An aerosol generating device includes the above-mentioned atomizer.

[0016] In the atomizer of the present application, an air return passage is formed on the fixing seat. After the aerosol-forming substrate in the liquid storage chamber is consumed, the outside air can be replenished through the air return passage to avoid a negative pressure in the liquid storage chamber, so as to balance the air pressure difference in the liquid storage chamber 130 and achieve smooth liquid release. Further, sufficient liquid supply to the atomizing core is ensured, dry burning of the atomizing core is prevented, and the safety performance of the aerosol generating device is improved.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]

FIG. 1 is a structural schematic diagram of an atomizer in an embodiment of the present application;

FIG. 2 is a partially exploded schematic diagram of the atomizer shown in FIG. 1;

FIG. 3 is an exploded view of the atomizer shown in FIG. 1;

FIG. 4 is a cross-sectional view of the atomizer shown in FIG. 1;

FIG. 5 is a schematic diagram of the airflow path in the air return passage of the atomizer shown in FIG. 1;

FIG. 6 is a bottom view of the atomizer shown in FIG. 1;

FIG. 7 is a cross-sectional view of the atomizer shown in FIG. 6 along B-B direction;

FIG. 8 is a cross-sectional view of the atomizer shown in FIG. 6 along A-A direction.

aerosol generating device 100	atomizer 10
bottom seat 11	bottom wall 110
air inlet 1101	side wall 112
step 1121	bottom seat sealing ring 114
attractive magnet 12	
liquid storage member 13	liquid storage chamber 130
atomizing assembly 15	fixing seat 150
atomizing chamber 150a	air return passage 150b
base seat 1501	smoke outlet hole 1501a
second liquid inlet hole 1501b	liquid sealing member 1503
first liquid inlet hole 1503a	air return groove 1505
connecting air passage 1507	atomizing core 152
atomizing core sealing member 154	third liquid inlet hole 154a
electrode 17	liquid absorbing member 19

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0018] In order to facilitate the understanding of the present application, the present application will be described more fully below with reference to the relevant drawings. Preferred embodiments of the present application are provided in the accompanying drawings. However, the present application can be embodied in many different forms and is not limited to the embodiments described herein. On the contrary, the purpose of providing these embodiments is to make the understanding of the disclosure of the present application more thorough and comprehensive.

[0019] It should be noted that when an element is referred to as being "fixed" to another element, it can be directly on the other element or there can also be an intervening element. When an element is considered "connected" to another element, it may be directly connected to another element or there may be an intervening element at the same time.

[0020] Unless otherwise defined, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the technical field of this present application. The terminology used in the description of the present application herein is only for the purpose of describing specific embodiments, and is not intended to limit the present application. As used herein, the term "and/or" includes any and all combinations of one or more of the

associated listed items.

[0021] Please refer to FIG. 1, an embodiment of the present application provides an aerosol generating device. The aerosol generating device 100 includes an atomizer 10 and a power supply device (not shown) electrically connected to the atomizer 10. In use, the power supply device is used to provide electric energy to the atomizer 10, thereby heating the aerosol-forming substrate stored in the atomizer 10, and the aerosol-forming substrate is atomized under heating to form smoke for the user to inhale.

[0022] Please refer to FIG. 2, the atomizer 10 includes a bottom seat 11, a liquid storage member 13 and an atomizing assembly 15. Specifically, the bottom seat 11 is configured to provide support for the installation of other parts of the atomizer 10. The liquid storage member 13 is installed on the bottom seat 11, and a liquid storage chamber 130 (as shown in FIG. 4) for storing the aerosol-forming substrate is formed in the liquid storage member 13. The atomizing assembly 15 is installed on the bottom seat 11 and is located in the gravity direction of the aerosol-forming substrate in the liquid storage chamber 130. The aerosol-forming substrate in the liquid storage chamber 130 flows into the atomizer assembly 15 and can be heated and atomized to form smoke under the action of the electric energy provided by the power supply device to the atomizer 10, and the smoke is inhaled under the user's suction action.

[0023] Please refer to FIG. 3 and FIG. 4, the bottom seat 11 includes a bottom wall 110 and a side wall 112 formed by extending from the outer edge of the bottom wall 110 in the same direction. An inner cavity of the bottom seat 11 is formed by the enclosure of the bottom wall 110 and the side wall 112. Specifically, the bottom wall 110 is provided with an air inlet 1101 communicating with the outside environment, which is used to provide the atomizing assembly 15 with outside cold air under the suction effect of the user. Two steps 1121 protrude from the opposite inner sides of the side wall 112, and the atomizing assembly 15 is supported on the two steps 1121.

[0024] Further, the atomizer 10 also includes an attractive magnet 12. The attractive magnet 12 is installed on the bottom wall 110 and at least partially exposed from the bottom surface of the bottom wall 110, so as to realize the detachable connection between the atomizer 10 and the power supply device.

[0025] Further, the bottom seat 11 also includes a bottom seat sealing ring 114 for sealing the gap between the bottom seat 11 and the liquid storage member 13.

[0026] The atomizing assembly 15 includes a fixing seat 150, an atomizing core 152 and an atomizing core sealing member 154. An atomizing chamber 150a communicating with the liquid storage chamber 130 and the air inlet 1101 is formed in the fixing seat 150. The atomizing core 152 is received in the atomizing core sealing member 154, both being supported on the two steps 1121 and accommodated in the atomizing chamber 150a.

[0027] Please refer to FIG. 3 and FIG. 5 together, there is an air return passage 150b formed on the fixing seat 150, the air return passage 150b is communicated between the air inlet 1101 and the liquid storage chamber 130, so that after the aerosol-forming substrate in the liquid storage chamber 130 is consumed, the outside air can be replenished through the air return passage 150b to balance the air pressure difference in the liquid storage chamber 130, so as to achieve smooth liquid release, thereby ensuring sufficient liquid supply to the atomizing core 152, preventing the atomizing core 152 from dry burning and improving the safety performance of the aerosol generating device 100.

[0028] Specifically, the fixing seat 150 includes a base seat 1501 and a liquid sealing member 1503. The base seat 1501 is supported on the bottom seat 11 and an inner cavity of the base seat 1501 is formed as an atomizing chamber 150a. In this specific embodiment, specifically referring to FIG. 4, the two steps 1121 are in the shape of two stages. The base seat 1501 is supported on the second stage of the two steps 1121 away from the bottom wall 110. The atomizing core 152 is received in the atomizing core sealing member 154, both of them are supported on the first stage of the two steps 1121 adjacent to the bottom wall 110 and are at least partially received in the base seat 1501.

[0029] The base seat 1501 has a substantially hollow cylindrical structure. An air return groove 1505 is provided on an outer wall of the base seat 1501. The liquid sealing member 1503 also has a substantially hollow cylindrical structure. The liquid sealing member 1503 is sleeved on the outside of the base seat 1501 and surrounds the air return groove 1505 to form the air return passage 150b. In this specific embodiment, the liquid sealing member 1503 is a liquid sealing silicone, which is sleeved outside the base seat 1501 and configured to form the bottom of the liquid storage chamber 130, to prevent the leakage of the aerosol-forming substrate in the liquid storage chamber 130, and at the same time, the external air can also be replenished, to balance the air pressure difference in the liquid storage chamber 130, so that the liquid can be released smoothly.

[0030] Please refer to FIG. 3, FIG. 6 and FIG. 7 together, the top of the base seat 1501 is provided with a smoke outlet hole 1501a. The outer wall of the base seat 1501 is further provided with a connecting air passage 1507. The connecting air passage 1507 is communicated between the atomizing chamber 150a and the smoke outlet hole 1501a, so that the smoke generated by atomization can flow from the atomizing chamber 150a to the smoke outlet hole 1501a under the suction of the user, for the user to inhale.

[0031] Please refer to FIG. 3 and FIG. 5 together, further, the inlet end I of the air return passage 150b is in communication with the lower end of the connecting air passage 1507 which is communicated with the atomizing chamber 150a, and the outlet end O of the air return passage 150b is in communication with the liquid storage chamber 130. In this way, during the inhalation process of the user, the aerosol-forming substrate is atomized under the heating of the

atomizing core 152, part of the condensate generated during the flow of smoke to the user's mouth through the connecting air passage 1507 and the smoke outlet hole 1501a can flow along the outer surface of the connecting air passage 1507 to the air return passage 150b under the action of gravity, and then flow through the air return passage 150b to be absorbed and stored in the liquid storage chamber 130, thereby preventing the user from sucking the condensate, reducing the noise generated by the flow of the condensate in the connecting air passage 1507, and improving user experience.

[0032] Please refer to FIG. 3 and FIG. 4 again, further, the air return groove 1505 is arranged in a labyrinth along the circumferential direction of the outer wall of the base seat 1501. The design of the labyrinthine structure can effectively prevent the aerosol-forming substrate in the liquid storage chamber 130 from leaking to the outside through the air return passage 150b, thereby improving user experience.

[0033] The atomizer 10 also includes an electrode 17, and the electrode 17 is installed on the bottom wall 110 of the bottom seat 11. The atomizing core sealing member 154 is substantially cylindrical with an open lower end. The heating surface and the electrical connection surface of the atomizing core 152 are exposed through the atomizing core sealing member 154, and the electrical connection surface is electrically connected to the electrode 17, wherein the electrical connection surface is configured to supply electrical energy to the heating surface, and the heating surface is configured to generate heat required to atomize the aerosol-forming substrate. In this specific embodiment, the atomizing core 152 has a porous ceramic structure.

[0034] Please refer to FIG. 3, FIG. 6 and FIG. 8 together, further, the top portion of the liquid sealing member 1503 is provided with a first liquid inlet hole 1503a, the base seat 1501 is provided with a second liquid inlet hole 1501b, and the atomizing core sealing member 154 is provided with a third liquid inlet hole 154a. Specifically, the first liquid inlet hole 1503a, the second liquid inlet hole 1501b and the third liquid inlet hole 154a are communicated with each other to form a liquid inlet passage for releasing the aerosol-forming substrate in the liquid storage chamber 130 to the atomizing core 152. During the inhalation process, the atomizing core 152 atomizes the aerosol-forming substrate provided from the liquid storage chamber 130, and the smoke formed after atomization is outputted to the user's mouth for inhalation under the drive of the air introduced from the air inlet 1101.

[0035] Please refer to FIG. 3 and FIG. 4 again, further, the atomizer 10 includes a liquid absorbing member 19, and the liquid absorbing member 19 is disposed between the two steps 1121 and located below the atomizing assembly 15 for absorbing condensate dripped from the atomizing assembly 15.

[0036] In the atomizer 10 of the present application, an air return passage 150b is formed on the fixing seat 150. After the aerosol-forming substrate in the liquid storage chamber 130 is consumed, the outside air can be replenished through the air return passage 150b to avoid a negative pressure in the liquid storage chamber 130, so as to balance the air pressure difference in the liquid storage chamber 130 and achieve smooth liquid release. Further, sufficient liquid supply to the atomizing core 152 is ensured, dry burning of the atomizing core 152 is prevented, and the safety performance of the aerosol generating device 100 is improved.

[0037] The present application also provides an aerosol generating device 100 with the atomizer 10 described above. Since the aerosol generating device 100 has all the functions of the atomizer 10 described above, details will not be repeated here.

[0038] The above-mentioned embodiments only express several implementations of the present application, and the description thereof is relatively specific and detailed, but it should not be construed as limiting the patent scope of the present application. It should be pointed out that those skilled in the art can make several modifications and improvements without departing from the concept of the present application, and these all belong to the protection scope of the present application. Therefore, the scope of protection of the present application patent should be based on the appended claims.

Claims

1. An atomizer comprising:

a bottom seat provided with an air inlet;
a liquid storage member installed on the bottom seat, wherein a liquid storage chamber for storing an aerosol-forming substrate is formed in the liquid storage member; and
an atomizing assembly installed on the bottom seat;
wherein the atomizing assembly comprises a fixing seat and an atomizing core, an atomizing chamber communicating with the liquid storage chamber and the air inlet is formed in the fixing seat, the atomizing core is installed in the atomizing chamber and atomizes the aerosol-forming substrate provided from the liquid storage chamber, the smoke formed after atomization is outputted under the drive of the air introduced from the air inlet; wherein an air return passage is formed on the fixing seat, and the air return passage is communicated between the air inlet and the liquid storage chamber.

2. The atomizer as claimed in claim 1, wherein the fixing seat comprises a base seat and a liquid sealing member, the base seat is supported on the bottom seat and an inner cavity of the base seat is formed as the atomizing chamber, an outer wall of the base seat is provided with an air return groove; the liquid sealing member is sleeved on the outside of the base seat and surrounds the air return groove to form the air return passage.
3. The atomizer as claimed in claim 2, wherein the air return groove is arranged in a labyrinth along the circumferential direction of the outer wall of the base seat.
4. The atomizer as claimed in claim 2, wherein the top of the base seat is provided with a smoke outlet hole, and the outer wall of the base seat is further provided with a connecting air passage, and the connecting air passage is communicated between the atomizing chamber and the smoke outlet hole.
5. The atomizer as claimed in claim 4, wherein the inlet end of the air return passage is in communication with the lower end of the connecting air passage which is communicated with the atomizing chamber, the outlet end of the air return passage is in communication with the liquid storage chamber.
6. The atomizer as claimed in claim 2, wherein the liquid sealing member is configured to form the bottom of the liquid storage chamber.
7. The atomizer as claimed in claim 2, wherein the liquid sealing member is a liquid sealing silicone sleeved outside of the base seat.
8. The atomizer as claimed in claim 2, wherein the bottom seat comprises a bottom wall and a side wall formed by extending from the outer edge of the bottom wall in the same direction, two steps protrude from the opposite inner sides of the side wall, the atomizing assembly is supported on the two steps; the atomizer comprises a liquid absorbing member, the liquid absorbing member is disposed between the two steps and located below the atomizing assembly.
9. The atomizer as claimed in claim 8, wherein the atomizing assembly comprises an atomizing core sealing member, and the atomizing core is received in the atomizing core sealing member, both being supported on the two steps; the liquid sealing member is provided with a first liquid inlet hole, the base seat is provided with a second liquid inlet hole, the atomizing core sealing member is provided with a third liquid inlet hole; wherein the first liquid inlet hole, the second liquid inlet hole and the third liquid inlet hole are communicated with each other to form a liquid inlet passage for releasing the aerosol-forming substrate in the liquid storage chamber to the atomizing core.
10. An aerosol generating device, comprising the atomizer as claimed in any one of claims 1 to 9.

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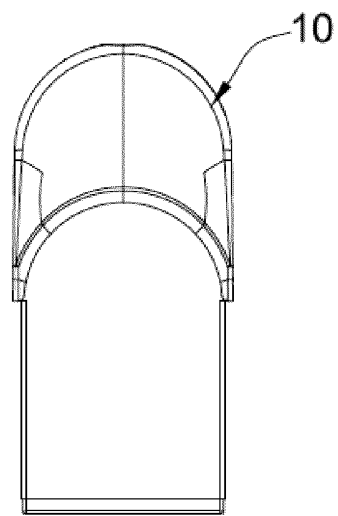


FIG. 1

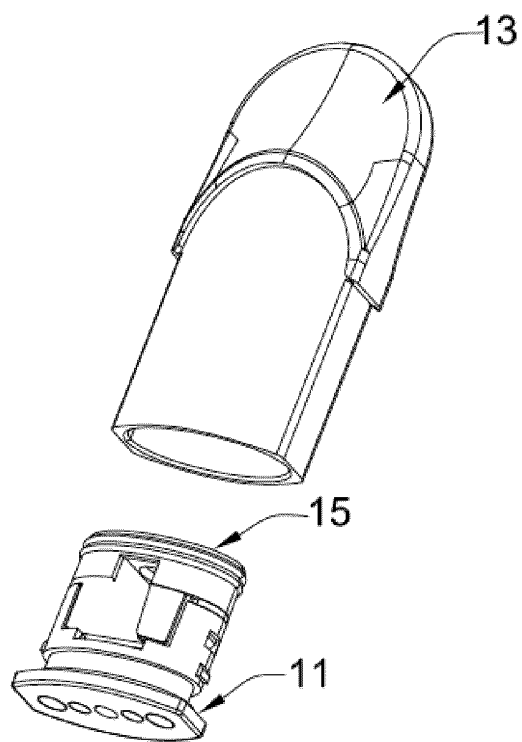


FIG. 2

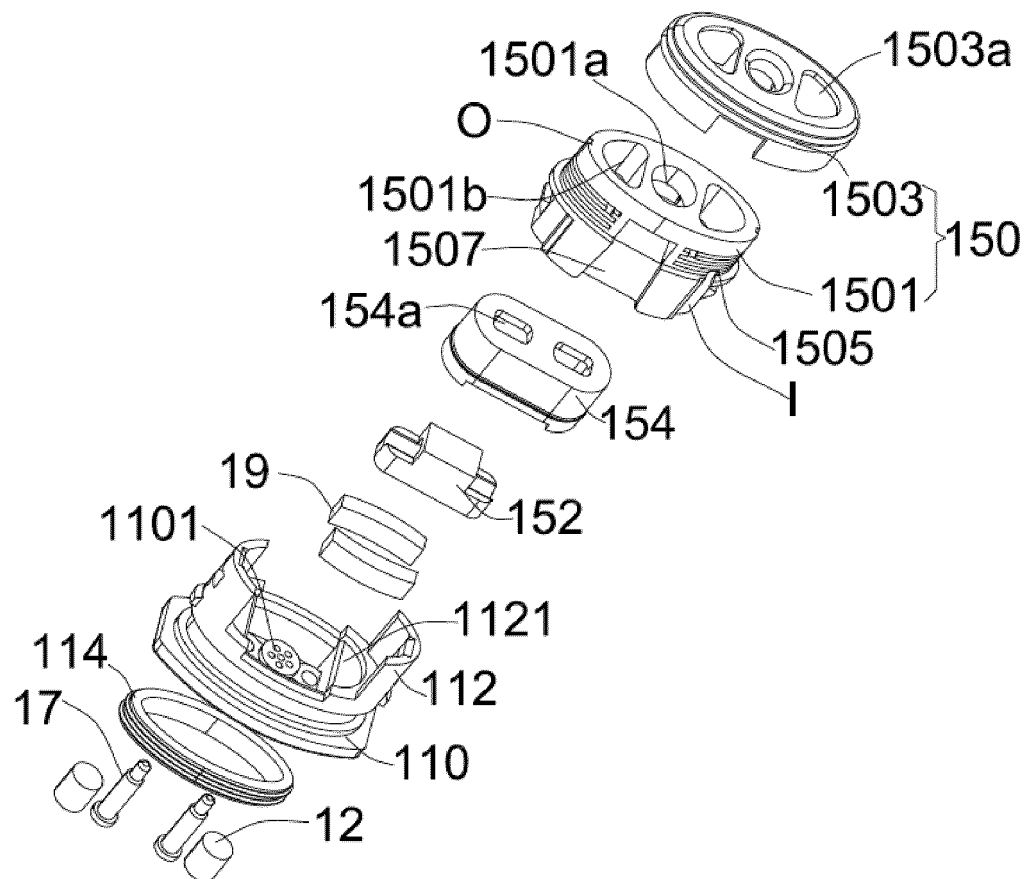


FIG. 3

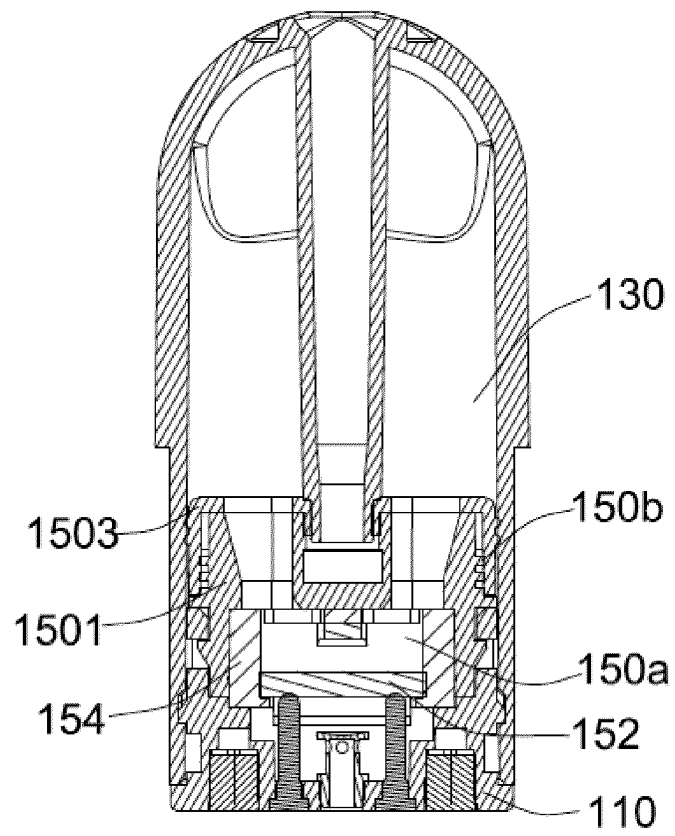


FIG. 4

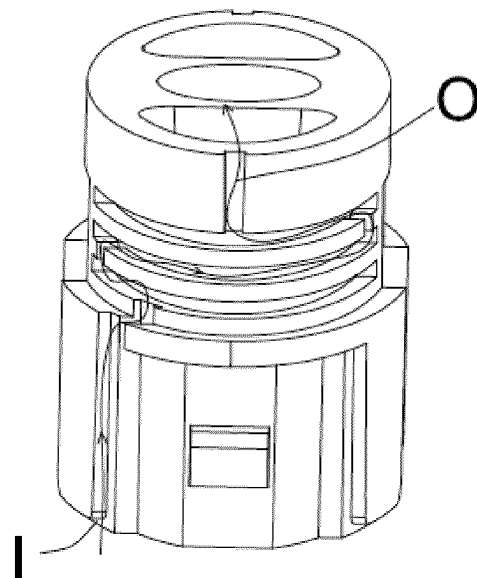


FIG. 5

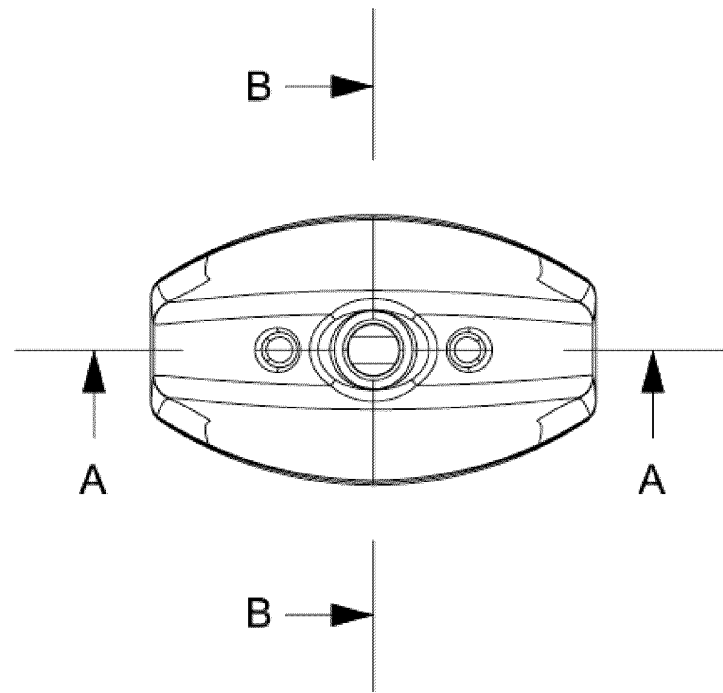
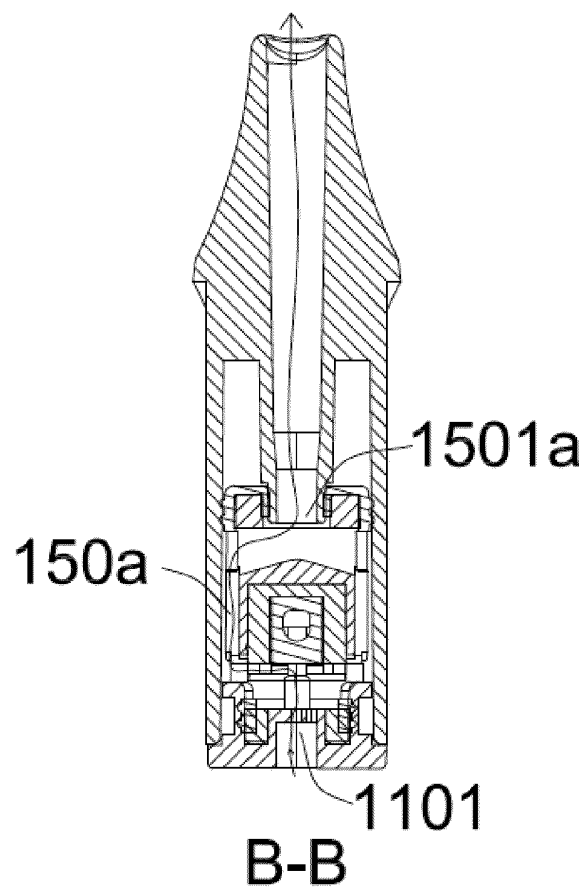
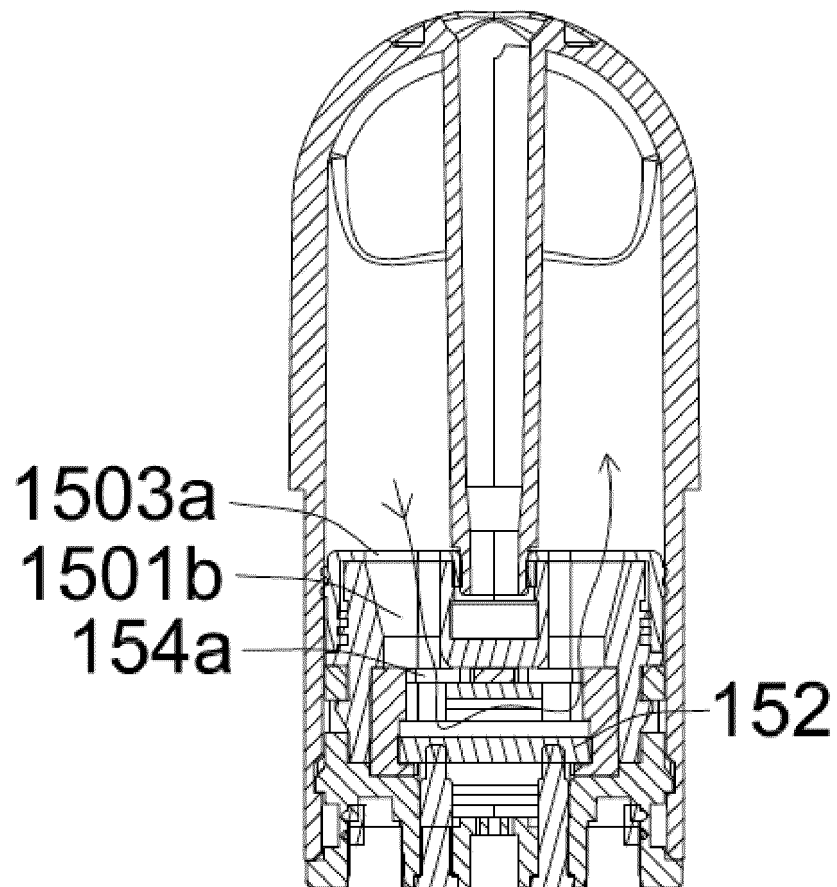


FIG. 6



B-B

FIG. 7



A-A

FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2021/111993

A. CLASSIFICATION OF SUBJECT MATTER A24F 40/10(2020.01)i; A24F 40/40(2020.01)i; A24F 40/46(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; VEN; CNKI; CNTXT; EPTXT; USTXT; WOTXT: 派腾, 麦克韦尔, 储液, 储油, 压力, 气压, 压强, 补气, 换气, 回气, 负压, 平衡, liquid, oil, balance, negative pressure, subatmospheric, aerosol, electric cigarette, compensate, supply, backfill, backflow	C. DOCUMENTS CONSIDERED TO BE RELEVANT																		
<table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>CN 111657548 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 15 September 2020 (2020-09-15) description, paragraphs [0048]-[0086], and figures 1-14</td> <td>1-10</td> </tr> <tr> <td>X</td> <td>CN 211861815 U (SHENZHEN SMOORE TECHNOLOGY LIMITED) 06 November 2020 (2020-11-06) description, paragraphs [0051]-[0109], and figures 1-18</td> <td>1-10</td> </tr> <tr> <td>X</td> <td>CN 111631437 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 08 September 2020 (2020-09-08) description, paragraphs [0038]-[0061], and figures 1-13</td> <td>1-10</td> </tr> <tr> <td>X</td> <td>CN 211746997 U (SHENZHEN SMOORE TECHNOLOGY LIMITED) 27 October 2020 (2020-10-27) description, paragraphs [0044]-[0102], and figures 1-18</td> <td>1-10</td> </tr> <tr> <td>A</td> <td>CN 210809302 U (SHENZHEN RELX TECH. CO., LTD.) 23 June 2020 (2020-06-23) entire document</td> <td>1-10</td> </tr> </tbody> </table>	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	CN 111657548 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 15 September 2020 (2020-09-15) description, paragraphs [0048]-[0086], and figures 1-14	1-10	X	CN 211861815 U (SHENZHEN SMOORE TECHNOLOGY LIMITED) 06 November 2020 (2020-11-06) description, paragraphs [0051]-[0109], and figures 1-18	1-10	X	CN 111631437 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 08 September 2020 (2020-09-08) description, paragraphs [0038]-[0061], and figures 1-13	1-10	X	CN 211746997 U (SHENZHEN SMOORE TECHNOLOGY LIMITED) 27 October 2020 (2020-10-27) description, paragraphs [0044]-[0102], and figures 1-18	1-10	A	CN 210809302 U (SHENZHEN RELX TECH. CO., LTD.) 23 June 2020 (2020-06-23) entire document	1-10	
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Date of the actual completion of the international search 08 October 2021	Date of mailing of the international search report 28 October 2021																		
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.																		

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2021/111993

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