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(54) HEATING ELEMENT ASSEMBLY AND AEROSOL GENERATING DEVICE

(57) A heating element assembly (14) and an aerosol generating device (10). The heating element assembly (14) is applied in the aerosol generating device (10), and comprises a heating element (141), a fixing seat (142), and a sealing element (145). The heating element (141) comprises a base body (1411); the base body (1411) has a first end (1411a) and a second end (1411b) arranged opposite to each other; the base body (1411) is provided with a heating portion and a connecting portion (1413), and the connecting portion (1413) is located at the first end (1411a) of the base body (1411) and is electrically connected to the heating portion; the fixing seat (142) is arranged on the base body (1411), located on the side of the connecting portion (1413) distant from the second end (1411b) and spaced apart from the connecting portion (1413); the sealing member (145) is sleeved on the base body (1411), and a position where the sealing member (145) is connected to the base body (1411) is located between the connecting portion (1413) and the fixing seat (142). The heating element assembly (14) and the aerosol generating device (10) effectively prevent short circuiting of a circuit in an electronic element, so that the service life of the aerosol generating device (10) is prolonged and the aerosol generating device (10) has excellent safety performance.

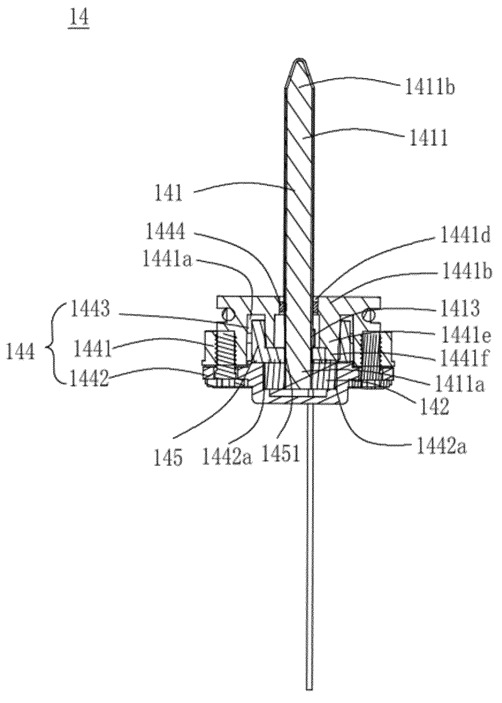

FIG. 6

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Description

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present disclosure claims priority of Chinese Patent Application No. 202122181104.5, filed on September 08, 2021, the entire contents of which are hereby incorporated by reference in their entirety.

TECHNICAL FIELD

[0002] The present disclosure relates to the technical field of electronic atomization devices, and in particular to a heating element assembly and an aerosol-generating device.

BACKGROUND

[0003] A heat not burning (HNB) device is a combination device of an aerosol-generating device for heating an aerosol-generating substance such as tobacco without burning. The aerosol-generating device heats the aerosol-generating substance at a low temperature, and the aerosol-generating substance may generate a desired aerosol for a user.

[0004] Generally, the aerosol-generating device includes a heating element assembly capable of heating the aerosol-generating substance to generate the aerosol. However, when the internal structure of the heating element assembly is not well sealed, the liquid, such as the aerosol-generating substance and condensate, etc., may leak into an electronic component arranged in the aerosol-generating device through the heating element assembly, which may cause the short circuit of a circuit in the electronic component, thereby significantly shortening the service life and having a poor safety performance of the aerosol-generating device.

SUMMARY OF THE DISCLOSURE

[0005] In order to solve a problem that the service life is shortened and the safety performance of an aerosol-generating device is poor due to the poor sealing in the related heating element assembly, a heating element assembly and an aerosol-generating device are provided by some embodiments of the present disclosure.

[0006] In order to solve the above technical problem, a first technical solution adopted by the present disclosure is to provide a heating element assembly, applied in an aerosol-generating device and including: a heating element, including a base having a first end and a second end opposite to the first end, where the base is arranged with a heating portion and a connecting portion, and the connecting portion is disposed on the first end of the base and electrically connected to the heating portion; a fixing mount, connected to the base, disposed on the side of the connecting portion away from the second end, and spaced apart from the connecting portion; and a sealing member, sleeved on the base, where a connection position between the sealing member and the base is disposed between the connecting portion and the fixing mount.

[0007] In some embodiments, a first mounting hole is defined on the sealing member, the sealing member is sleeved on the base between the connecting portion and the fixing mount through the first mounting hole, and the first mounting hole is engaged with the base by means of interference fit.

[0008] . In some embodiments, the heating element assembly further includes a heating base assembly, the heating element is mounted to the heating base assembly, and the sealing member is at least partially clamped by the heating base assembly and the fixing mount.

[0009] In some embodiments, an accommodating cavity is defined on the heating base assembly, the fixing mount and the sealing member are arranged in the accommodating cavity, the sealing member is at least partially clamped by the top wall of the accommodating cavity and the fixing mount, and the second end of the base extends out of the accommodating cavity.

[0010] In some embodiments, the heating base assembly includes an upper base and a lower base, and the accommodating cavity is cooperatively defined by the upper base and the lower base; the upper base is sleeved on the heating element, and the sealing member is at least partially clamped by the upper base and the fixing mount; and the sealing member is configured to seal a gap between the upper base and the fixing mount.

[0011] In some embodiments, a second mounting hole is defined on the top wall of the upper base, the upper base is sleeved on the base through the second mounting hole, a sealing rib is arranged on the inner wall of the second mounting hole, and the sealing rib seals a gap between the second mounting hole and the base; and the sealing member is at least partially clamped by the top wall of the upper base and the fixing mount, and the sealing member is configured to seal the gap between the top wall of the upper base and the fixing mount.

[0012] In some embodiments, a clamping portion is extends outwards from the surface of the top wall of the upper base close to the fixing mount, and a clamping groove is defined on the surface of the sealing member close to the top wall of the upper base; and the clamping groove is clamped with the clamping portion, and the bottom wall of the clamping groove is clamped by the clamping portion and the fixing mount.

[0013] In some embodiments, a protruding portion is arranged on one of the ends of the clamping portion close to the fixing mount, a through hole is defined on the sealing member, and the protruding portion passes through the through hole and abuts against the fixing mount.

[0014] In some embodiments, the through hole is engaged with the protruding portion by means of interference fit, and liquid is prevented from leaking along the protruding portion.

[0015] In some embodiments, a limiting groove is de-

fined on the lower base, and the fixing mount is arranged in the limiting groove.

[0016] In some embodiments, a limiting hole is defined on the bottom wall of the limiting groove, the fixing mount is sleeved on the first end of the base, a part of the base disposed on the side of the fixing mount away from the connecting portion is arranged in the limiting hole, and the limiting hole is engaged with the base by means of interference fit.

[0017] In order to solve the above technical problem, a second technical solution adopted by the present disclosure is to provide an aerosol-generating device, including: the above-mentioned heating element assembly and a first mounting base, where the heating element assembly is arranged on the first mounting base.

[0018] In the heating element assembly and the aerosol-generating device provided by some embodiments of the present disclosure, the heating element assembly includes the heating element, the fixing mount, and the sealing member. The heating element includes the base having the first end and the second end opposite to the first end, the base is arranged with the heating portion and the connecting portion, and the connecting portion is disposed on the first end of the base and electrically connected to the heating portion. By arranging the connecting portion and the heating portion on the base of the heating element, the heating portion may heat the aerosol-generating substance to generate the aerosol after the heating portion is powered on, and the connecting portion may be electrically connected to the external lead. The external lead is electrically connected to the battery, the controller, etc., the battery may supply power to the heating portion, and the controller may control the heating portion to operate. The fixing mount is connected to the base and is disposed on the side of the connecting portion away from the second end. The fixing mount is spaced apart from the connecting portion. The fixing mount is configured to fix the heating element, such that the heating element may be fixed in the aerosol-generating device. The sealing member is sleeved on the base, and the connection position between the sealing member and the base is between the connecting portion and the fixing mount. The sealing member may be capable of preventing the liquid from leaking along the base from the side of the sealing member close to the connecting portion to the side of the sealing member away from the connecting portion, thereby preventing the liquid from leaking to the electronic component arranged on the side of the sealing member away from the connecting portion. In this way, it may be possible to effectively prevent the short circuit of the circuit in the electronic component, thereby prolonging the service life of the aerosol-generating device and enabling the aerosol-generating device to have the excellent safety performance.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] To illustrate the technical solutions in the embodiments of the present disclosure more clearly, a brief description to the drawings needed in the embodiments or the prior art are given in the following. Obviously, the figures in the following description are only some embodiments of the present disclosure. For those skilled in the art, they can also obtain other figures according to these drawings and without any creative work.

FIG. 1 is a schematic view of a structure where an aerosol-generating device is assembled with an aerosol-generating substance according to an embodiment of the present disclosure.

FIG. 2 is a cross-sectional view of the structure shown in FIG. 1 along an A-A direction.

FIG. 3 is a schematic view of a structure where a fixing mount is assembled with a heating element and two external leads according to an embodiment of the present disclosure.

FIG. 4 is an exploded schematic view of the structure shown in FIG. 3.

FIG. 5 is an exploded schematic view of a heating element assembly according to an embodiment of the present disclosure.

FIG. 6 is a cross-sectional schematic view of the heating element assembly according to an embodiment of the present disclosure.

FIG. 7 is a structural schematic view of an upper base and a sealing member according to an embodiment of the present disclosure.

FIG. 8 is a structural schematic view of a lower base according to an embodiment of the present disclosure.

FIG. 9 is a cross-sectional schematic view of the heating element assembly according to another embodiment of the present disclosure.

DETAILED DESCRIPTION

[0020] Technical solutions in the embodiments of the present disclosure will be clearly and completely described below by referring to the accompanying drawings in the embodiments of the present disclosure. Obviously, the described embodiments are only some of but not all of the embodiments of the present disclosure. Based on the embodiments in the present disclosure, all other embodiments obtained by any ordinary skilled person in the art without making creative work shall fall within the scope of the present disclosure.

[0021] In the following description, specific details such as a specific system structure, an interface, a technology, etc., are proposed for description rather than limitation, so as to thoroughly understand the present disclosure.

[0022] Terms "first", "second" and "third" herein are used for descriptive purposes only and shall not be interpreted as indicating or implying relative importance or implicitly specifying the number of indicated technical features. Therefore, a feature defined by the "first", "second", or "third" may explicitly or implicitly include at least

one such feature. In the description of the present disclosure, "a plurality of" means at least two, such as two, three, and so on, unless otherwise expressly and specifically limited. All directional indications in the present disclosure (such as up, down, left, right, front, rear, ...) are used only to explain relative position relationship, movement, and the like, between components at a particular posture (as shown in the drawings). When the posture is changed, the directional indications may change accordingly. In addition, terms "include" and "have", and any variations thereof are intended to cover non-exclusive inclusion. For example, a process, a method, a system, a product or an apparatus including a series of operations or units is not limited to the listed operations or units, but may further include operations or units that are not listed, or include other operations or units that are inherent to the process, the method, the product or the apparatus.

[0023] Term "embodiment" of the present disclosure may indicate that a particular feature, a structure or a property described in an embodiment may be included in at least one embodiment of the present disclosure. Presence of the term in various sections in the specification does not necessarily mean a same embodiment or a separate or an alternative embodiment that is mutually exclusive with other embodiments. It shall be understood, both explicitly and implicitly, by any ordinary skilled person in the art that the embodiments described herein may be combined with other embodiments.

[0024] The present disclosure will be described in detail below by referring to the accompanying drawings and embodiments.

[0025] An aerosol-generating device 10 is provided by some embodiments of the present disclosure. As shown in FIGS. 1-2, FIG. 1 is a schematic view of a structure where an aerosol-generating device is assembled with an aerosol-generating substance according to an embodiment of the present disclosure, and FIG. 2 is a cross-sectional view of the structure shown in FIG. 1 along an A-A direction.

[0026] In some embodiments, the aerosol-generating device 10 includes a housing 11, a first mounting base 12, a second mounting base 13, a heating element assembly14, a battery 15, and a controller (not shown). A mounting cavity 111 is defined on the housing 11. The heating element assembly14, the first mounting base 12, and the second mounting base 13 are arranged in the mounting cavity 111. The second mounting base 13 is arranged on one of the ends of the mounting cavity 111, and a heating cavity 131 is defined on the second mounting base 13. The heating cavity 131 is in communication with outside air through an opening 1311.

[0027] The heating element assembly14 is arranged on the side of the heating cavity 131 away from the opening 1311. The heating element assembly 14 includes a heating element 141, and the heating element 141 is capable of generating heat after the heating element 141 is powered on. One of the ends of the heating element 141 is disposed in the heating cavity 131 and disposed on the opposite side of the opening 1311. The aerosol-generating substance 20 may be inserted into the heating cavity 131 through the opening 1311, and the one of the ends of the heating element 141 is inserted into the aerosol-generating substance 20, such that it may be possible to enable the heating element 141 to heat the aerosol-generating substance 20 after the heating element 141 is powered on, thereby generating an aerosol for the user to inhale.

[0028] The first mounting base 12 is arranged on the side of the heating cavity 131 away from the opening 1311, and is configured to install and fix the heating element assembly14, such that the axis of the heating element assembly14 is substantially parallel to the axis of the heating cavity 131. In some embodiments, the axis of the heating element 141 substantially coincides with the axis of the heating cavity 131, such that the one of the ends of the heating element 141 may be inserted into the aerosol-generating substance 20 and uniformly heat the aerosol in the heating cavity 131 around the aerosol-generating substance 20.

[0029] The heating element assembly14 may also refer to the structure and function of the heating element assembly14 involved in any of the embodiments described below, which may achieve the same or similar technical effects and will not be repeated herein.

[0030] The battery 15 and the controller are arranged on the side of the second mounting base 13 away from the heating cavity 131, and the battery 15 and the controller are electrically connected to the heating element assembly14. The battery 15 is configured to supply power to the heating element assembly14 and heat the aerosol-generating substance 20. The controller is configured to control the heating element assembly14 to start heating or stop heating, and may further control a heating power, temperature, and other parameters of the heating element assembly14.

[0031] As shown in FIGS. 3-4, FIG. 3 is a schematic view of a structure where a fixing mount is assembled with a heating element and two external leads according to an embodiment of the present disclosure, and FIG. 4 is an exploded schematic view of the structure shown in FIG. 3. The heating element assembly14 includes a heating element 141, two external leads 143, and a fixing mount 142.

[0032] The heating element 141 includes a base 1411, a heating portion, and a connecting portion 1413. The base 1411 has a first end 1411a and a second end 1411b opposite to the first end 1411a. The first end 1411a of the base 1411 is the end of the base 1411 away from the opening 1311 of the heating cavity 131, and the second end 1411b of the base 1411 is the end of the base 1411 inserted into the opening 1311 of the heating cavity 131. The shape of the base 1411 may be needle shaped as shown in FIGS. 3-4, or sheet shaped, cylindrical, etc. The shape of the cross-section of base 1411 may be circular, quasi circular, triangular, polygonal, or the like. An inser-

tion portion, such as a conical tip, is arranged on the end of the second end 1411b of the base 1411, so as to facilitate inserting into the aerosol-generating substance 20. In some embodiments, the shape of the base 1411 is set to be cylindrical, the insertion portion is arranged on the end of the second end 1411b of the base 1411, and the insertion portion is conical, such that the aerosol-generating substance 20 may be inserted into or exited from the heating element 141 by rotating.

[0033] The base 1411 is arranged with a heating portion (not shown) and a connecting portion 1413. The heating portion may be a heating film, a heating wire, a heating net, or the like, which is arranged on the base 1411. For example, In some embodiments, the heating portion is a heating circuit arranged on the base 1411. The heating circuit may be printed on a flexible ceramic film, and the flexible ceramic film with the heating circuit may be wound on the outer surface of the base 1411. The flexible ceramic film with the heating circuit is sintered together with the base 1411. In some embodiments, the heating circuit is in the strip shape, and the two ends of the heating circuit in the strip shape are arranged on the first end 1411a of the base 1411. In other embodiments, the heating portion may also be in the spiral shape.

[0034] The connecting portion 1413 is disposed on the first end 1411a of the base 1411 and electrically connected to the heating portion. In some embodiments, the number of connecting portions 1413 is two, and the two connecting portions 1413 are arranged on the first end 1411a of the base 1411 at intervals. The connecting portion 1413 may be a solder pad and configured to weld the two external leads 143 on the base. The two connecting portions 1413 are electrically connected to the two ends of the heating portion, respectively. At the same time, the two connecting portions 1413 are electrically connected to the two external leads 143, respectively, and configured to electrically connect to the battery 15, the controller, etc., such that the battery 15 may supply power for the heating portion, and the controller may control the heating portion to operate. In an embodiment, the two ends of the heating portion are arranged on the first end 1411a of the base 1411, and two metal pads are arranged on the first end 1411a of the base 1411 at intervals, so as to form two connecting portions 1413. In another embodiment, the two ends of the heating portion are arranged on the first end 1411a and the second end 1411b of the base 1411, respectively. One of two metal pads is arranged on the first end 1411a of the base 1411 to form one of the two connecting portions 1413, and the other of two metal pads extends from the second end 1411b of the base 1411 to the first end 1411a of the base 1411, and the other of the two connecting portions 1413 is formed on the end of the first end 1411a of the base 1411.

[0035] In an embodiment, the outer surface of the heating portion, the outer surface of the connecting portion 1413, and the outer surface of each of the two external leads 143 are arranged with a protective layer (not shown). The protective layer is configured to prevent liquid, such as the aerosol-generating substance 20, condensate, etc., from directly contacting the heating portion, the connecting portion 1413, and the two external leads 143, so as to prevent short circuit damage to the heating portion, the connecting portion 1413, and the two external leads 143.

[0036] The fixing mount 142 is configured to fix the heating element 141, and the fixing mount 142 may be, but is not limited to, a flange. The fixing mount 142 is connected to the base 1411, is disposed on the side of the connecting portion 1413 away from the second end 1411b of the base 1411, and spaced apart from the connecting portion 1413. In some embodiments, the fixing mount 142 is sleeved on the base 1411, one of the two ends of each of the two external leads 143 is electrically connected to two connecting portions 1413, and the other of the two ends of each of the two external leads 143 extends through an opening defined on the fixing mount 142 to the side of the fixing mount 142 away from the connecting portion 1413. In some embodiments, the fixing seat 142 may be configured to fix the heating element 141, such that the axis of the heating element 141 is substantially parallel to the axis of the heating cavity 131. In some embodiments, the axis of the heating element 141 substantially coincides with the axis of the heating cavity 131, such that after the aerosol-generating substance 20 is inserted into the heating element 141 of the heating cavity 131, the heating element 141 may uniformly heat the periphery of the aerosol-generating substance 20. The material of the fixing mount 142 may be ceramic, and the fixing mount 142 may be sintered together with the heating element 141, that is, the fixing mount 142 may be integrally formed with the heating element 141.

[0037] In some embodiments, the fixing mount 142 is sleeved on the end of the first end 1411a of the base 1411, and the end surface of the first end 1411a of the base 1411 is substantially flush with the surface of the fixing mount 142 away from the connecting portion 1413. In other embodiments, the fixing mount 142 may also be sleeved on the first end 1411a of the base 1411, and there is a certain distance between the fixing mount 142 and the end of the first end 1411a. That is, the end of the first end 1411a of the base 1411 passes through the fixing mount 142 and is arranged on the side of the fixing mount 142 away from the connecting portion 1413.

[0038] In some embodiments, the first end 1411a of the base 1411 and the heating portion of the base 1411 are arranged in the heating cavity 131, such that the aerosol-generating substance 20 in the heating cavity 131 may be heated through the heating portion of the base 1411. The second end 1411b of the base 1411, the connecting portion 1413 of the base 1411, and the fixing mount 142 are arranged in the mounting cavity 111 outside the heating cavity 131.

[0039] As shown in FIGS. 5-6, FIG. 5 is an exploded schematic view of a heating element assembly according

to an embodiment of the present disclosure, and FIG. 6 is a cross-sectional schematic view of the heating element assembly according to an embodiment of the present disclosure. A heating element assembly14 is provided by some embodiments of the present disclosure, and applied in the aerosol-generating device 10. The heating element assembly14 includes a heating element 141, a heating base assembly 144, a fixing mount 142, and a sealing member 145.

[0040] The sealing member 145 is sleeved on the base 1411, and a connection position between the sealing member 145 and the base 1411 is disposed between the connecting portion 1413 and the fixing mount 142. In some embodiments, as shown in FIG. 7, a first mounting hole 1451 is defined on the sealing member 145. The sealing member 145 is sleeved on the base 1411 through the first mounting hole 1451, and the first mounting hole 1451 is engaged with the base 1411 by means of interference fit. The location where the first mounting hole 1451 is engaged with the base 1411 is disposed between the connecting portion 1413 and the fixing mount 142. In this way, the sealing member 145 may prevent the liquid from leaking along the heating element 141 from the side of the sealing member 145 close to the connecting portion 1413 to the side of the sealing member 145 away from the connecting portion 1413, thereby preventing the liquid from leaking to an electronic component arranged on the side of the sealing member 145 away from the connecting portion 1413. Therefore, it may be possible to effectively prevent the short circuit of a circuit in the electronic component, so as to prolong the service life of the aerosol-generating device 10, and enable the aerosol-generating device 10 to have the excellent safety performance. The heating base assembly 144 may be configured to install and fix the heating portion, the fixing mount 142, and the sealing member 145. As shown in FIGS. 5-6. The heating element 141 and the fixing mount 142 are mounted to the heating base assembly 144. The sealing member 145 is at least partially clamped by the heating base assembly 144 and the fixing mount 142, and a gap between the heating base assembly 144 and the fixing mount 142 is sealed by the sealing member 145. The sealing member 145 is clamped by the heating base assembly 144 and the fixing mount 142, such that the sealing member 145 may be fixed and limited. For example, in some embodiments, the sealing member 145 is clamped by the heating base assembly 144 and the fixing mount 142, so as to limit the sealing member 145 to the base 1411 between the connecting portion 1413 and the fixing mount 142.

[0041] In some embodiments, the heating base assembly 144 includes an upper base 1441 and a lower base 1442. An accommodating cavity 1443 is cooperatively defined by the upper base 1441 and the lower base 1442. The fixing mount 142, the sealing member 145, and a part of the heating element 141 are arranged in the accommodating cavity 1443. The upper base 1441 may be detachably connected to the lower base 1442. The upper base 1441 may be connected to the lower base 1442 by means of engaging connection. Alternatively, in the embodiments as shown in FIG. 6, the upper base 1441 may be connected to the lower base 1442 through a connecting member, such as a screw, a bolt, etc.

[0042] In some embodiments, an accommodating groove 1441a is defined on the side of the upper base 1441 facing the lower base 1442. A limiting groove 1442a is defined on the side of the lower base 1442 facing the upper base 1441. The accommodating groove 1441a is in communication with the limiting groove 1442a. The accommodating cavity 1443 of the heating base assembly 144 is defined by the accommodating groove 1441a and the limiting groove 1442a. In other embodiments, the upper base 1441 may also be integrally formed with the lower base 1442, that is, the heating base assembly 144 is an integral structural component, and the accommodating cavity 1443 is defined in heating base assembly 144.

[0043] The sealing member 145 is at least partially clamped by the top wall of the accommodating cavity 1443 and the fixing mount 142. In some embodiments, the top wall 1441b of the accommodating cavity 1443 abuts against the surface of the sealing member 145 facing the connecting portion 1413, and the surface of the fixing mount 142 facing the connecting portion 1413 abuts against the surface of the sealing member 145 away from the connecting portion 1413. In this way, the sealing member 145 may be clamped by the top wall of the accommodating cavity 1443 and the fixing mount 142, and the sealing member 145 is fixed on the base 1411 between the connecting portion 1413 and the fixing mount 142.

[0044] In some embodiments, the upper base 1441 is arranged on the heating element 141, the first end 1411a of the base 1411 is arranged in the accommodating cavity 1443, and the second end 1411b of the base 1411 extends out of the accommodating cavity 1443 and is arranged in the heating cavity 131. The sealing member 145 is clamped by the upper base 1441, the fixing mount 142, and the lower base 1442, so as to fix the sealing member 145 on the base 1411 between the connecting portion 1413 and the fixing mount 142. Further, as shown in FIGS. 6-7, FIG. 7 is a structural schematic view of an upper base and a sealing member according to an embodiment of the present disclosure. The upper base 1441 includes a top wall 1441b and an annular sidewall 1441c. The annular sidewall 1441c of the upper base 1441 is arranged on the side of the top wall 1441b of the upper base 1441 away from the heating cavity 131. The internal space enclosed by the top wall 1441b and the annular sidewall 1441c of the upper base 1441 is the accommodating groove 1441a. In an embodiment, the sealing member 145 is at least partially clamped by the top wall 1441b of the upper base 1441 and the fixing mount 142, and the gap between the top wall 1441b of the upper base 1441 and the fixing mount 142 is sealed by the

sealing member 145.

[0045] A second mounting hole 1441d is defined on the top wall 1441b of the upper base 1441, and the upper base 1441 is sleeved on the base 1411 through the second mounting hole 1441d. The second mounting hole 1441d may be engaged with the base 1411 by means of interference fit. Alternatively, the inner wall of the second mounting hole 1441d is arranged with a sealing rib 1444. The gap between the second mounting hole 1441d and the base 1411 is sealed by the sealing rib 1444, such that it may be possible to prevent liquid from leaking along the heating portion from the side of the upper base 1441 close to the heating cavity 131 to the side of the upper base 1441 away from the heating cavity 131. In this way, it may prevent liquid from leaking along the heating portion to the electronic component, and effectively prevent the short circuit of the circuit of the electronic component, thereby prolonging the service life of the aerosol-generating device 10 and enabling the aerosol-generating device 10 to have the excellent safety performance.

[0046] In some embodiments, as shown in FIGS. 6-7, a clamping portion 1441e is extends outwards from the surface of the top wall 1441b of the upper base 1441 close to the lower base 1442. A clamping groove 1452 is defined on the surface of the sealing member 145 close to the top wall 1441b of the upper base 1441. The clamping portion 1441e is clamped with the clamping groove 1452. The bottom wall of the clamping groove 1452 is clamped by the clamping portion 1441e and the fixing mount 142. Alternatively, the bottom wall of the clamping groove 1452 is clamped by the clamping portion 1441e and the lower base 1442. By arranging the clamping portion 1441e and the clamping groove 1452, the sealing member 145 may be further fixed and limited by the upper base 1441.

[0047] In other embodiments, a clamping groove 1452 may be defined on the surface of the top wall 1441b of the upper base 1441 close to the lower base 1442. A clamping portion 1441e is arranged on the surface of the sealing member 145 close to the top wall 1441b of the upper base 1441. The clamping groove 1452 is clamped with the clamping portion 1441e. The shape of the clamping groove 1452 and the shape of the clamping portion 1441e are not limited, and may be designed as required, as long as the clamping portion 1441e is arranged on the one of the lower base 1442 and the sealing member 145, and the clamping groove 1452 is defined on the other one of the lower base 1442 and the sealing member 145. An arrangement way between the heating base assembly 144 and the sealing member 145 is not limited to several structures mentioned in some embodiments of the present disclosure, but may also be other structures.

[0048] Further, a protruding portion 1441f is arranged on the end of the clamping portion 1441e close to the fixing mount 142. A through hole 1453 is defined on the bottom wall of the clamping groove 1452 of the sealing member 145, and the through hole 1453 is arranged correspondingly to the protruding portion 1441f. The protruding portion 1441f is arranged in the through hole 1453, and the sealing member 145 may be further fixed and limited by the cooperation of the protruding portion 1441f and the through hole 1453. In an embodiment, the through hole 1453 is engaged with the protruding portion 1441f by means of interference fit, so as to prevent liquid leakage along the protruding portion 1441f of the upper base 1441, thereby increasing the sealing effect of the heating element assembly14.

[0049] The number of protruding portions 1441f may be the same as the number of through holes 1453, and the number of the protruding portions 1441f may be one or more, and the number of the through holes 1453 may be one or more. In some embodiments, the number of the protruding portions 1441f is three, and the number of the through holes 1453 is three. The more the number of the protruding portions 1441f and the number of the through holes 1453, the better the fixing effect of the sealing member 145. In other embodiments, the through hole 1453 may also be a blind hole, which may have the fixing and limiting effect, and prevent liquid leakage.

[0050] In an embodiment, as shown in FIG. 6 and FIG. 8, FIG. 8 is a structural schematic view of a lower base according to an embodiment of the present disclosure. The limiting groove 1442a is defined on the lower base 1442, and the fixing mount 142 is arranged in the limiting groove 1442a. The shape of the limiting groove 1442a may be the same as that of the fixing mount 142, such that the fixing mount 142 may be arranged in the limiting groove 1442a, and the limiting groove 1442a may be capable of fixing and limiting the fixing mount 142. By arranging the fixing mount 142 in the limiting groove 1442a, on the one hand, the heating element 141 may be fixed, and on the other hand, the axis of the fixing mount 142 may be substantially parallel to the axis of the heating element 144. When the heating element 141 is substantially perpendicular to the fixing mount 142, the axis of the heating element 141 may be substantially parallel to the axis of the heating element 144, and by adjusting the axis of the heating base assembly 144 to be substantially parallel to the axis of the first mounting base 12 and the axis of the second mounting base 13, the axis of the heating element 141 may be substantially parallel or coincident with the axis of the heating cavity 131. Therefore, the heating element 141 may uniformly heat the aerosol-generating substance 20 in the heating cavity 131.

[0051] In some embodiments, the protruding portion 1441f of the upper base 1441 may also pass through the through hole 1453 and abut against the surface of the fixing mount 142 close to the connecting portion 1413, such that the protruding portion 1441f and the limiting groove 1442a cooperatively limit the periphery of the fixing mount 142, thereby realizing the fixing of the heating element 141. In other embodiments, the heating base assembly 144 may be fixed to the fixing mount 142 in other fixing manners, which is not limited to the fixing mode mentioned in the present disclosure.

[0052] In an embodiment, as shown in FIG. 9, FIG. 9 is a cross-sectional schematic view of the heating element assembly according to another embodiment of the present disclosure. In some embodiments, the fixing mount 142 is sleeved on the first end 1411a of the base 1411, and the end of the first end 1411a of the base 1411 passes through the fixing mount 142 and is arranged on the side of the fixing mount 142 away from the second end 1411b of the base 1411. A limiting hole 1442b is defined on the bottom wall of the limiting groove 1442a of the lower base 1442. The part of the base 1411 disposed on the side of the fixing mount 142 away from the second end 1411b of the base 1411 is arranged in the limiting hole 1442b, and the limiting hole 1442b is engaged with the base 1411 by means of interference fit. In some embodiments, the second mounting hole 1441d of the upper base 1441 is further engaged with the base 1411 by means of interference fit. The second mounting hole 1441d of the upper base 1441 and the limiting hole 1442b of the lower base 1442 are engaged with the base 1411 by means of interference fit, such that the base 1411 may be directly fixed through the second mounting hole 1441d and the limiting hole 1442b. In addition, the axis of the second mounting hole 1441d substantially coincides with the axis of the limiting hole 1442b, such that the axis of the heating base assembly 144 may directly coincides with the axis of the heating element 141, and thus the axis of the heating element 141 substantially coincides with the heating cavity 131. In this way, the heating element 141 may uniformly heat the periphery of the aerosol-generating substance 20. By directly fixing the heating element 141 through the heating base assembly 144, it may be possible to reduce the requirement for the perpendicularity between the fixing mount 142 and the heating element 141, and reduce the requirement for the shape of the fixing mount 142 and the requirement for the manufacturing accuracy of the fixing mount 142, thereby reducing the manufacturing difficulty of the heating element assembly14.

[0053] The above are only embodiments of the present disclosure and are not intended to limit the scope of the present disclosure. Any equivalent structure or process transformation using the contents of the specification and the accompanying drawings of the present disclosure, or any direct or indirect application in other related technical fields, is equally included in the scope of the present disclosure.

Claims

1. A heating element assembly, applied in an aerosol-generating device and comprising:

   a heating element, comprising a base having a first end and a second end opposite to the first end, wherein the base is arranged with a heating portion and a connecting portion, and the connecting portion is disposed on the first end of the base and electrically connected to the heating portion;

   a fixing mount, connected to the base, disposed on the side of the connecting portion away from the second end, and spaced apart from the connecting portion; and

   a sealing member, sleeved on the base, wherein a connection position between the sealing member and the base is disposed between the connecting portion and the fixing mount.

2. The heating element assembly according to claim 1, wherein a first mounting hole is defined on the sealing member, the sealing member is sleeved on the base between the connecting portion and the fixing mount through the first mounting hole, and the first mounting hole is engaged with the base by means of interference fit.

3. The heating element assembly according to claim 1, wherein the heating element assembly further comprises a heating base assembly, the heating element is mounted to the heating base assembly, and the sealing member is at least partially clamped by the heating base assembly and the fixing mount.

4. The heating element assembly according to claim 3, wherein an accommodating cavity is defined on the heating base assembly, the fixing mount and the sealing member are arranged in the accommodating cavity, the sealing member is at least partially clamped by the top wall of the accommodating cavity and the fixing mount, and the second end of the base extends out of the accommodating cavity.

5. The heating element assembly according to claim 4, wherein the heating base assembly comprises an upper base and a lower base, and the accommodating cavity is cooperatively defined by the upper base and the lower base;

   the upper base is sleeved on the heating element, and the sealing member is at least partially clamped by the upper base and the fixing mount; and

   the sealing member is configured to seal a gap between the upper base and the fixing mount.

6. The heating element assembly according to claim 5, wherein a second mounting hole is defined on the top wall of the upper base, the upper base is sleeved on the base through the second mounting hole, a sealing rib is arranged on the inner wall of the second mounting hole, and the sealing rib seals a gap between the second mounting hole and the base; and the sealing member is at least partially clamped by the top wall of the upper base and the fixing mount,

and the sealing member is configured to seal the gap between the top wall of the upper base and the fixing mount.

7. The heating element assembly according to claim 6, wherein a clamping portion is extends outwards from the surface of the top wall of the upper base close to the fixing mount, and a clamping groove is defined on the surface of the sealing member close to the top wall of the upper base; and
the clamping groove is clamped with the clamping portion, and the bottom wall of the clamping groove is clamped by the clamping portion and the fixing mount.

8. The heating element assembly according to claim 7, wherein a protruding portion is arranged on one of the ends of the clamping portion close to the fixing mount, a through hole is defined on the sealing member, and the protruding portion passes through the through hole and abuts against the fixing mount.

9. The heating element assembly according to claim 8, wherein the through hole is engaged with the protruding portion by means of interference fit, and liquid is prevented from leaking along the protruding portion.

10. The heating element assembly according to claim 5, wherein a limiting groove is defined on the lower base, and the fixing mount is arranged in the limiting groove.

11. The heating element assembly according to claim 10, wherein a limiting hole is defined on the bottom wall of the limiting groove, the fixing mount is sleeved on the first end of the base, a part of the base disposed on the side of the fixing mount away from the connecting portion is arranged in the limiting hole, and the limiting hole is engaged with the base by means of interference fit.

12. An aerosol-generating device, comprising:

the heating element assembly according to claim 1; and
a first mounting base, wherein the heating element assembly is arranged on the first mounting base.

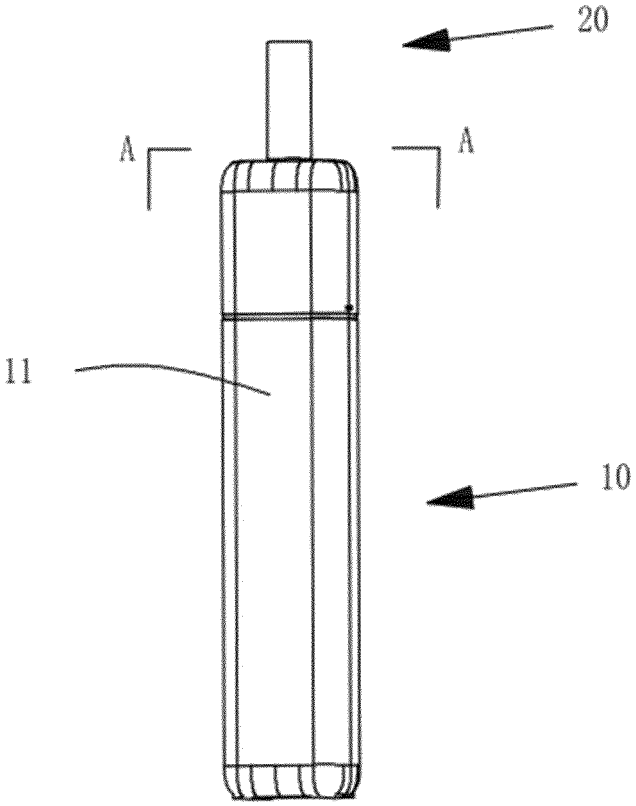

FIG. 1

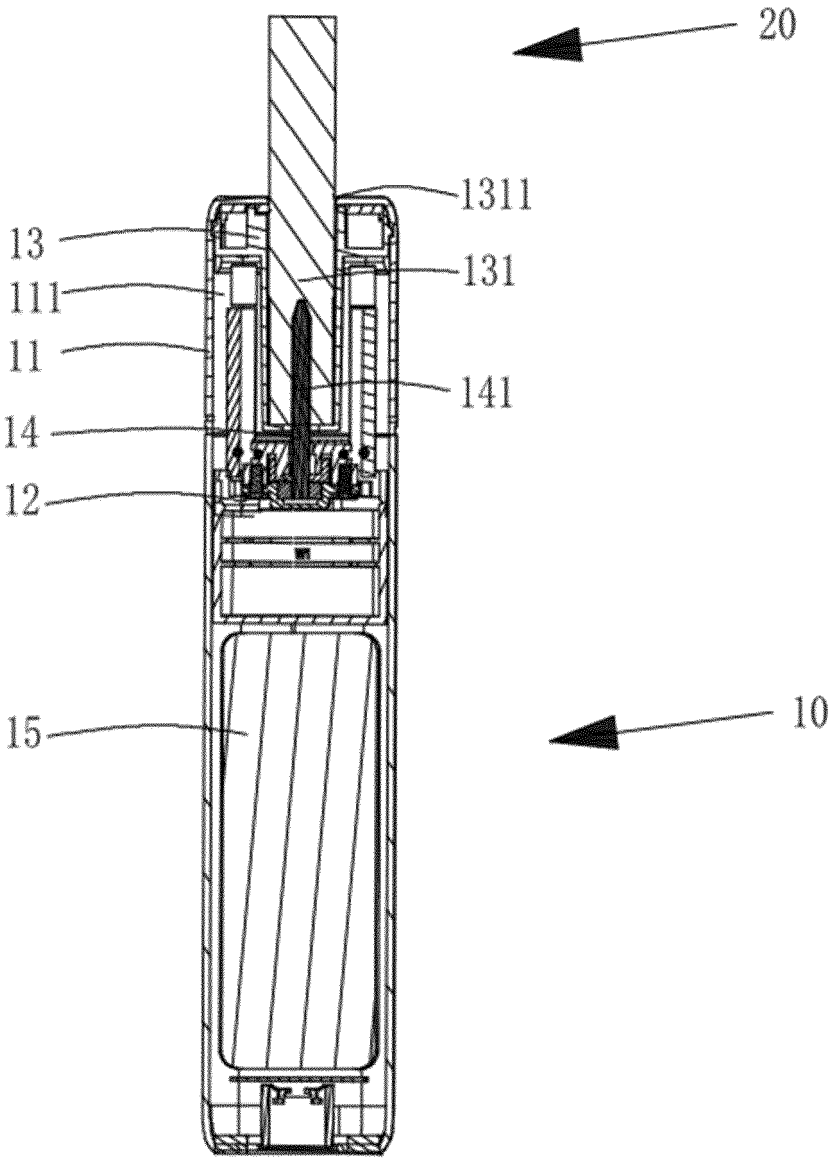

FIG. 2

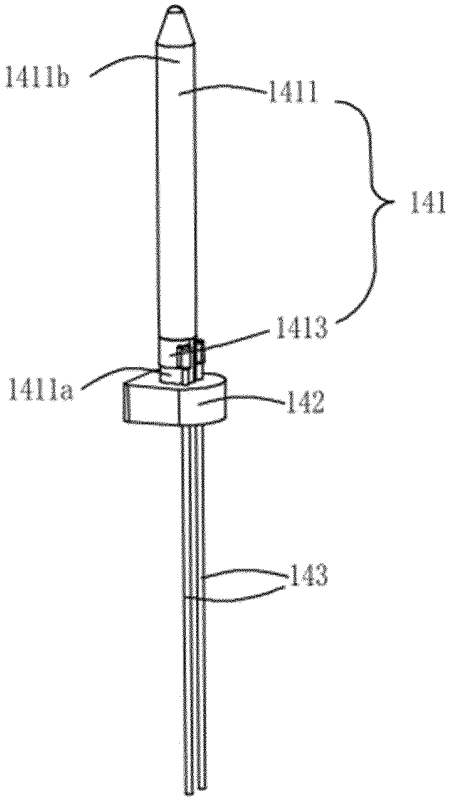
1411b
1411
141
1413
1411a
142
143

FIG. 3

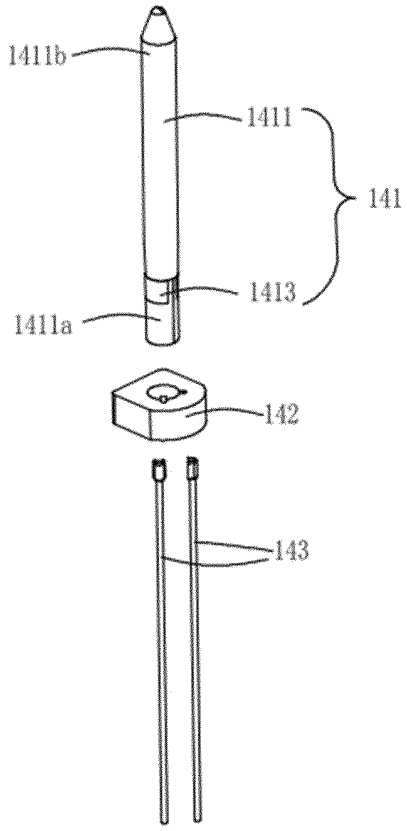
1411b
1411
141
1413
1411a
142
143

FIG. 4

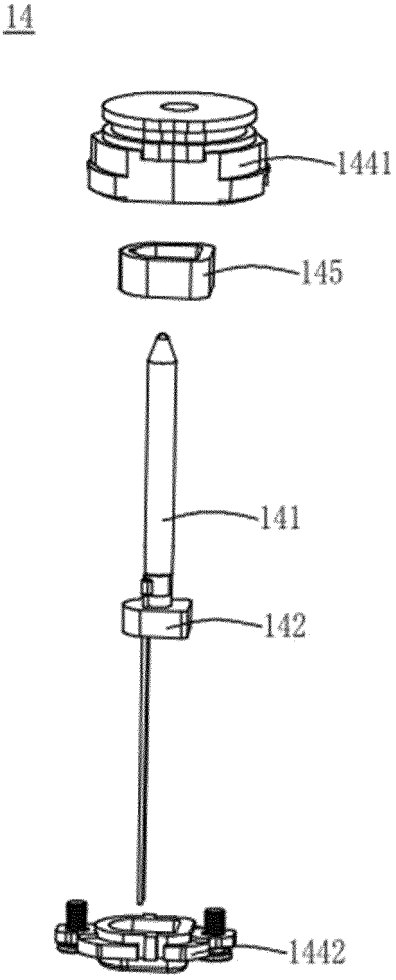

FIG. 5

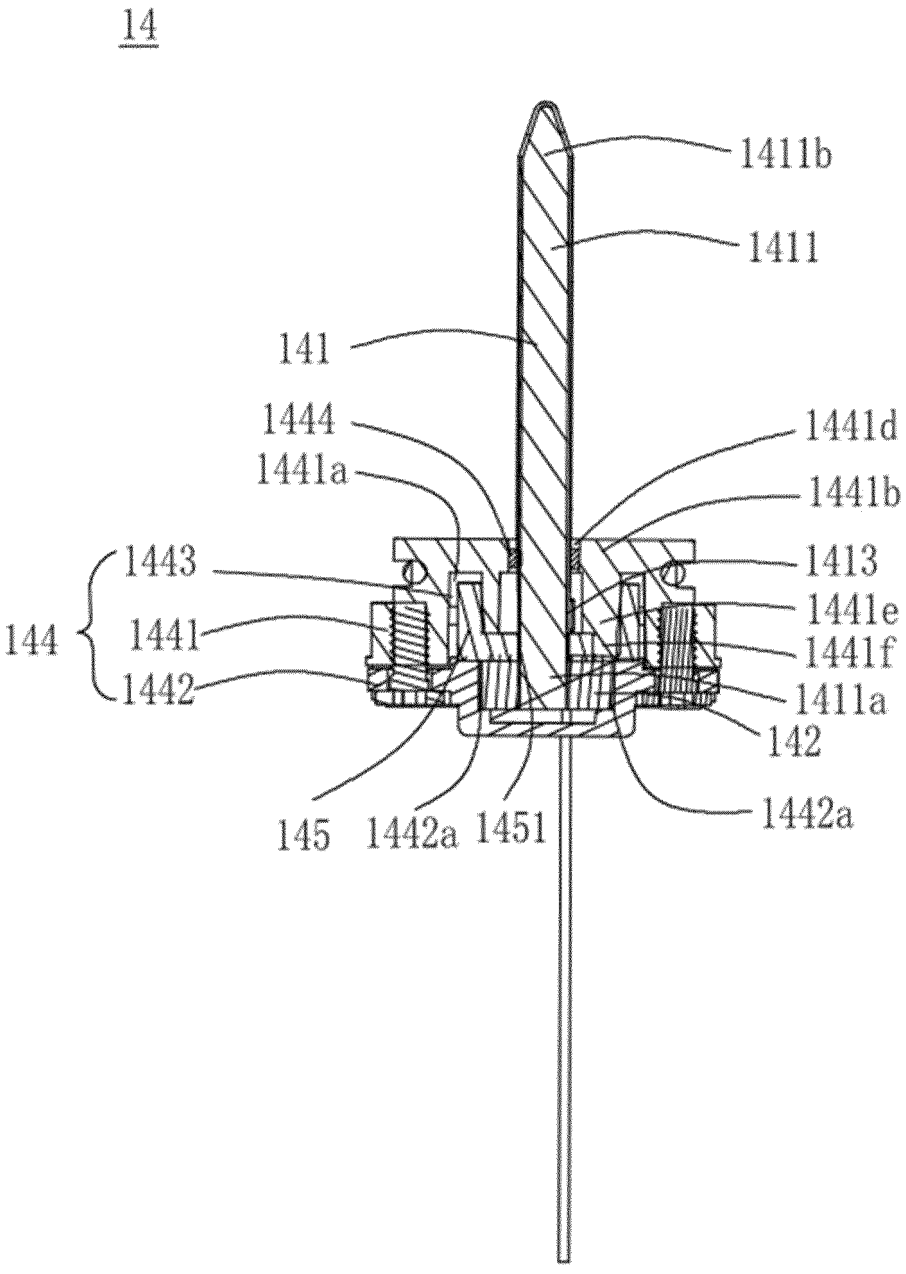
14
1411b
1411
141
1444
1441a
1441d
1441b
1443
1413
144
1441
1441e
1442
1441f
1411a
142
145
1442a
1451
1442a

FIG. 6

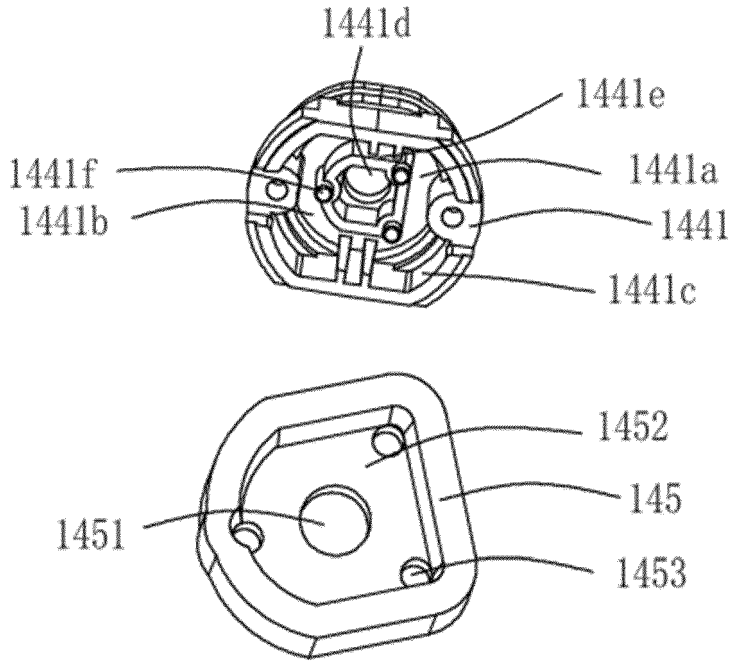
1441d
1441e
1441f
1441a
1441b
1441
1441c
1452
145
1451
1453

FIG. 7

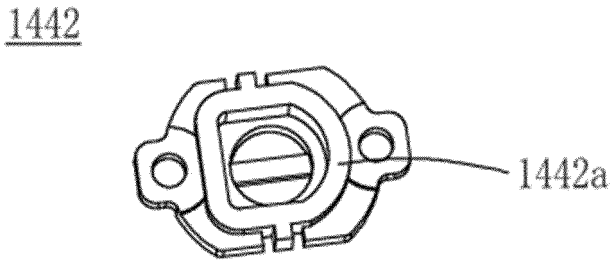
1442
1442a

FIG. 8

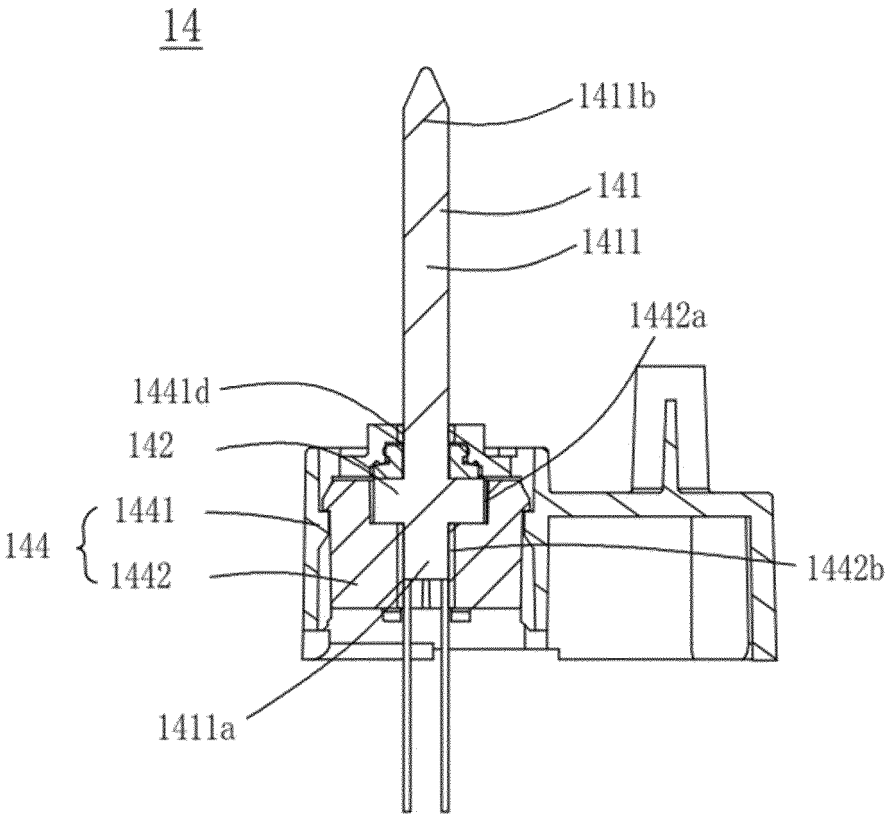

FIG. 9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2022/110361

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/40(2020.01)i; A24F 40/46(2020.01)i; A24F 40/50(2020.01)n

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)

CNTXT; CNABS; VEN; WPABS; DWPI; ENTXTC: 电子烟, 吸烟, 气溶胶, 密封, 发热, 加热, 短路, 焊点, 焊盘, 引脚, 电极, heat+, aerosol, cigarette, ciga+, smoke, seal+, short circuit, bonding pad, soldered point, pin, electrode, pole

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 216255440 U (SHENZHEN MAISHI TECHNOLOGY CO., LTD.) 12 April 2022 (2022-04-12) description, paragraphs [0035]-[0062], and figures 1-9	1-12
PX	CN 113424991 A (SHENZHEN MAISHI TECHNOLOGY CO., LTD.) 24 September 2021 (2021-09-24) description, paragraphs [0041]-[0078], and figures 1-10	1-5, 12
X	WO 2020201499 A1 (NICOVENTURES TRADING LTD.) 08 October 2020 (2020-10-08) description, paragraphs [0056]-[0143], and figures 6, 9-10, 12 and 14	1-3, 12
A	CN 112244355 A (SHENZHEN MAISHI TECHNOLOGY CO., LTD.) 22 January 2021 (2021-01-22) entire document	1-12
A	CN 212937919 U (NANTONG CIGARETTE FILTER CO., LTD.) 13 April 2021 (2021-04-13) entire document	1-12
A	US 2020086068 A1 (KT & G CORP.) 19 March 2020 (2020-03-19) entire document	1-12

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

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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 September 2022	**10 October 2022**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

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

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2022/110361

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		EP 3632238 A1	08 April 2020
		KR 102035313 B1	22 October 2019
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REFERENCES CITED IN THE DESCRIPTION

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