(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 049 547 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
13.11.2024 Bulletin 2024/46

(21) Application number: **20878464.5**

(22) Date of filing: **23.10.2020**

(51) International Patent Classification (IPC):
A24F 47/00 *(2020.01)* ***A24F 40/40*** *(2020.01)*
A24F 40/42 *(2020.01)*

(52) Cooperative Patent Classification (CPC):
A24F 40/40; A24F 40/42; A24F 40/10

(86) International application number:
PCT/CN2020/123358

(87) International publication number:
WO 2021/078277 (29.04.2021 Gazette 2021/17)

(54) **ATOMIZATION MEMBER AND ELECTRONIC CIGARETTE**

ZERSTÄUBUNGSELEMENT UND ELEKTRONISCHE ZIGARETTE

ÉLÉMENT D'ATOMISATION ET CIGARETTE ÉLECTRONIQUE

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **25.10.2019 CN 201921804393 U**
25.10.2019 CN 201921804534 U

(43) Date of publication of application:
31.08.2022 Bulletin 2022/35

(73) Proprietor: **Shenzhen First Union Technology Co., Ltd.**
Shenzhen, Guangdong 518000 (CN)

(72) Inventors:
- **CHEN, Xiqin**
Shenzhen, Guangdong 518000 (CN)
- **XU, Zhongli**
Shenzhen, Guangdong 518000 (CN)
- **LI, Yonghai**
Shenzhen, Guangdong 518000 (CN)

(74) Representative: **Proi World Intellectual Property GmbH**
Obermattweg 12
6052 Hergiswil, Kanton Nidwalden (CH)

(56) References cited:
WO-A1-2015/109540
WO-A1-2018/141106
CN-A- 109 717 519
CN-U- 203 676 143
CN-U- 203 676 143
CN-U- 205 196 988
CN-U- 208 300 942
CN-U- 209 106 324
CN-U- 209 106 324
CN-U- 211 211 430
CN-U- 211 482 961
US-A1- 2013 068 239

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 4 049 547 B1

Description

TECHNICAL FIELD

[0001] The present disclosure relates to the technical field of electronic cigarettes, and in particular to an atomization member and an electronic cigarette having the same.

BACKGROUND

[0002] Electronic cigarette in existing technologies generally includes an atomization assembly and a battery assembly. One end of the atomization assembly is provided with a first electrode for electrical connection with the battery assembly. Inside the first electrode are sleeved an insulating ring and a second electrode in sequence. The atomization assembly is internally provided with an electric heating wire, a first end of which electric heating wire is electrically connected to the second electrode, and a second end of which electric heating wire is connected to the first electrode. The second electrode defines a through hole. The first end of the electric heating wire is welded to the end surface of the second electrode. In such a structure, since the through hole on the second electrode extends along the axial direction, the through hole is easy to be plugged by solder tin when the lead of the electric heating wire is welded.

[0003] In order to solve the above technical problem, those skilled in the art design an electronic cigarette, which includes an atomization assembly, a first electrode and a second electrode that are inserted into an end part of the atomization assembly. The atomization assembly accommodates an electric heating wire for atomizing an e-liquid, a first lead and a second lead in electrical connection with the electric heating wire. The second electrode includes an extension portion stretching into the atomization assembly, the second lead is electrically connected to the extension portion, and the first lead is electrically connected to the first electrode. The extension portion defines on a side surface thereof at least one first through hole for air to flow, so that the likeliness of hole plugging can be reduced when the second lead is electrically connected to the second electrode through welding. However, in order to avoid hole plugging, the used solder is less when welding, which is not convenient for welding, and the welding is not firm, so the service life is short.

WO2015109540 A1 relates to an electronic cigarette and an atomisation assembly and a power source assembly thereof. WO2018141106 A1 relates to an electronic cigarette comprising an atomizing assembly and a battery rod assembly. CN203676143 U relates to an electronic cigarette and an atomization assembly and a power supply assembly thereof. CN209106324 U relates to a printing heating body atomizer which comprises a hollow atomizing sleeve.

SUMMARY

[0004] In order to solve the problem in the existing technologies, the present disclosure provides an atomization member and an electronic cigarette which are firm in welding and convenient to produce.

[0005] In a first aspect, the present disclosure provides an atomization member, including: an e-liquid storage body, an atomizing core, a connecting seat and an electrode, wherein the e-liquid storage body is internally provided with an e-liquid storage cavity for accommodating an e-liquid, the atomizing core includes an electric heating element having a connecting pin, and the electric heating element is used for atomizing at least part of the e-liquid supplied to the electric heating element from the e-liquid storage cavity, the connecting seat is connected to the e-liquid storage body, the electrode is fixed on the connecting seat, and the electrode defines thereon a connecting hole passing through the electrode and an accommodating recess, a hole opening at one end of the connecting hole is located in the accommodating recess to communicate with the accommodating recess, and at least part of the connecting pin is inserted into the connecting hole and extends into the accommodating recess, thereby forming a connection with the electrode.

[0006] Optional, the electrode presents a sheet shape and is arranged extending along an end face of the connecting seat.

[0007] Optional, the accommodating recess is located on a surface of the electrode away from the connecting seat and extends towards another surface close to the connecting seat.

[0008] Optional, the accommodating recess is configured for filling a solder, at least part of the connecting pin extends into the accommodating recess and forms soldering connection with the electrode.

[0009] Optional, a recess opening of the accommodating recess is hole shaped and has a bigger diameter than the hole opening of the connecting hole.

[0010] Optional, the connecting seat defines a through hole, the electrode is provided with a locating protrusion at the hole opening of the connecting hole, the locating protrusion is inserted into the through hole, and the connecting pin passes through the through hole to connect to the electrode.

[0011] Optional, the connecting seat defines a first fixing recess, and the electrode is inserted into the first fixing recess.

[0012] Optional, the electrode includes a main body made of a magnetic material and a protection layer located on a surface of the main body, and the electrode is further configured for magnetic connection with the battery assembly.

[0013] Optional, the e-liquid storage body defines therein an air channel and an e-liquid storage cavity surrounding the air channel, the connecting seat defines a first air inlet communicated with the air channel, and the first air inlet is arranged spaced from the electrode.

[0014] Optional, the atomization assembly further includes a first filter screen, wherein the first filter screen is located between the atomizing core and the connecting seat, for filtering the e-liquid leaking towards the first air inlet.

[0015] Optional, a surface of the connecting seat facing the e-liquid storage body defines a second fixing recess, the first filter screen is inserted into the second fixing recess, and an air exit of the first air inlet is located on a bottom wall of the second fixing recess.

[0016] Optional, the atomization assembly further includes a sealing plug, wherein the sealing plug includes a cover body and a column body, the column body is located on one side of the cover body away from the connecting seat and is connected to the cover body, the e-liquid storage body defines an e-liquid filling hole, the e-liquid filling hole is communicated with the e-liquid storage cavity, the sealing plug is located between the e-liquid storage body and the connecting seat, and the column body is inserted into the e-liquid filling hole.

[0017] Optional, the sealing plug defines a connecting groove passing through the cover body and extending into the column body, the connecting seat is provided with a connecting column, and the connecting column is inserted into the connecting groove.

[0018] Optional, the e-liquid storage body includes an e-liquid storage sleeve and a separation sleeve, the separation sleeve includes an air tube and a fixing seat, the air tube includes a first end and a second end which are arranged opposite to each other, the air tube is located inside the e-liquid storage sleeve, the first end of the air tube is connected to the e-liquid storage sleeve, the second end of the air tube is connected to the fixing seat, and the atomizing core is accommodated inside the air tube; the fixing seat is connected to the e-liquid storage sleeve, wherein the air tube and the fixing seat are a one-piece structure shaped by injection in a mold.

[0019] Optional, the air tube is a part made of a metallic material, and the fixing seat is a part made of a non-metallic material.

[0020] Optional, the air tube includes a first vent section, a second vent section and a connecting section; the connecting section is located between the first vent section and the second vent section and is connected to the first vent section and the second vent section, the second vent section has a section area bigger than that of the first vent section, and the atomizing core is accommodated inside the second vent section.

[0021] In a second aspect, the present disclosure further provides an electronic cigarette, including the atomization assembly according to any item described above in the first aspect.

[0022] The present disclosure has the following benefits. As the electrode is fixed on the end face of the connecting seat, the electrode defines a connecting hole and a solder accommodating recess, a hole opening at one end of the connecting hole is located in the solder accommodating recess, and at least part of the connecting pin is inserted into the connecting hole and welded to the electrode, during welding, the solder accommodating recess is used for containing solder, so that the solder is uneasy to flow out and easy to flow into the connecting hole, more solder can be applied to the surrounding of the connecting pin to reduce the likeliness of rosin joint; therefore, the welding is firm and the service life is long. In addition, since the solder will not arbitrarily flow easily, the production is convenient.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] One or more embodiments are illustrated through the image(s) in corresponding drawing(s). These illustrations do not form restrictions to the embodiments. Elements in the drawings with a same reference number are expressed as similar elements, and the images in the drawings do not form restrictions unless otherwise stated.

FIG. 1 is a perspective view of an atomization assembly provided by another preferred embodiment of the present disclosure.

FIG. 2 is a sectional view of the atomization assembly shown in FIG. 1.

FIG. 3 is an exploded view of the atomization assembly shown in FIG. 1.

FIG. 4 is a perspective view of a separation sleeve of the atomization assembly shown in FIG. 1.

FIG. 5 is a perspective view of a connecting seat of the atomization assembly shown in FIG. 1.

FIG. 6 is a perspective view of an electrode of the atomization assembly shown in FIG. 1.

FIG. 7 is a schematic block diagram of an electronic cigarette provided by another preferred embodiment of the present disclosure.

DETAILED DESCRIPTION

[0024] For a better understanding of the present disclosure, a detailed description is provided to the present disclosure in conjunction with the drawings and specific embodiments. It is to be noted that when an element is described as "fixed on"/ "fixedly connected to" another element, it may be directly on the another element, or there might be one or more intermediate elements between them. When one element is described as "connected to" another element, it may be directly connected to the another element, or there might be one or more intermediate elements between them. Terms "vertical", "horizontal", "left", "right," "inner", "outer" and similar expressions used in this description are merely for illustration.

[0025] Unless otherwise defined, all technical and scientific terms used in the description have the same meaning as those normally understood by the skill in the technical field of the present disclosure. The terms used in the description of the present disclosure are just for de-

scribing specific implementations, not to limit the present disclosure. Terms "and/or" used in the description include any and all combinations of one or more listed items.

[0026] In addition, technical features involved in different embodiments of the present disclosure described below can be combined mutually if no conflict is incurred.

[0027] In the description, the installation includes fixing or limiting one element or device to a particular position or place by means of welding, screwing, clamping, bonding and the like, the element or device can remain stationary at a specific position or place or move within a limited range, and the element or device can be or not be detached after fixed or limited to the particular position or place, which are limited in the present disclosure.

[0028] Referring to FIG. 1 to FIG. 6, the present disclosure provides an atomization assembly, which includes an e-liquid storage body 1, an atomizing core 2, a connecting seat 3 and an electrode 4. The e-liquid storage body 1 defines therein an e-liquid storage cavity a and an air channel b. The e-liquid storage body 1 includes an e-liquid storage sleeve 10 and a separation sleeve 11, wherein the e-liquid storage sleeve 10 is provided with a first end and a second end which are arranged opposite to each other, the first end of the e-liquid storage sleeve 10 defines an air outlet 111, and a hole opening of the air outlet 111 facing the separation sleeve 11 is provided with an insertion slot 112. During smoking, an aerosol formed by e-liquid atomization is discharged from the air outlet 111 for the user to inhale.

[0029] The separation sleeve 11 includes an air tube 12 and a fixing seat 13, the air tube 12 includes a first end and a second end which are arranged opposite to each other, the air tube 12 is inserted into the e-liquid storage sleeve 10, the first end of the air tube 12 is connected to the e-liquid storage sleeve 10, and the second end of the air tube 12 is connected to the fixing seat 13. The air tube 12 forms therein the air channel b, the air channel b is communicated with the air outlet 111, between the air tube 12 and the e-liquid storage sleeve 10 is formed the e-liquid storage cavity a, that is, the e-liquid storage cavity a is arranged surrounding the air tube 12, and the e-liquid storage cavity a is configured for storing the e-liquid. The air tube 12 defines an e-liquid outlet 120 at a position corresponding to the atomizing core 2, to discharge the e-liquid inside the e-liquid storage cavity a to the atomizing core 2.

[0030] The air tube 12 includes a first vent section 121, a second vent section 122 and a connecting section 123; the connecting section 123 is located between the first vent section 121 and the second vent section 122 and is connected to the first vent section 121 and the second vent section 122, and the second vent section 122 has a section area bigger than that of the first vent section 121. It is understandable that in some embodiments the air tube 12 is formed by a first vent section 121 and a second vent section 122 that are directly connected, wherein the first vent section 121 and the second vent section 122 have a same section area.

[0031] The fixing seat 13 is arranged covering a cavity opening of the e-liquid storage cavity a and is connected to the e-liquid storage sleeve 10. The air tube 12 and the fixing seat 13 are a one-piece structure shaped by injection in a mold, wherein the air tube 12 is a part made of a metallic material, and the fixing seat 13 is a part made of a non-metallic material. That is to say, during preparation, place the metallic air tube 12 in an injection mold, and shape the fixing seat 13 through injection into the mold, so that the air tube 12 and the fixing seat 13 become a one-piece structure. Preferably, the air tube 12 is a stainless steel part, and the fixing seat 13 is a plastic part; therefore, not only good tightness is achieved, but the air tube 12 is not easy to be impacted by the e-liquid. It is understandable that the air tube 12 may be a part made of other metallic materials, and the fixing seat 13 may be a part made of other non-metallic materials.

[0032] The fixing seat 13 defines an installing recess 131 and an e-liquid filling hole 132, wherein the installing recess 131 is located at a surface of the fixing seat 13 away from the e-liquid storage cavity a, and the installing recess 131 has a side wall defining a buckling groove 133. The e-liquid filling hole 132 is communicated with the e-liquid storage cavity a and the installing recess 131. It is understandable that the position of the e-liquid filling hole 132 is not specifically limited here as long as the e-liquid storage body 1 defines the e-liquid filling hole 132. For example, the e-liquid filling hole 132 may be defined on the outside of the installing recess 131. The installing recess 131 is communicated with the air channel b.

[0033] The e-liquid storage body 1 further includes a sealing ring 14, and the first end of the air tube 12 is connected to the sealing ring 14, so as to connect to the e-liquid storage sleeve 10 via the sealing ring 14. The second end of the air tube 12 is inserted into the fixing seat 13. Specifically, the sealing ring 14 defines an abutting groove 141 on an end face of one end thereof; the sealing ring 14 is inserted at least in part into the insertion slot 112, so that the sealing ring 14 is fixed through the insertion slot 112, which can better avoid e-liquid leakage. In the present embodiment, one end of the sealing ring 14 is inserted into the insertion slot 112, and the other end of the sealing ring 14 is located outside the insertion slot 112.

[0034] It is understandable that in some embodiments the sealing ring 14 may be completely located inside the insertion slot 112. The first end of the air tube 12 is inserted into the abutting groove 141, and the second end of the air tube 12 is inserted into the fixing seat 13, which can better prevent leakage of e-liquid. It is understandable that the sealing ring 14 may be made of elastic materials such as silicone or polyurethane. In some embodiments, the abutting groove 141 may not be required, and the first end of the air tube 12 elastically presses against the end face of the sealing ring 14. Of course, the sealing ring 14 may not be required too, and the air tube 12 is directly connected to the e-liquid storage sleeve 10. In

some embodiments, the e-liquid storage sleeve 10 includes a tubular sleeve body and an annular cover body, wherein the cover body is located at one end of the sleeve body and is detachably connected to the sleeve body, the air tube 12 passes through the cover body, and a user can inhale aerosol directly through the air tube when smoking. Thus, the structure of the e-liquid storage sleeve 10 is not specifically limited here, as long as it can be used for storing the e-liquid.

[0035] The e-liquid storage body 1 further includes a second filter screen 15, the second filter screen 15 is inserted into the insertion slot 112 and is clamped between the sealing ring 14 and the e-liquid storage sleeve 10. The second filter screen 15 is configured to filter the large-particle aerosol discharged from the air tube 12, thereby preventing a user inhaling the large-particle aerosol and enabling a good user experience. The second filter screen 15 may be formed by weaving, or may be formed by stamping from a plate, which is not specifically limited here.

[0036] The atomizing core 2 is inserted into the air tube 12 and is located inside the second vent section 122. Through the blocking of the connecting section 123, the atomizing core 2 can be prevented from being excessively inserted into the air tube 12, which facilitates assembling. The atomizing core 2 includes an e-liquid absorption element 21 and an electric heating element 22, wherein the e-liquid absorption element 21 is inserted into the air channel b, to absorb the e-liquid inside the e-liquid storage cavity a. The electric heating element 22 is in contact with the e-liquid absorption element 21, to atomize the e-liquid on the e-liquid absorption element 21. The electric heating element 22 is provided with a connecting pin 221. It is understandable that the e-liquid absorption element 21 may be a glass fiber string extending into the e-liquid storage cavity a, and the electric heating element 22 may be an electric heating wire wound on the glass fiber string. The e-liquid absorption element 21 may also be a fiber cotton wound into a tubular shape, the electric heating element 22 is an electric heating wire wound into a columnar shape, and the electric heating element 22 is inserted into the e-liquid absorption element 21. Therefore, the atomizing core 2 only needs to include the electric heating element 22 having the connecting pin 221, and the electric heating element 22 is used for atomizing at least part of the e-liquid supplied to the electric heating element 22 from the e-liquid storage cavity a. The structure of the atomizing core 2 is not specifically limited here. It is understandable that the position of the atomizing core 2 may be arranged as needed and the position is not specifically limited here.

[0037] In the present embodiment, the e-liquid absorption element 21 includes a porous ceramic tube 211 and a cotton cloth 212 wound on outside of the porous ceramic tube 211. Through the cotton cloth 212, the e-liquid inside the e-liquid storage cavity a is absorbed to the porous ceramic tube 211. The electric heating element 22 includes an electric heating wire 220 and the connecting pin 221, wherein the electric heating wire 220 is inserted into the porous ceramic tube 211 and contacts an inner wall of the porous ceramic tube 211, thereby contacting the e-liquid absorption element 21. One end of the connecting pin 221 is connected to the electric heating wire 220, while the other end of the connecting pin 221 is laser welded to the electrode 4.

[0038] The connecting seat 3 is provided with a buckling protrusion 31 on a peripheral surface thereof, the connecting seat 3 is inserted into the installing recess 131, and the buckling protrusion 31 is in buckled connection with the buckling groove 133, so that the connecting seat 3 is connected to the e-liquid storage body 1. The connecting seat 3 further define a through hole 32, a first air inlet 33, a first fixing recess 34, a second fixing recess 35 and a connecting column 36, wherein the connecting pin 221 passes through the through hole 32 to be welded to the electrode 4, the first air inlet 33 is communicated with the air channel b, thus, during smoking, air outside the atomization assembly can flow into the air channel b from the first air inlet 33 to bring the aerosol inside the air channel b out from the air outlet 111. The first air inlet 33 is arranged spaced from the electrode 4, which can better avoid the solder blocking the first air inlet 33. The second fixing recess 35 is located on a surface of the connecting seat 3 facing the e-liquid storage body, and a bottom wall of the second fixing recess 35 is provided with a supporting protrusion 351, wherein the supporting protrusion 351 may present a bar shape, a ring shape or a square shape, etc.

[0039] The electrode 4 is fixed on an end face of the connecting seat 3, and through the electrode 4 the atomization assembly is connected to the battery assembly. During smoking, the battery assembly supplies power to the electric heating element 22 through the electrode 4. The electrode 4 defines a connecting hole 41 and a solder accommodating recess 42. A hole opening at one end of the connecting hole 41 is located in the solder accommodating recess 42, and at least part of the connecting pin 221 is inserted into the connecting hole 41 and welded to the electrode 4.

[0040] As the electrode 4 is fixed on the end face of the connecting seat 3, the electrode 4 defines a connecting hole 41 and a solder accommodating recess 42, a hole opening at one end of the connecting hole 41 is located in the solder accommodating recess 42, and at least part of the connecting pin 221 is inserted into the connecting hole 41 and welded to the electrode 4, during welding, the solder accommodating recess 42 is used for containing solder, so that the solder is uneasy to flow out and easy to flow into the connecting hole 41, more solder can be applied to the surrounding of the connecting pin 221 to reduce the likeliness of rosin joint; therefore, the welding is firm and the service life is long. In addition, since the solder will not arbitrarily flow easily, the production is convenient.

[0041] In the present embodiment, the electrode 4 presents a sheet shape and is arranged extending along

and in an end face of the connecting seat 3, that is, the sheet shaped electrode 4 is arranged extending along a horizontal direction of the atomization assembly, which not only can increase the contact area when electrically connected to the battery assembly and avoid problems of unreliable electrical connection, but also can reduce the difficulty of manufacture. It is understandable that the electrode 4 may be plate shaped or bar shaped and the like. To well fix the electrode 4, the electrode 4 is inserted into the first fixing recess 34.

[0042] The solder accommodating recess 42 is located on a surface of the electrode 4 away from the connecting seat 3 and extends towards another surface close to the connecting seat 3, and the connecting pin 221 passes through the connecting hole 41 and extends into the solder accommodating recess 42; therefore, during welding, the connecting pin 221 may be welded after the electrode 4 is assembled, thus the connection is reliable, and this avoids problems of unreliable connection due to the installation of the electrode 4 after the welding of the connecting pin 221. It is understandable that in some embodiments the solder accommodating recess 42 may be defined on the surface of the electrode 4 facing the connecting seat 3.

[0043] A recess opening of the solder accommodating recess 42 is hole shaped and is bigger than the hole opening of the connecting hole 41. The solder accommodating recess 42 is arranged coaxial to the connecting hole 41; thus, during welding, the solder can be applied to the surrounding of the connecting pin 221, thereby enabling a secure connection. The electrode 4 is provided with a locating protrusion 43 at the hole opening of the connecting hole 41, and the locating protrusion 43 is inserted into the through hole 32, which facilitates locating during welding. In the present embodiment, the electrode 4 includes a main body made of a magnetic material and a protection layer located on a surface of the main body, and the electrode 4 is further configured for magnetic connection with the battery assembly. That is to say, besides power transmission, the electrode 4 is further configured for connection with the battery assembly, which can avoid problems in the prior art that the battery assembly is in reliable connection with the atomization assembly while the power transmission is not necessarily reliable. The magnetic material may be iron, cobalt, nickel and other materials. The protection layer may be a metallic layer, a metallic oxide layer and the like. In the present embodiment, the protection layer employs the material of gold, which can improve the conductivity. It is understandable that the material of the electrode 4 is not specifically limited here.

[0044] The atomization assembly further includes a first filter screen 5 and a sealing plug 6. The first filter screen 5 is located between the atomizing core 2 and the connecting seat 3 and is inserted into the second fixing recess 35, for filtering the e-liquid leaking towards the first air inlet 33 and thus avoiding the e-liquid leaking to the battery assembly to cause a problem of short circuit of the battery assembly. An air exit of the first air inlet 33 is located on a bottom wall of the second fixing recess 35. The supporting protrusion 351 abuts against the first filter screen 5, which reduces the contact area between the first filter screen 5 and the connecting seat 3 and enables better filtering. Preferably, the supporting protrusion 351 is arranged surrounding the first air inlet 33, thus it can better support the filter screen and the contact area is less.

[0045] The sealing plug 6 is located between the e-liquid storage body 1 and the connecting seat 3, and includes a cover body 61 and a column body 62; the cover body 61 is located in the installing recess 131 and defines a second air inlet 611; the second air inlet 611 corresponds to the positions of the first air inlet 33 and the air channel b, to import the air flowing from the first air inlet 33 to the air channel b. Herein, the fixing seat 13 defines a third air inlet (not shown) communicated with the second air inlet 611 and the air channel b respectively, so that the air can pass through in sequence the first air inlet 33, the second air inlet 611, the third air inlet and the air channel to be discharged from the air outlet 111 for a user to inhale. The column body 62 is located on one side of the cover body 61 away from the connecting seat 3 and is connected to the cover body 61. The column body 62 is inserted into the e-liquid filling hole 132, to better seal the e-liquid. During production, after the e-liquid storage body 1 is assembled, an e-liquid is filled into the e-liquid storage cavity a through the e-liquid filling hole 132. The production is convenient. The sealing plug 6 defines a connecting groove 63 passing through the cover body 61 and extending into the column body 62, and the connecting column 36 is inserted into the connecting groove 63, so that the sealing plug 6 achieves a better tightness and improves the sealing performance.

[0046] Referring to FIG. 7, the present disclosure further provides an electronic cigarette, which includes an atomization assembly 100 and a battery assembly 200. The atomization assembly 100 is the one as described above, and the battery assembly 20 is electrically connected to the atomization assembly 100, to supply power to the atomization assembly 100. Since the atomization assembly 100 of the electronic cigarette is of the same structure as the above atomization assembly 100, it has the same technical effects.

[0047] To summarize, since the air tube 12 and the fixing seat 13 are a one-piece structure shaped by injection in a mold, there is no need to arrange a sealing ring between the air tube 12 and the fixing seat 13 to seal the e-liquid. The structure is simple, not only cost is saved but e-liquid leakage is better avoided, it is convenient for automated production and the production efficiency is increased. Since the air tube 12 is a part made of a metallic material, it can better avoid generating thermal deformation to cause leakage of e-liquid when the atomizing core 2 atomizes the e-liquid and thus better guarantees the tightness.

[0048] The present invention is defined by the append-

ed claims.

Claims

1. An atomization assembly (100), configured to combine with a battery assembly (200) to form an electronic cigarette, comprising: an e-liquid storage body (1), an atomizing core (2) , a connecting seat (3) and an electrode (4), **characterized in that** the e-liquid storage body (1) is internally provided with an e-liquid storage cavity (a) for accommodating an e-liquid, the atomizing core (2) comprises an electric heating element (22) having a connecting pin (221), and the electric heating element (22) is used for atomizing at least part of the e-liquid supplied to the electric heating element (22) from the e-liquid storage cavity (a), the connecting seat (3) is connected to the e-liquid storage body (1), the electrode (4) is fixed on the connecting seat (3), and the electrode (4) defines thereon a connecting hole (41) passing through the electrode (4) and an accommodating recess (42), a hole opening at one end of the connecting hole (41) is located in the accommodating recess (42) to communicate with the accommodating recess (42), and at least part of the connecting pin (221) is inserted into the connecting hole (41) and extends into the accommodating recess (42), thereby forming a connection with the electrode (4).

2. The atomization assembly (100) according to claim 1, wherein the electrode (4) presents a sheet shape and is arranged extending along an end face of the connecting seat (3).

3. The atomization assembly (100) according to claim 1 or 2, wherein the accommodating recess (42) is located on a surface of the electrode (4) away from the connecting seat (3) and extends towards another surface close to the connecting seat (3).

4. The atomization assembly (100) according to claim 3, wherein the accommodating recess (42) is configured for filling a solder, at least part of the connecting pin (221) extends into the accommodating recess (42) and forms soldering connection with the electrode (4).

5. The atomization assembly (100) according to claim 3, wherein a recess opening of the accommodating recess (42) is hole shaped and has a bigger diameter than the hole opening of the connecting hole (41).

6. The atomization assembly (100) according to claim 1 or 2, wherein the connecting seat (3) defines a through hole (32), the electrode (4) is provided with a locating protrusion (43) at the hole opening of the connecting hole (41), the locating protrusion (43) is inserted into the through hole (32), and the connecting pin (221) passes through the through hole (32) to connect to the electrode (4).

7. The atomization assembly (100) according to claim 1 or 2, wherein the connecting seat (3) defines a first fixing recess (34), and the electrode (4) is inserted into the first fixing recess (34).

8. The atomization assembly (100) according to claim 1 or 2, wherein the electrode (4) comprises a main body made of a magnetic material and a protection layer located on a surface of the main body, and the electrode (4) is further configured for magnetic connection with the battery assembly (200).

9. The atomization assembly (100) according to claim 1 or 2, wherein the e-liquid storage body (1) defines therein an air channel (b) and an e-liquid storage cavity (a) surrounding the air channel (b), the connecting seat (3) defines a first air inlet (33) communicated with the air channel (b), and the first air inlet (33) is arranged spaced from the electrode (4).

10. The atomization assembly (100) according to claim 9, further comprising a first filter screen (5), wherein the first filter screen (5) is located between the atomizing core (2) and the connecting seat (3), for filtering the e-liquid leaking towards the first air inlet (33).

11. The atomization assembly (100) according to claim 10, wherein a surface of the connecting seat (3) facing the e-liquid storage body (1) defines a second fixing recess, the first filter screen is inserted into the second fixing recess (35), and an air exit of the first air inlet (33) is located on a bottom wall of the second fixing recess (35).

12. The atomization assembly (100) according to claim 1 or 2, further comprising a sealing plug (6), wherein the sealing plug (6) comprises a cover body (61) and a column body (62), the column body (62) is located on one side of the cover body (61) away from the connecting seat (3) and is connected to the cover body (61), the e-liquid storage body (1) defines an e-liquid filling hole (132), the e-liquid filling hole (132) is communicated with the e-liquid storage cavity (a), the sealing plug (6) is located between the e-liquid storage body (1) and the connecting seat (3), and the column body (62) is inserted into the e-liquid filling hole (132).

13. The atomization assembly (100) according to claim 12, wherein the sealing plug (6) defines a connecting groove (63) passing through the cover body (61) and extending into the column body (62), the connecting seat (3) is provided with a connecting column (36),

and the connecting column (36) is inserted into the connecting groove (63).

14. The atomization assembly (100) according to claim 1, wherein the e-liquid storage body (1) comprises an e-liquid storage sleeve (10) and a separation sleeve (11), the separation sleeve (11) comprises an air tube (12) and a fixing seat (13), the air tube (11) comprises a first end and a second end which are arranged opposite to each other, the air tube (11) is located inside the e-liquid storage sleeve (10), the first end of the air tube (11) is connected to the e-liquid storage sleeve (10), the second end of the air tube (11) is connected to the fixing seat (13), and the atomizing core (2) is accommodated inside the air tube (11); the fixing seat (13) is connected to the e-liquid storage sleeve (10), wherein the air tube (12) and the fixing seat (13) are a one-piece structure shaped by injection in a mold.

15. The atomization assembly (100) according to claim 14, wherein the air tube (11) is a part made of a metallic material, and the fixing seat is a part made of a non-metallic material.

16. The atomization assembly (100) according to claim 14, wherein the air tube comprises a first vent section (121), a second vent section (122) and a connecting section; the connecting section (123) is located between the first vent section (121) and the second vent section (122) and is connected to the first vent section (121) and the second vent section (122), the second vent section (122) has a section area bigger than that of the first vent section (121), and the atomizing core (2) is accommodated inside the second vent section (122).

17. An electronic cigarette, comprising the atomization assembly (100) according to any one of claims 1 to 16.

Patentansprüche

1. Zerstäubungsvorrichtung (100), die so konfiguriert ist, dass sie mit einer Batteriebaugruppe (200) kombiniert werden kann, um eine elektronische Zigarette zu bilden, und die umfasst: einen E-Flüssigkeitsspeicherkörper (1), einen Zerstäubungskern (2), einen Verbindungssitz (3) und eine Elektrode (4), **dadurch gekennzeichnet, dass**
der E-Flüssigkeitsspeicherkörper (1) im Inneren mit einem E-Flüssigkeitsspeicherhohlraum (a) zur Aufnahme einer E-Flüssigkeit versehen ist, der Zerstäuberkern (2) ein elektrisches Heizelement (22) mit einem Anschlussstift (221) umfasst, und das elektrische Heizelement (22) zum Zerstäuben zumindest eines Teils der dem elektrischen Heizelement (22) aus dem E-Flüssigkeitsspeicherhohlraum (a) zugeführten E-Flüssigkeit verwendet wird, der Verbindungssitz (3) mit dem E-Flüssigkeitsspeicherkörper (1) verbunden ist, die Elektrode (4) auf dem Verbindungssitz (3) befestigt ist, und die Elektrode (4) darauf ein Verbindungsloch (41), das durch die Elektrode (4) hindurchgeht, und eine Aufnahmeaussparung (42) definiert, wobei eine Lochöffnung an einem Ende des Verbindungslochs (41) in der Aufnahmeaussparung (42) angeordnet ist, um mit der Aufnahmeaussparung (42) zu kommunizieren, und zumindest ein Teil des Verbindungsstifts (221) in das Verbindungsloch (41) eingeführt ist und sich in die Aufnahmeaussparung (42) erstreckt, wodurch eine Verbindung mit der Elektrode (4) gebildet wird.

2. Zerstäubungsvorrichtung (100) nach Anspruch 1, wobei die Elektrode (4) eine Blattform aufweist und sich entlang einer Endfläche des Verbindungssitzes (3) erstreckt.

3. Zerstäubungsvorrichtung (100) nach Anspruch 1 oder 2, wobei sich die Aufnahmeaussparung (42) auf einer vom Anschlusssitz (3) entfernten Oberfläche der Elektrode (4) befindet und sich in Richtung einer anderen Oberfläche nahe dem Anschlusssitz (3) erstreckt.

4. Zerstäubungsvorrichtung (100) nach Anspruch 3, wobei die Aufnahmeausnehmung (42) zum Einfüllen eines Lotes ausgebildet ist, zumindest ein Teil des Verbindungsstiftes (221) in die Aufnahmeausnehmung (42) hineinragt und eine Lötverbindung mit der Elektrode (4) bildet.

5. Zerstäubungsvorrichtung (100) nach Anspruch 3, wobei eine Aussparungsöffnung der Aufnahmeaussparung (42) lochförmig ist und einen größeren Durchmesser als die Lochöffnung des Verbindungslochs (41) aufweist.

6. Zerstäubungsvorrichtung (100) nach Anspruch 1 oder 2, wobei der Verbindungssitz (3) ein Durchgangsloch (32) definiert, die Elektrode (4) mit einem Positionierungsvorsprung (43) an der Lochöffnung des Verbindungslochs (41) versehen ist, der Positionierungsvorsprung (43) in das Durchgangsloch (32) eingeführt ist und der Verbindungsstift (221) durch das Durchgangsloch (32) hindurchgeht, um eine Verbindung mit der Elektrode (4) herzustellen.

7. Zerstäubungsvorrichtung (100) nach Anspruch 1 oder 2, wobei der Verbindungssitz (3) eine erste Befestigungsaussparung (34) definiert und die Elektrode (4) in die erste Befestigungsaussparung (34) eingesetzt ist.

8. Zerstäubungsvorrichtung (100) nach Anspruch 1

oder 2, wobei die Elektrode (4) einen Hauptkörper aus einem magnetischen Material und eine auf einer Oberfläche des Hauptkörpers angeordnete Schutzschicht umfasst und die Elektrode (4) ferner für eine magnetische Verbindung mit der Batterieanordnung (200) konfiguriert ist.

9. Zerstäubungsvorrichtung (100) nach Anspruch 1 oder 2, wobei der E-Flüssigkeitsspeicherkörper (1) darin einen Luftkanal (b) und einen den Luftkanal (b) umgebenden E-Flüssigkeitsspeicherhohlraum (a) definiert, der Verbindungssitz (3) einen ersten Lufteinlass (33) definiert, der mit dem Luftkanal (b) in Verbindung steht, und der erste Lufteinlass (33) von der Elektrode (4) beabstandet angeordnet ist.

10. Zerstäubungsvorrichtung (100) nach Anspruch 9 umfasst ferner ein erstes Filtersieb (5), wobei das erste Filtersieb (5) zwischen dem Zerstäubungskern (2) und dem Anschlusssitz (3) angeordnet ist, um die zum ersten Lufteinlass (33) hin austretende E-Flüssigkeit zu filtern.

11. Zerstäubungsvorrichtung (100) nach Anspruch 10, wobei eine Oberfläche des Verbindungssitzes (3), die dem E-Flüssigkeitsspeicherkörper (1) zugewandt ist, eine zweite Befestigungsaussparung definiert, das erste Filtersieb in die zweite Befestigungsaussparung (35) eingesetzt ist und ein Luftausgang des ersten Lufteinlasses (33) an einer Bodenwand der zweiten Befestigungsaussparung (35) angeordnet ist.

12. Zerstäubungsvorrichtung (100) nach Anspruch 1 oder 2, ferner umfassend einen Verschlussstopfen (6), wobei der Verschlussstopfen (6) einen Abdeckkörper (61) und einen Säulenkörper (62) umfasst, wobei der Säulenkörper (62) auf einer Seite des Abdeckkörpers (61) entfernt von dem Verbindungssitz (3) angeordnet und mit dem Abdeckkörper (61) verbunden ist, der E-Flüssigkeitsspeicherkörper (1) ein E-Flüssigkeitseinfüllloch (132) definiert, das E-Flüssigkeitseinfüllloch (132) mit dem E-Flüssigkeitsspeicherhohlraum (a) in Verbindung steht, der Verschlussstopfen (6) zwischen dem E-Flüssigkeitsspeicherkörper (1) und dem Verbindungssitz (3) angeordnet ist und der Säulenkörper (62) in das E-Flüssigkeitseinfüllloch (132) eingesetzt ist.

13. Zerstäubungsvorrichtung (100) nach Anspruch 12, wobei der Dichtungsstopfen (6) eine Verbindungsnut (63) definiert, die durch den Abdeckkörper (61) hindurchgeht und sich in den Säulenkörper (62) hinein erstreckt, der Verbindungssitz (3) mit einer Verbindungssäule (36) versehen ist und die Verbindungssäule (36) in die Verbindungsnut (63) eingesetzt ist.

14. Zerstäubungsvorrichtung (100) nach Anspruch 1, wobei der E-Flüssigkeitsspeicherkörper (1) eine E-Flüssigkeitsspeicherhülse (10) und eine Trennhülse (11) umfasst, die Trennhülse (11) ein Luftrohr (12) und einen Befestigungssitz (13) umfasst, das Luftrohr (11) ein erstes Ende und ein zweites Ende umfasst, die einander gegenüber angeordnet sind, das Luftrohr (11) im Inneren der E-Flüssigkeitsspeicherhülse (10) angeordnet ist, das erste Ende des Luftrohrs (11) mit der E-Flüssigkeitsspeicherhülse (10) verbunden ist, das zweite Ende des Luftrohrs (11) mit dem Befestigungssitz (13) verbunden ist und der Zerstäuberkern (2) im Inneren des Luftrohrs (11) untergebracht ist; der Befestigungssitz (13) mit der E-Flüssigkeitsspeicherhülse (10) verbunden ist, wobei das Luftrohr (12) und der Befestigungssitz (13) eine einteilige Struktur sind, die durch Einspritzen in eine Form geformt ist.

15. Zerstäubungsvorrichtung (100) nach Anspruch 14, wobei das Luftrohr (11) ein Teil aus einem metallischen Material ist und der Befestigungssitz ein Teil aus einem nichtmetallischen Material ist.

16. Zerstäubungsvorrichtung (100) nach Anspruch 14, wobei das Luftrohr einen ersten Entlüftungsabschnitt (121), einen zweiten Entlüftungsabschnitt (122) und einen Verbindungsabschnitt umfasst; der Verbindungsabschnitt (123) zwischen dem ersten Entlüftungsabschnitt (121) und dem zweiten Entlüftungsabschnitt (122) angeordnet und mit dem ersten Entlüftungsabschnitt (121) und dem zweiten Entlüftungsabschnitt (122) verbunden ist, der zweite Entlüftungsabschnitt (122) eine größere Querschnittsfläche als der erste Entlüftungsabschnitt (121) aufweist und der Zerstäubungskern (2) im zweiten Entlüftungsabschnitt (122) untergebracht ist.

17. Elektronische Zigarette, umfassend die Zerstäubungsvorrichtung (100) nach einem der Ansprüche 1 bis 16.

Revendications

1. Ensemble d'atomisation (100), configuré pour être combiné avec un assemblage de batterie (200) pour former une cigarette électronique, comprenant : un corps de stockage d'e-liquide (1), un noyau d'atomisation (2), un siège de connexion (3) et une électrode (4), **caractérisé par le fait que**
le corps de stockage de e-liquide (1) est pourvu à l'intérieur d'une cavité de stockage de e-liquide (a) pour loger un e-liquide, le noyau d'atomisation (2) comprend un élément chauffant électrique (22) ayant une broche de connexion (221), et l'élément chauffant électrique (22) est utilisé pour atomiser au moins une partie du e-liquide fourni à l'élément

chauffant électrique (22) à partir de la cavité de stockage du e-liquide (a), le siège de connexion (3) est connecté au corps de stockage du e-liquide (1), l'électrode (4) est fixée sur le siège de connexion (3), et l'électrode (4) définit sur celle-ci un trou de connexion (41) traversant l'électrode (4) et un logement (42), une ouverture à une extrémité du trou de connexion (41) est située dans le logement (42) pour communiquer avec le logement (42), et au moins une partie de la broche de connexion (221) est insérée dans le trou de connexion (41) et s'étend dans le logement (42), formant ainsi une connexion avec l'électrode (4).

2. L'ensemble d'atomisation (100) selon la revendication 1, dans lequel l'électrode (4) présente une forme de feuille et est disposée le long d'une face d'extrémité du siège de connexion (3).

3. L'ensemble d'atomisation (100) selon la revendication 1 ou 2, dans lequel le logement (42) est situé sur une surface de l'électrode (4) éloignée du siège de connexion (3) et s'étend vers une autre surface proche du siège de connexion (3).

4. L'ensemble d'atomisation (100) selon la revendication 3, dans lequel le logement (42) est configuré pour remplir une soudure, au moins une partie de la broche de connexion (221) s'étend dans le logement (42) et forme une connexion de soudure avec l'électrode (4).

5. L'ensemble d'atomisation (100) selon la revendication 3, dans lequel une ouverture de la cavité de logement (42) est en forme de trou et a un diamètre plus grand que l'ouverture du trou de connexion (41).

6. L'ensemble d'atomisation (100) selon la revendication 1 ou 2, dans lequel le siège de connexion (3) définit un trou de passage (32), l'électrode (4) est pourvue d'une saillie de localisation (43) à l'ouverture du trou de connexion (41), la saillie de localisation (43) est insérée dans le trou de passage (32), et la broche de connexion (221) passe à travers le trou de passage (32) pour se connecter à l'électrode (4).

7. L'ensemble d'atomisation (100) selon la revendication 1 ou 2, dans lequel le siège de connexion (3) définit une première cavité de fixation (34), et l'électrode (4) est insérée dans la première cavité de fixation (34).

8. L'ensemble d'atomisation (100) selon la revendication 1 ou 2, dans lequel l'électrode (4) comprend un corps principal fait d'un matériau magnétique et une couche de protection située sur une surface du corps principal, et l'électrode (4) est en outre configurée pour une connexion magnétique avec l'ensemble de batterie (200).

9. L'ensemble d'atomisation (100) selon la revendication 1 ou 2, dans lequel le corps de stockage d'e-liquide (1) définit à l'intérieur un canal d'air (b) et une cavité de stockage d'e-liquide (a) entourant le canal d'air (b), le siège de connexion (3) définit une première entrée d'air (33) communiquée avec le canal d'air (b), et la première entrée d'air (33) est disposée à l'écart de l'électrode (4).

10. L'ensemble d'atomisation (100) selon la revendication 9, comprenant en outre un premier écran filtrant (5), dans lequel le premier écran filtrant (5) est situé entre le noyau d'atomisation (2) et le siège de connexion (3), pour filtrer l'e-liquide fuyant vers la première entrée d'air (33).

11. L'ensemble d'atomisation (100) selon la revendication 10, dans lequel une surface du siège de connexion (3) faisant face au corps de stockage d'e-liquide (1) définit un deuxième renfoncement de fixation, le premier écran filtrant est inséré dans le deuxième renfoncement de fixation (35), et une sortie d'air de la première entrée d'air (33) est située sur une paroi inférieure du deuxième renfoncement de fixation (35).

12. L'ensemble d'atomisation (100) selon la revendication 1 ou 2 comprend en outre un bouchon d'étanchéité (6), dans lequel le bouchon d'étanchéité (6) comprend un corps de couvercle (61) et un corps de colonne (62), le corps de colonne (62) est situé d'un côté du corps de couvercle (61) à l'écart du siège de connexion (3) et est relié au corps de couvercle (61), le corps de stockage de e-liquide (1) définit un trou de remplissage de e-liquide (132), le trou de remplissage de e-liquide (132) est en communication avec la cavité de stockage de e-liquide (a), le bouchon d'étanchéité (6) est situé entre le corps de stockage de e-liquide (1) et le siège de connexion (3), et le corps de colonne (62) est inséré dans le trou de remplissage de e-liquide (132).

13. L'ensemble d'atomisation (100) selon la revendication 12, dans lequel le bouchon d'étanchéité (6) définit une rainure de connexion (63) traversant le corps du couvercle (61) et s'étendant dans le corps de la colonne (62), le siège de connexion (3) est pourvu d'une colonne de connexion (36), et la colonne de connexion (36) est insérée dans la rainure de connexion (63).

14. L'ensemble d'atomisation (100) selon la revendication 1, dans lequel le corps de stockage d'e-liquide (1) comprend un manchon de stockage d'e-liquide (10) et un manchon de séparation (11), le manchon

de séparation (11) comprend un tube d'air (12) et un siège de fixation (13), le tube d'air (11) comprend une première extrémité et une deuxième extrémité qui sont disposées à l'opposé l'une de l'autre, le tube d'air (11) est situé à l'intérieur du manchon de stockage d'e-liquide (10), la première extrémité du tube d'air (11) est reliée au manchon de stockage d'e-liquide (10), la seconde extrémité du tube d'air (11) est reliée au siège de fixation (13), et le noyau d'atomisation (2) est logé à l'intérieur du tube d'air (11) ; le siège de fixation (13) est relié au manchon de stockage d'e-liquide (10), le tube d'air (12) et le siège de fixation (13) étant une structure monobloc façonnée par injection dans un moule.

15. L'ensemble d'atomisation (100) selon la revendication 14, dans lequel le tube d'air (11) est une pièce en matériau métallique, et le siège de fixation est une pièce en matériau non métallique.

16. L'ensemble d'atomisation (100) selon la revendication 14, dans lequel le tube d'air comprend une première section de ventilation (121), une deuxième section de ventilation (122) et une section de connexion ; la section de connexion (123) est située entre la première section de ventilation (121) et la deuxième section de ventilation (122) et est connectée à la première section de ventilation (121) et à la deuxième section de ventilation (122), la deuxième section de ventilation (122) a une section plus grande que celle de la première section de ventilation (121), et le noyau d'atomisation (2) est logé à l'intérieur de la deuxième section de ventilation (122).

17. Cigarette électronique comprenant l'ensemble d'atomisation (100) selon l'une des revendications 1 à 16.

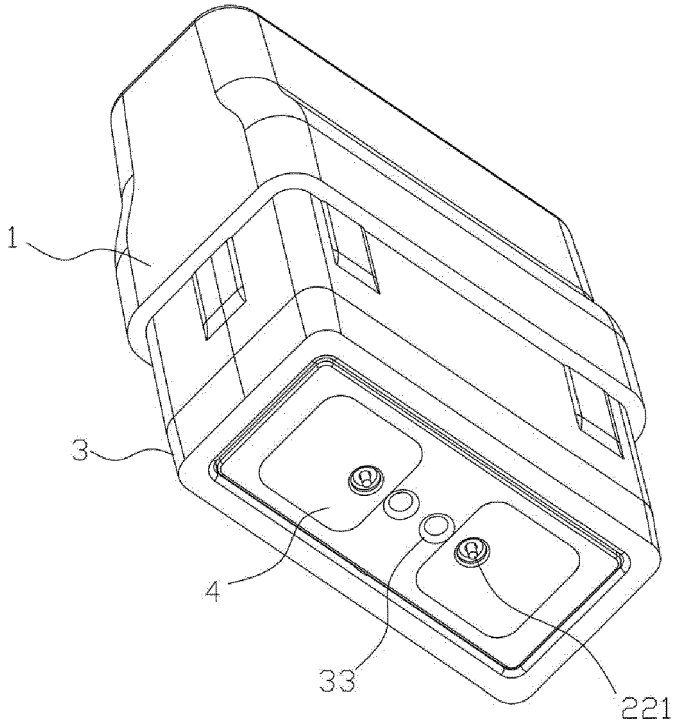

1
3
4
33
221

FIG. 1

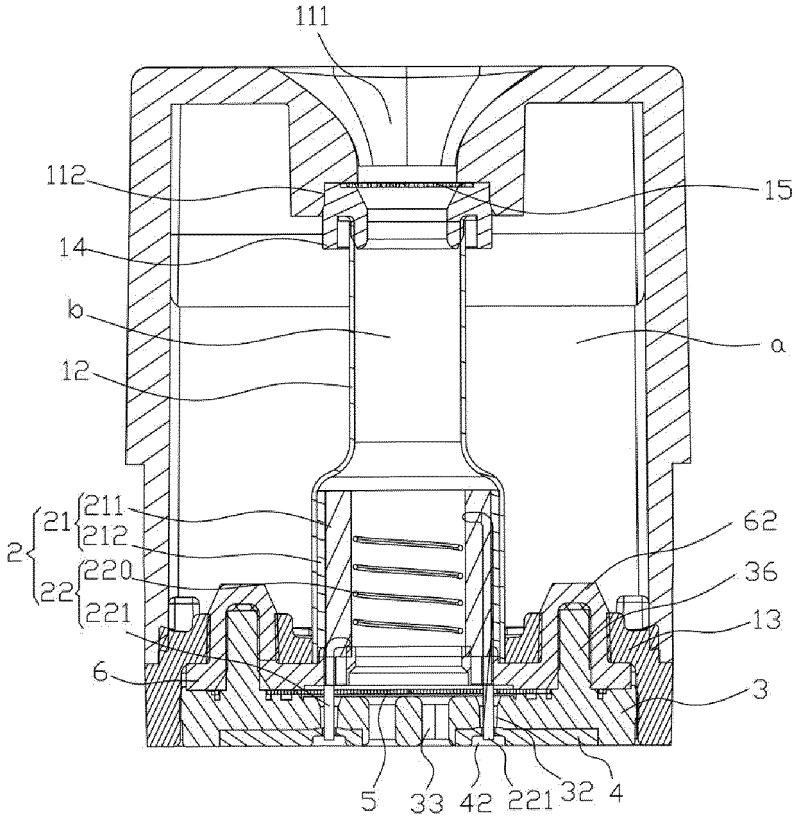

111
112
15
14
b
a
12
2
21
211
212
22
220
221
62
36
13
6
3
5
33
42
221
32
4

FIG. 2

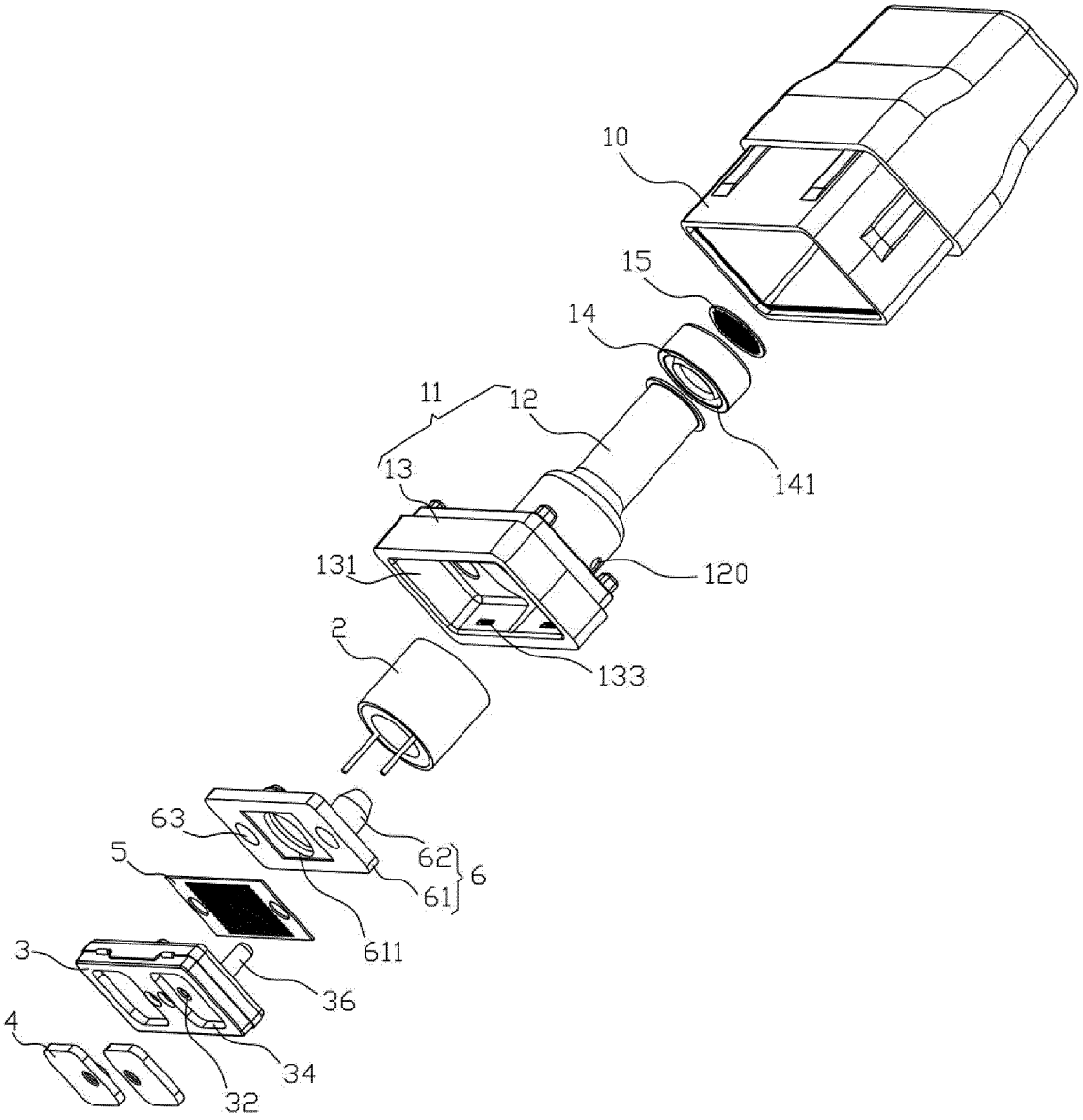


FIG. 3

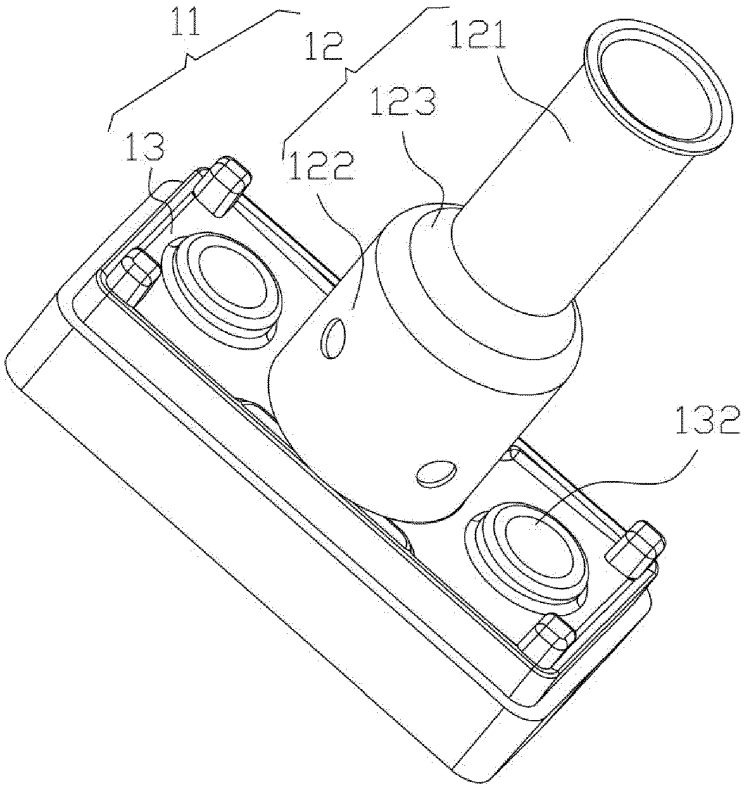


FIG. 4

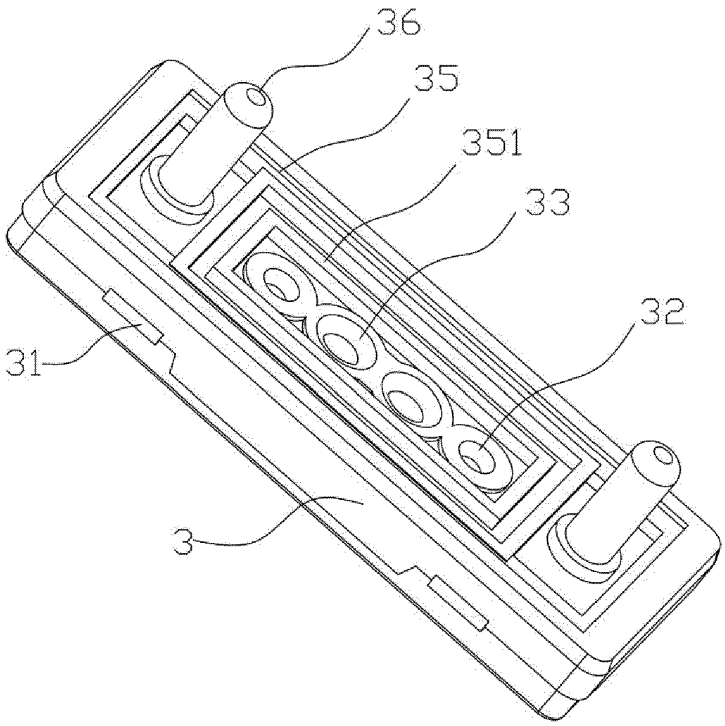


FIG. 5

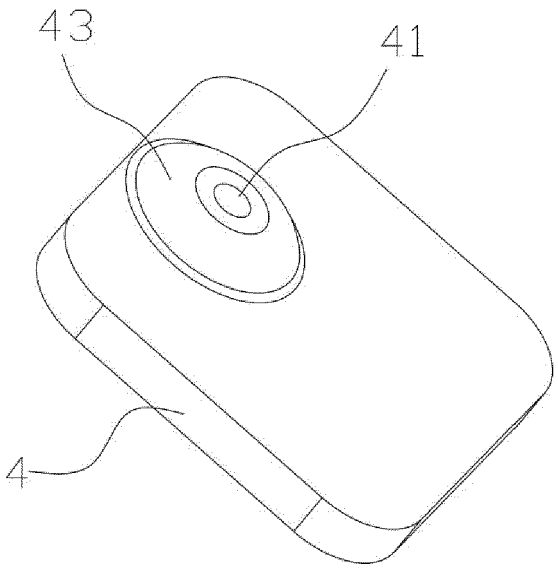

43
41
4

FIG. 6

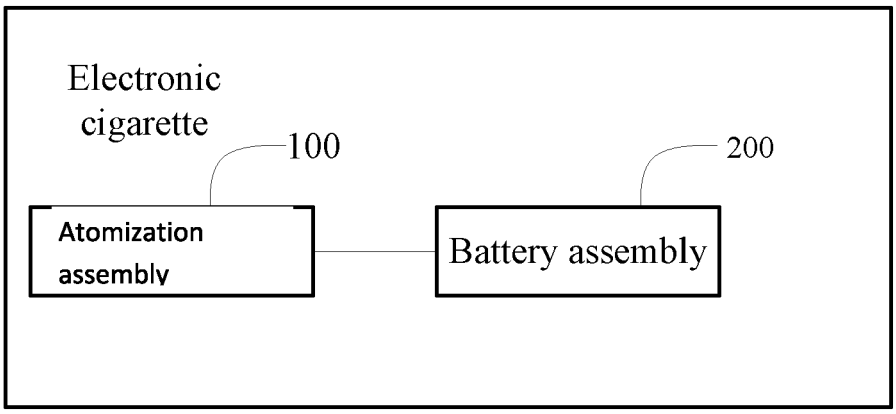

Electronic cigarette
100
200
Atomization assembly
Battery assembly

FIG. 7

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- WO 2015109540 A1 **[0003]**
- WO 2018141106 A1 **[0003]**
- CN 203676143 U **[0003]**
- CN 209106324 U **[0003]**