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

(11) **EP 4 483 728 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
01.01.2025 Bulletin 2025/01

(21) Application number: **22927651.4**

(22) Date of filing: **22.02.2022**

(51) International Patent Classification (IPC):
A24F 40/40 *(2020.01)* ***A24F 40/46*** *(2020.01)*

(52) Cooperative Patent Classification (CPC):
A24F 40/40; A24F 40/46

(86) International application number:
PCT/CN2022/077325

(87) International publication number:
WO 2023/159355 (31.08.2023 Gazette 2023/35)

(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
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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(54) HEATING ASSEMBLY AND AEROSOL GENERATION APPARATUS

(57) A heating assembly (100) and an aerosol generation apparatus (300). The heating assembly comprises a base (20) and a conductive trace (30), wherein the base (20) is provided with a heating area (21); the conductive trace (30) is arranged in the heating area (21); the base (20) and the conductive trace (30) are used for being at least partially inserted into an aerosol generation substrate, such that the conductive trace (30) is heated under a power-on condition, so as to heat the aerosol generation substrate; and the conductive trace (30) is configured to form, under the power-on condition, at least two high-temperature areas (31) in the heating area (21), such that heating performed by the heating assembly (100) is more uniform, thereby improving the user experience.

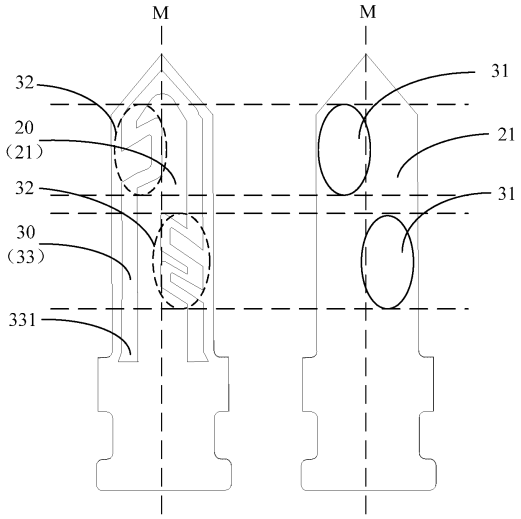

FIG. 6

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to the field of atomization, and in particular to a heating assembly and an aerosol generating apparatus.

BACKGROUND

[0002] An aerosol generating apparatus is configured to heat and atomize an aerosol generating substrate. For example, solid substrates of plant leaves with a specific aroma are baked in a heat-not-burning manner, enabling the solid substrates to form an aerosol.

[0003] Currently, the heating assemblies in most aerosol generating apparatuses heat the aerosol generating substrate in a central heating manner.

[0004] However, the heating assembly in related art heats the aerosol generating substrate unevenly, results in poor user experience.

SUMMARY

[0005] In view of the above problems, the present disclosure provides a heating assembly and an aerosol generating apparatus to solve the problems in the related art that the heating assembly generates heat unevenly and the poor user experience.

[0006] In order to solve the above technical problems, the present disclosure provides a heating assembly, including a base body and a conductive track. The base body has a heating region, and the conductive track is arranged in the heating region. At least part of the base body and at least part of the conductive track are configured to be inserted into an aerosol generating substrate, enabling the conductive track to generate heat and heat the aerosol generating substrate under energized condition. The conductive track is configured to form at least two high temperature regions in the heating region under energized condition.

[0007] In some embodiments, the conductive track is configured to form at least one high temperature region at each of two ends of the heating region along the length direction of the base body under energized condition.

[0008] In some embodiments, the conductive track includes two sub-conductive tracks, and the two sub-conductive tracks are arranged in series or in parallel.

[0009] In some embodiments, the two sub-conductive tracks are arranged on each of two sides of a midline of the base body, and are symmetrically or asymmetrically arranged with respect to the midline of the base body.

[0010] In some embodiments, one of the two sub-conductive tracks forms one high temperature region at one end of the heating region along the length direction of the base body, and the other of the two sub-conductive tracks forms one high temperature region at the other end of the heating region along the length direction of the base body.

[0011] In some embodiments, the conductive track is bent multiple times at a position facing the high temperature regions.

[0012] In some embodiments, the base body includes a non-heating region not arranged with the conductive track, the heating region and the non-heating region are adjacently arranged along the length direction of the base body, and an end of the heating region away from the non-heating region forms a tip.

[0013] In some embodiments, the heating assembly includes a first electrode and a second electrode arranged at intervals in the non-heating region, the first electrode and the second electrode are configured to be electrically connected to a power supply assembly. One of the first electrode and the second electrode is electrically connected to a first end of the conductive track, and the other of the first electrode and the second electrode is electrically connected to a second end of the conductive track.

[0014] In some embodiments, the heating assembly includes a protective layer coated on the base body and covering the conductive track, the first electrode, and the second electrode.

[0015] In some embodiments, the base body includes an insulating substrate.

[0016] In some embodiments, the base body includes a conductive substrate and an insulating layer disposed on the surface of the conductive substrate, and the conductive track is disposed on a side of the insulating layer away from the conductive substrate.

[0017] In order to solve the above technical problems, the present disclosure also provides an aerosol generating apparatus, including a housing, a heating assembly, and a power supply assembly. The heating assembly and the power supply assembly are disposed in the housing. The power supply assembly is electrically connected to the heating assembly, and is configured to supply power to the heating assembly. The heating assembly is a heating assembly described above.

[0018] Different from the related art, the present disclosure provides the heating assembly and the aerosol generating apparatus. The heating assembly includes the base body and the conductive track. The base body has a heating region, and the conductive track is arranged in the heating region. At least part of the base body and at least part of the conductive track are configured to be inserted into the aerosol generating substrate, enabling the conductive track to generate heat and heat the aerosol generating substrate under energized condition. The conductive track is configured to form at least two high temperature regions in the heating region under energized condition, enabling the heating of the heating assembly to be more uniform and improving user experience.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019]

FIG. 1 is a schematic structural view of an aerosol generating apparatus according to an embodiment of the present disclosure.

FIG. 2 is a cross-sectional view of an aerosol generating apparatus along a certain angle according to an embodiment of the present disclosure.

FIG. 3 is a schematic structural view of an aerosol generating product according to an embodiment of the present disclosure.

FIG. 4 is a schematic structural view of a heating assembly according to an embodiment of the present disclosure.

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

FIG. 6 is a schematic structural view of a bending portion, forming a high temperature region in a heating region, of a conductive track according to an embodiment of the present disclosure.

FIG. 7 is a schematic structural view of a conductive track according to an embodiment of the present disclosure.

FIG. 8 is a schematic structural view of a conductive track according to another embodiment of the present disclosure.

FIG. 9 is a schematic structural view of a heating assembly according to another embodiment of the present disclosure.

FIG. 10 is a schematic structural view of a heating assembly according to further another embodiment of the present disclosure.

FIG. 11 is a schematic structural view of a heating assembly according to still another embodiment of the present disclosure.

DETAILED DESCRIPTION

[0020] The technical solutions in the embodiments of the present disclosure will be clearly and completely described below with reference to the accompanying drawings in the embodiments of the present disclosure. Obviously, the described embodiments are merely some of the embodiments of the present disclosure, rather than all of the embodiments. All other embodiments obtained by persons of ordinary skill in the art based on the embodiments of the present disclosure without making creative efforts belong to the protection scope of the present disclosure.

[0021] The terms "first", "second", and "third" in the present disclosure are merely used for descriptive purposes, and may not be understood as indicating or implying relative importance or implicitly indicating the number of indicated technical features. Thus, features defining "first", "second", and "third" may explicitly or implicitly include at least one of these features. In the description of the present disclosure, "plurality" means at least two, such as two, three, etc., unless otherwise specifically defined. All directional indications (such as up, down, left, right, front, back...) in the embodiments of the present disclosure are merely used to explain relative positional relationships, sports conditions, etc., between various components in a specific posture (as shown in the drawings). If the specific posture changes, the directional indications may also change accordingly. In addition, the terms "include" and "have", as well as any variations thereof, are intended to cover a non-exclusive inclusion. For example, a process, method, system, product, or device that includes a series of steps or units is not limited to the listed steps or units, but optionally also includes unlisted steps or units, or optionally also includes other steps or units inherent in the process, method, product, or device.

[0022] Reference to the term "embodiment" in the specification means that particular features, structures, or characteristics described with the embodiment may be included in at least one embodiment of the present disclosure. The term appearing in various positions in the specification may not necessarily refer to the same embodiment, or an independent or alternative embodiment that is mutually exclusive with other embodiments. Those skilled in the art may explicitly and implicitly understand that the embodiments described in the specification may be combined with other embodiments.

[0023] As shown in FIG. 1 to 11, FIG. 1 is a schematic structural view of an aerosol generating apparatus according to an embodiment of the present disclosure; FIG. 2 is a cross-sectional view of an aerosol generating apparatus along a certain angle according to an embodiment of the present disclosure; FIG. 3 is a schematic structural view of an aerosol generating product according to an embodiment of the present disclosure; FIG. 4 is a schematic structural view of a heating assembly according to an embodiment of the present disclosure; FIG. 5 is an exploded view of a heating assembly according to an embodiment of the present disclosure; FIG. 6 is a schematic structural view of a bending portion, forming a high temperature region in a heating region, of a conductive track according to an embodiment of the present disclosure; FIG. 7 is a schematic structural view of a conductive track according to an embodiment of the present disclosure; FIG. 8 is a schematic structural view of a conductive track according to another embodiment of the present disclosure; FIG. 9 is a schematic structural view of a heating assembly according to another embodiment of the present disclosure; FIG. 10 is a schematic structural view of a heating assembly according to further another embodiment of the present disclosure; FIG. 11 is a schematic structural view of a heating assembly according to still another embodiment of the present disclosure.

[0024] As shown in FIG. 1 and FIG. 2, an aerosol generating apparatus 300 may be configured to heat

and atomize an aerosol generating substrate. The aerosol generating apparatus 300 may be configured in different fields, such as medical atomization, beauty atomization, recreational smoking, etc. In some embodiments, the aerosol generating apparatus 300 includes a housing 301, a heating assembly 100, and a power supply assembly 200. The heating assembly 100 and the power supply assembly 200 are disposed in the housing 301. The heating assembly 100 is configured to heat and atomize the aerosol generating substrate to form an aerosol. The power supply assembly 200 includes a battery 201, an airflow sensor (not shown), and a controller (not shown). The power supply assembly 200 is configured to supply power to the heating assembly 100 and control the heating assembly 100 to operate to heat and atomize the aerosol generating substrate to form the aerosol. The airflow sensor is configured to detect airflow changes in the aerosol generating apparatus 300, and the controller is configured to activate the battery 201 to supply power to the heating assembly 100 according to the airflow changes detected by the airflow sensor. In some embodiments, the airflow sensor may be omitted, and the controller is configured to activate the battery 201 to supply power to the heating assembly 100 according to a control signal input by the user.

[0025] In some embodiments, at least part of the heating assembly 100 is inserted into an aerosol generating product 10. The aerosol generating product 10 includes an accommodating tube 11 and the aerosol generating substrate disposed in the accommodating tube 11. The aerosol generating substrate may be a solid aerosol generating substrate of plant leaves with a specific aroma. The accommodating tube 11 may be a cylindrical segmented structure. The aerosol generating substrate is disposed inside a first end of the accommodating tube 11 to form a substrate section 12. A filter material (not labeled) is disposed inside a second end of the accommodating tube 11 opposite to the first end to form a filter section 13. A hollow section 14 is formed between the substrate section 12 and the filter section 13.

[0026] In some embodiments, at least part of the heating assembly 100 is inserted into the substrate section 12. The substrate section 12 accommodates the solid aerosol generating substrate. The form of the solid aerosol generating substrate is not limited to an ordered solid aerosol generating substrate, a disordered solid aerosol generating substrate, or a particulate solid aerosol generating substrate. The hollow section 14 may accommodate a support material (not labeled). The hollow section 14 is configured to gather the aerosol. The filter section 13 accommodates the filter material for filtering impurities in the aerosol. Both the support material in the hollow section 14 and the filter material in the filter section 13 include but are not limited to acetate fibers, polylactic acid fibers, polypropylene fibers, paper filter material, etc. In some embodiments, the first end of the accommodating tube 11 is an open structure or defines a through hole (not labeled), the air outside and the heating assembly 100 may enter the aerosol generating product 10 through the through hole.

[0027] In some embodiments, as shown in FIG. 3, a cooling section 15 with a cooling material is disposed between the hollow section 14 and the filtering section 13, in order to prevent the temperature of the generated aerosol from being too high and affecting the user experience. The cooling material includes but is not limited to polylactic acid and other phase change materials.

[0028] As shown in FIG. 4 to FIG. 6, in some embodiments, the heating assembly 100 includes a base body 20 and a conductive track 30. The base body 20 has a heating region 21. The conductive track 30 is arranged in the heating region 21. At least part of the base body 20 and at least part of the conductive track 30 are configured to be inserted into the aerosol generating substrate, enabling the conductive track 30 to generate heat and heat the aerosol generating substrate under energized condition. The base body 20 may be of a columnar or sheet structure. The material of the base body 20 may be an insulating ceramic or metal subjected to an insulation treatment. The material of the conductive track 30 may be one or more of aluminum and its alloys, copper and its alloys, silver and its alloys, gold and its alloys, platinum and its alloys, iron and its alloys, nickel and its alloys, titanium and its alloys. A heating circuit may be formed on the surface of the base body 20 by means of physical vapor deposition (such as magnetron sputtering, vacuum evaporation, ion plating) or chemical vapor deposition (such as ion-assisted chemical deposition, laser-assisted chemical deposition, organometallic compound deposition). The conductive track 30 may be formed by printing and sintering a conductive paste.

[0029] In related art, the heating assembly usually has only one high temperature region under energized condition, and the one high temperature region is usually located near the tip of the heating assembly, which makes the heating assembly heat the aerosol generating substrate unevenly, resulting in poor heating effect and low content of the aerosol. In order to solve the above problem, the present disclosure provides the conductive track 30 configured to form at least two high temperature regions 31 in the heating region 21 under energized condition, so that the high temperature regions 31 of the heating assembly 100 are widely distributed, and the heating effect is better, which is conducive to improving the user taste and the user experience.

[0030] It can be understood that the greater the resistance of the material of the conductive track 30, the more heat is generated when the conductive track 30 is energized, and the higher the temperature. In some embodiments, the conductive track 30 includes at least two heating sections with different resistances, and the heating section facing a corresponding high temperature region 31 has a higher resistance. In some embodiments, the material of the conductive track 30 includes at least two materials with different resistances. A material with higher resistance is arranged at a position facing the high

temperature region 31. Therefore, the temperature generated by the high temperature region 31 is greater than the temperature of other regions in the heating region 21 under energized condition.

[0031] For example, the conductive track 30 forms at least two high temperature regions 31 and multiple low temperature regions (not shown) in the heating region 21. The materials of conductive track 30 include silver and iron, and the resistance of iron is greater than the resistance of silver. Iron is disposed at a position facing the high temperature regions 31, and silver is disposed at other positions in the heating region 21.

[0032] For another example, the conductive track 30 forms at least two high temperature regions 31, multiple medium temperature regions (not shown), and multiple low temperature regions in the heating region 21. The material of the conductive track 30 includes silver, gold, and iron, where the resistance of silver is the least and the resistance of iron is the greatest among silver, gold, and iron. Iron is disposed at a position facing the high temperature regions 31, gold is disposed at a position facing the medium temperature regions, and silver is disposed at a position facing the low temperature regions.

[0033] It should be noted that the medium temperature regions and low temperature regions mentioned above are only as exemplary descriptions. In some embodiments, the heating temperature of a heat-not-burning manner to the aerosol generating substrate usually ranges from 240 degrees to 350 degrees. The temperature of the high temperature region 31 ranges from 330 degrees to 350 degrees, and the temperature of the low temperature region is greater than or equal to 240 degrees. That is, both the temperatures of the medium temperature regions and low temperature regions range from 240 degrees to 330 degrees, and the temperature of the medium temperature region is higher than the temperature of the low temperature region, which may be set according to actual demands.

[0034] In some embodiments, as shown in FIG. 5 to FIG. 8, the material of the conductive track 30 is of only one kind. The conductive track 30 is bent multiple times at a position facing the high temperature regions 31 to form a bending portion 32. The shape of the conductive track 30 facing the region of the bending portion 32 may be at least one of an acute angle, a right angle, an obtuse angle, an arc, or a combination thereof, which is not limited herein. The metal bending causes the resistance at the bend to change, which is usually manifested as an increase in resistance. Therefore, the bending portion 32 generates more heat and has a higher temperature under energized condition, and the high temperature region 31 is thus formed in the heating region 21.

[0035] In addition, the distribution density of the conductive track 30 corresponding to the bending portion 32 is greater than the distribution density of the conductive track 30 corresponding to an unbent region. In this way, the bending portion 32 generates more heat and has a higher temperature than the unbent region of the same unit area under energized condition, and the high temperature region 31 thus is formed in the heating region 21.

[0036] As shown in FIG. 6, FIG. 9, and FIG. 10, in related art, the heating temperature of each region on the heating assembly is uneven. For example, the heating temperature at one end of the heating assembly is high, and the heating temperature at the other end of the heating assembly is low under energized condition. It may lead to the temperature of the high temperature region becoming higher and the temperature of the low temperature region becoming lower during a vaping process. Thus, there is a risk of excessive heating, which may lead to fatigue cracking and an increase in fatigue resistance of the conductive track facing the corresponding high temperature region, reducing the service life. In some embodiments, the conductive track 30 is configured to form at least one high temperature region 31 at each of two ends of the heating region 21 along the length direction of the base body 20 under energized condition. In this way, the upper and lower ends of the heating region 21 may fully heat the aerosol generating substrate, enabling the heating assembly 100 to heat and atomize the aerosol generating substrate uniformly, quickly, and more fully, while avoiding the risks of excessive heating, fatigue cracking, and increasing fatigue resistance of the conductive track 30.

[0037] In some embodiments, as shown in FIG. 6, FIG. 9 and FIG. 10, the conductive track 30 includes two sub-conductive tracks 33. The two sub-conductive tracks 33 are arranged in series or in parallel. Each of the two sub-conductive tracks 33 forms at least one high temperature region 31 on the heating region 21.

[0038] In some embodiments, as shown in FIG. 6, each of the two sub-conductive tracks 33 includes a connecting end (not labeled) and a free end 331. The connecting ends of the two sub-conductive tracks 33 are connected to each other, the free end 331 of one of the two sub-conductive tracks 33 is configured to be electrically connected to the positive electrode of the power supply assembly 200, and the free end 331 of the other of the two sub-conductive tracks 33 is configured to be electrically connected to the negative electrode of the power supply assembly 200.

[0039] In some embodiments, as shown in FIG. 9, the two sub-conductive tracks 33 are connected end to end to form a ring-shaped conductive track. Two extending portions 332 are arranged on the ring-shaped conductive track. The two extending portions 332 are configured to be electrically connected to the positive and negative electrodes of the power supply assembly 200. One of the two extending portions 332 is arranged at a bottom end of the ring-shaped conductive track along the length direction of the base body 20. The other of the two extending portions 332 is arranged at the top end of the ring-shaped conductive track along the length direction of the base body 20, and extends from a surface of the base body 20 on which the sub-conductive tracks 33 are not arranged to the bottom end of the base body 20.

For example, the other of the two extending portions 332 extends from a back side of a surface on which the sub-conductive tracks 33 are arranged to the bottom end of the base body 20.

[0040] It can be understood that, as shown in FIG. 10, in some embodiments, the two extending portions 332 may be disposed in the middle of the sub-conductive tracks 33 along the length direction of the base body 20, and are disposed at intervals. For example, the two extending portions 332 extend from the surface of the base body 20 on which the sub-conductive tracks 33 are not arranged to the bottom end of the base body 20, and are configured to be electrically connected to the positive and negative electrodes of the power supply assembly 200. In some embodiments, as shown in FIG. 6 and FIG. 11, the two sub-conductive tracks 33 are respectively arranged on two sides of the midline M of the base body 20, and are symmetrically or asymmetrically arranged with respect to the midline M of the base body 20. The midline M of the base body 20 represents the midline along the length direction of the base body 20. By adjusting the positions of the two sub-conductive tracks 33 on the base body 20, the heating effect is better, thereby achieving a better vaping experience.

[0041] As shown in FIG. 6, the two sub-conductive tracks 33 are respectively disposed on two sides of the midline M of the base body 20, and are asymmetrically disposed with respect to the midline M of the base body 20. Each of the two sub-conductive tracks 33 include a bending portion 32 that may form the high temperature region 31 under energized condition. The bending portion 32 of one of the two sub-conductive tracks 33 is disposed at the tip of the base body 20 along the length direction of the base body 20 and offsets from the midline M of the base body 20, and the bending portion 32 of the other of the two sub-conductive tracks 33 is disposed at the bottom end of the base body 20 along the length direction of the base body 20 and offsets from the midline M of the base body 20. In some embodiments, one of the two sub-conductive tracks 33 forms one high temperature region 31 at one end of the heating region 21 along the length direction of the base body 20, and the other of the two sub-conductive tracks 33 forms one high temperature region 31 at the other end of the heating region 21 along the length direction of the base body 20, enabling the heating assembly 100 to heat the aerosol generating substrate more uniformly, thereby achieving a better vaping experience.

[0042] As shown in FIG. 11, the two sub-conductive tracks 33 are respectively disposed on two sides of the midline M of the base body 20, and are disposed symmetrically with respect to the midline M of the base body 20. Each of the two sub-conductive tracks 33 includes a bending portion 32 that may form the high temperature region 31 under energized condition, and the two bending portions 32 are arranged symmetrically with respect to the midline M of the base body 20. In some embodiments, one of the two sub-conductive tracks 33 forms one high temperature region 31 on one side of the heating region 21, and the other of the two sub-conductive tracks 33 forms one high temperature region 31 on the other side of the heating region 21, enabling the heating assembly 100 to heat the aerosol generating substrate more fully, thereby achieving a better vaping experience.

[0043] In some embodiments, the base body 20 includes a non-heating region 22 (as shown in FIG. 5) in which no conductive track 30 are arranged. The heating region 21 and the non-heating region 22 are adjacently arranged along the length direction of the base body 20. At least part of the non-heating region 22 is configured to be fixedly connected to the housing 301. A connection medium between the conductive track 30 and the power supply assembly 200 is arranged on the non-heating region 22. The connection medium may be a metal wire or a conductive coating configured to connect the conductive track 30 and the power supply assembly 200. It can be understood that due to the presence of the metal wire or conductive coating, the non-heating region 22 does not completely generate no heat, and may still generate a small amount of heat under energized condition, and the small amount of heat may be ignored.

[0044] In some embodiments, the heating assembly 100 includes a mounting base (not shown) fixedly connected to the heating assembly 100, enabling the heating assembly 100 to be mounted to the housing 301 through the mounting base. The material of the mounting base may be an organic or inorganic material with a melting point higher than 160 degrees. The mounting base may be fixed on the heating assembly 100 through a clamping structure or an adhesive, and the adhesive may be a high temperature resistant glue.

[0045] In some embodiments, as shown in FIG. 4, the end of the heating region 21 away from the non-heating region 22 is formed with a tip 211 to reduce resistance when the heating assembly 100 is inserted into the aerosol generating product 10.

[0046] In some embodiments, as shown in FIG. 5, the heating assembly 100 includes a first electrode 34 and a second electrode 35 disposed at intervals in the non-heating region 22, and the first electrode 34 and the second electrode 35 are configured to electrically connect the conductive track 30 with the power supply assembly 200. One of the first electrode 34 and the second electrode 35 is electrically connected to a first end of the conductive track 30, and the other of the first electrode 34 and the second electrode 35 is electrically connected to a second end of the conductive track 30. In response to the conductive track 30 being an unclosed conductive track or including two sub-conductive tracks 33 connected in series, one of the first electrode 34 and the second electrode 35 is electrically connected to one free end 331 of the conductive track 30, and the other of the first electrode 34 and the second electrode 35 is electrically connected to the other free end 331 of the conductive track 30. In response to the conductive track 30 including two sub-conductive tracks 33 connected in parallel, one

of the first electrode 34 and the second electrode 35 is electrically connected to one extending portion 332 of the ring-shaped conductive track, and the other of the first electrode 34 and the second electrode 35 is electrically connected to another extending portion 332 of the ring-shaped conductive track. In some embodiments, both the first electrode 34 and the second electrode 35 are conductive leads.

[0047] In some embodiments, as shown in FIG. 5, the heating assembly 100 further includes a protective layer 36 coated on the base body 20 and covering the conductive track 30, the first electrode 34, and the second electrode 35, in order to prevent the aerosol formed when the aerosol generating substrate is heated from damaging the first electrode 34, the second electrode 35, and the conductive track 30. The protective layer 36 may be a glass glaze layer.

[0048] In some embodiments, the protective layer 36 is only coated on the surface of the base body 20 where the conductive track 30, the first electrode 34, and the second electrode 35 are arranged, in order to prevent the conductive track 30, the first electrode 34, and the second electrode 35 from being damaged and even falling off.

[0049] In some embodiments, the protective layer 36 may cover the entire base body 20 to protect the entire heating assembly 100, enabling the heating assembly 100 to have a smooth surface, and further reducing the resistance of the heating assembly 100 being inserted into the aerosol generating product 10.

[0050] In some embodiments, the base body 20 includes an insulating substrate. For example, the base body 20 is a sheet insulating ceramic, and the conductive track 30 is disposed on a surface of the insulating substrate. The thermal conductivity of the base body 20 made of insulating ceramics may range 4 W/(m.k) to 18 W/(m.k), the flexural strength of the base body 20 may be more than 600 MPa, the thermal stability of the base body 20 may exceed 450 degrees, and the fire resistance of the base body 20 may be higher than 1450 degrees. The base body 20 may include a zirconia toughened alumina ceramic (ZTA) material or mullite and alumina composite (MTA).

[0051] In some embodiments, the base body 20 may further include a conductive substrate 23 not subjected to an insulation treatment. For example, the base body 20 includes a sheet metal substrate and an insulating layer 24 disposed on the surface of the metal substrate. The conductive track 30 is disposed on a side of the insulating layer 24 away from the conductive substrate 23. The strength of the heating assembly 100 is improved and the heating assembly 100 is prevented from bending or breaking, while the heat generated when the conductive track 30 is energized may be diffused to the aerosol generating substrate in contact with the base body 20, thereby improving the heating uniformity of the aerosol generating substrate. The material of the base body 20 may be a new type of composite zirconia material. The new type of composite zirconia base body 20 may perform heat preservation and heat transfer upon the heat generated by the conductive track 30, thereby improving the energy utilization rate of the heating assembly 100.

[0052] The above specification only refers to embodiments of the present disclosure, and does not limit the patent scope of the present disclosure. Any equivalent structure conversion or equivalent process conversion made by using the specification and drawings of the present disclosure, or directly or indirectly used in other related technologies fields are equally included in the scope of patent protection of the present disclosure.

Claims

1. A heating assembly, comprising:

a base body, having a heating region; and
a conductive track, arranged in the heating region; wherein, at least part of the base body and at least part of the conductive track are configured to be inserted into an aerosol generating substrate, enabling the conductive track to generate heat and heat the aerosol generating substrate under energized condition;
wherein the conductive track is configured to form at least two high temperature regions in the heating region under energized condition.

2. The heating assembly according to claim 1, wherein the conductive track is configured to form at least one high temperature region at each of two ends of the heating region along the length direction of the base body under energized condition.

3. The heating assembly according to claim 1, wherein the conductive track comprises two sub-conductive tracks, and the two sub-conductive tracks are arranged in series or in parallel.

4. The heating assembly according to claim 3, wherein the two sub-conductive tracks are arranged on each of two sides of a midline of the base body, and are symmetrically or asymmetrically arranged with respect to the midline of the base body.

5. The heating assembly according to claim 4, wherein one of the two sub-conductive tracks forms one high temperature region at one end of the heating region along the length direction of the base body, and the other of the two sub-conductive tracks forms one high temperature region at the other end of the heating region along the length direction of the base body.

6. The heating assembly according to claim 1, wherein the conductive track is bent multiple times at a position facing the high temperature regions.

7. The heating assembly according to claim 1, wherein the base body comprises a non-heating region not arranged with the conductive track, the heating region and the non-heating region are adjacently arranged along the length direction of the base body, and an end of the heating region away from the non-heating region forms a tip.

8. The heating assembly according to claim 7, wherein the heating assembly comprises a first electrode and a second electrode arranged at intervals in the non-heating region, the first electrode and the second electrode are configured to be electrically connected to a power supply assembly; one of the first electrode and the second electrode is electrically connected to a first end of the conductive track, and the other of the first electrode and the second electrode is electrically connected to a second end of the conductive track.

9. The heating assembly according to claim 8, wherein the heating assembly comprises a protective layer coated on the base body and covering the conductive track, the first electrode, and the second electrode.

10. The heating assembly according to claim 1, wherein the base body comprises an insulating substrate.

11. The heating assembly according to claim 1, wherein the base body comprises a conductive substrate and an insulating layer disposed on the surface of the conductive substrate, and the conductive track is disposed on a side of the insulating layer away from the conductive substrate.

12. An aerosol generating apparatus, comprising a housing, a heating assembly, and a power supply assembly; wherein the heating assembly and the power supply assembly are disposed in the housing, the power supply assembly is electrically connected to the heating assembly and is configured to supply power to the heating assembly, the heating assembly is a heating assembly according to any one of claims 1 to 11.

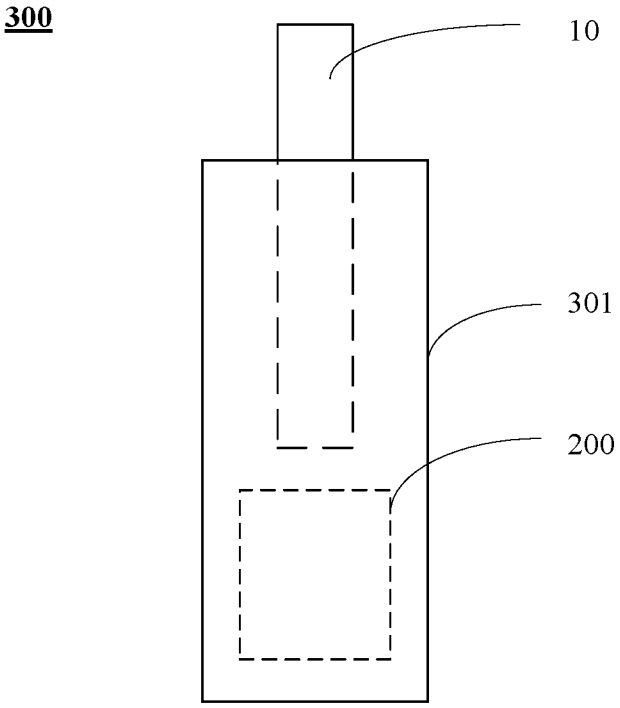

FIG. 1

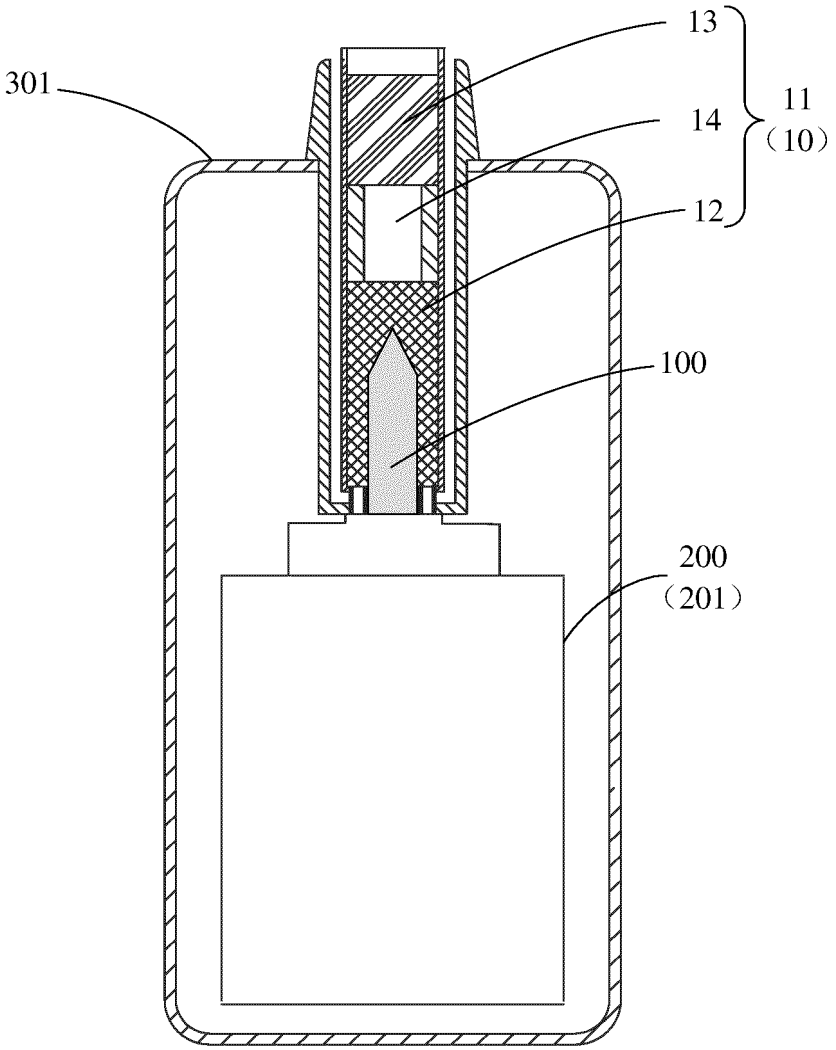

FIG. 2

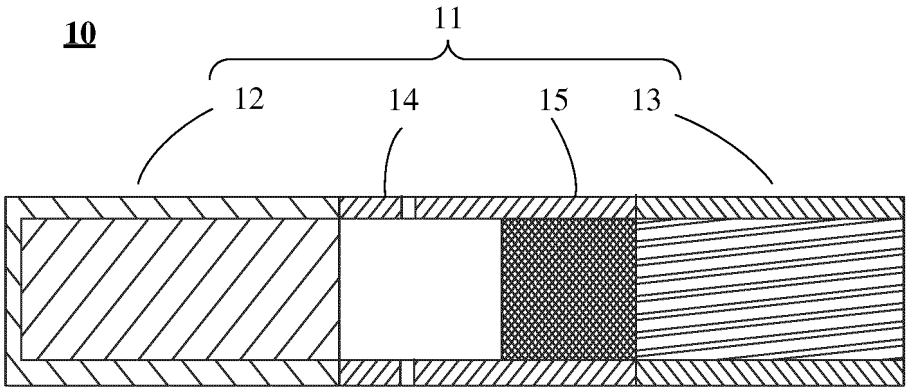

FIG. 3

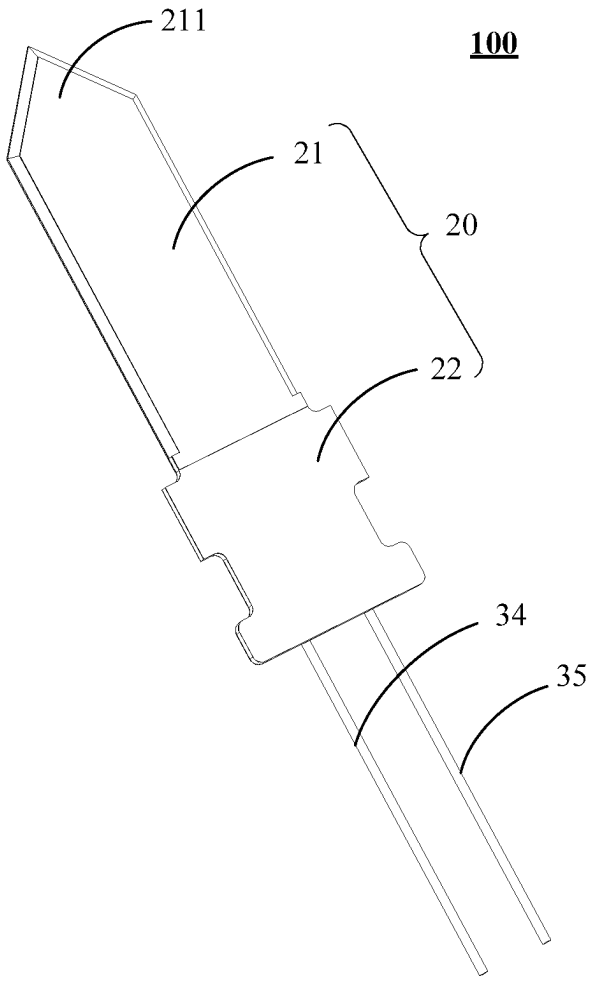

FIG. 4

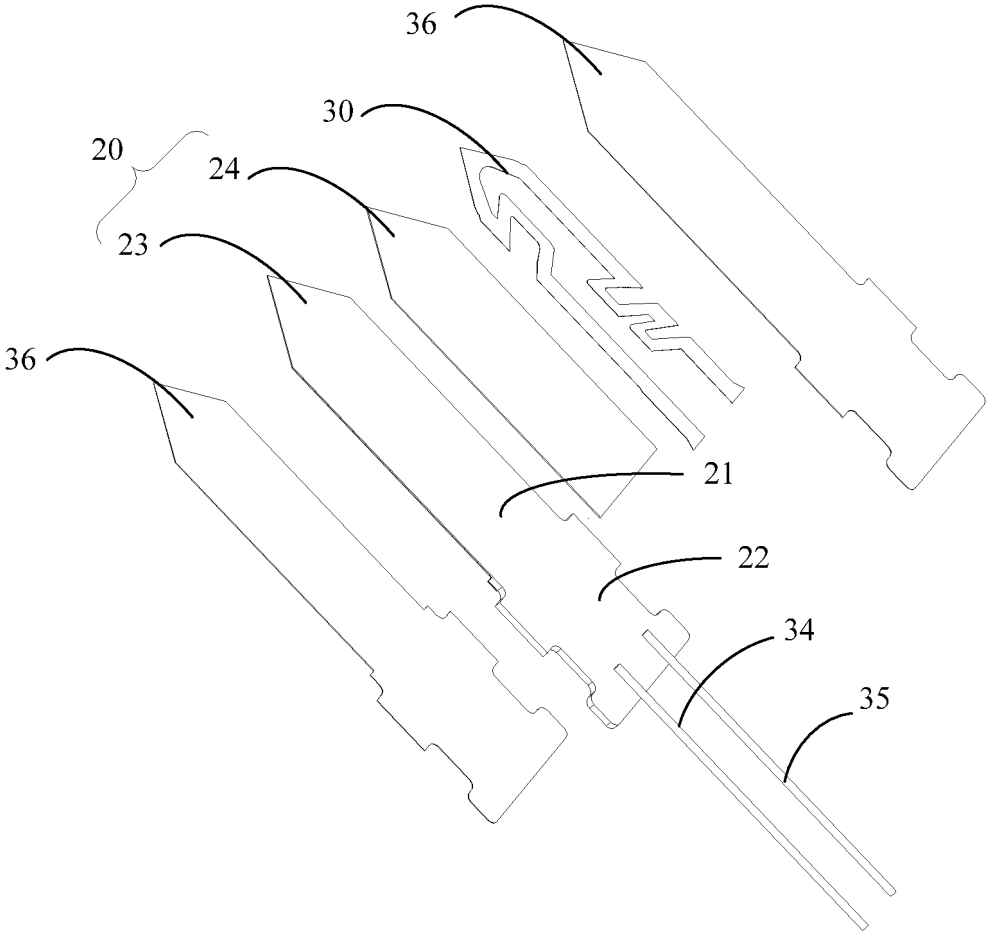

FIG. 5

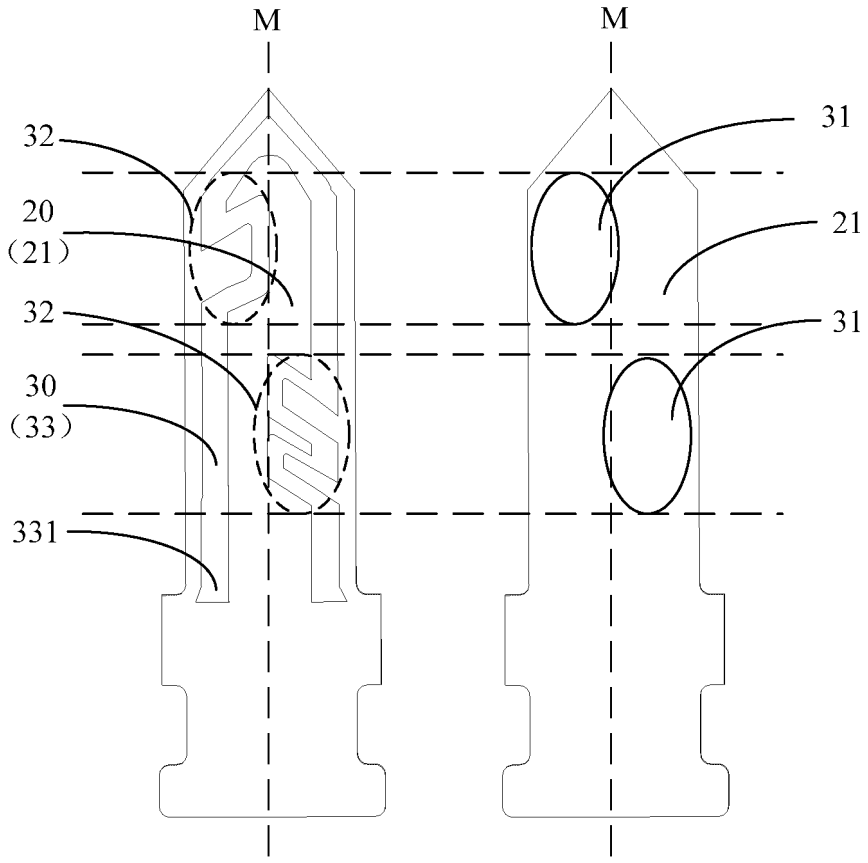

FIG. 6

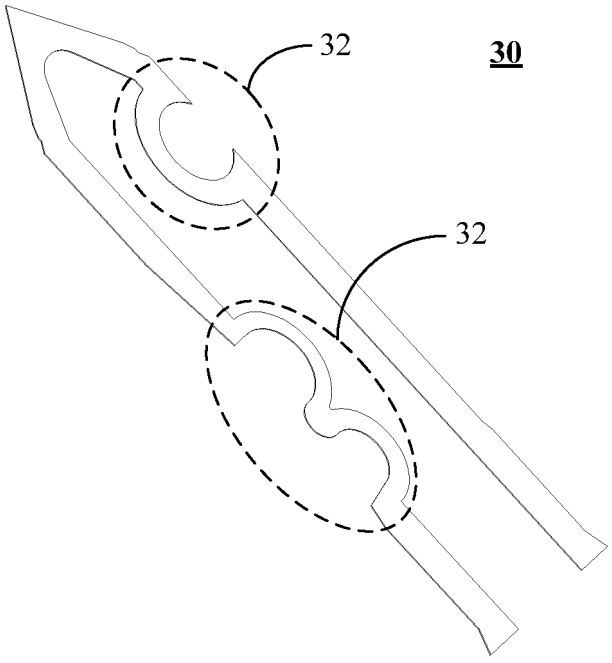

FIG. 7

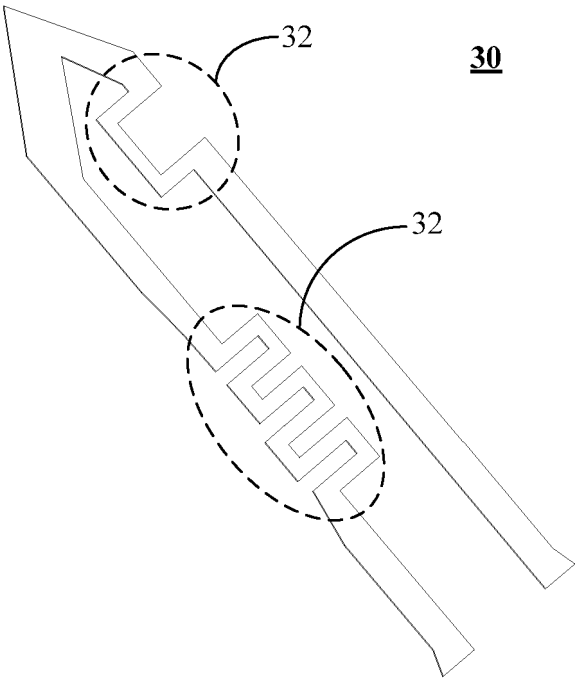

FIG. 8

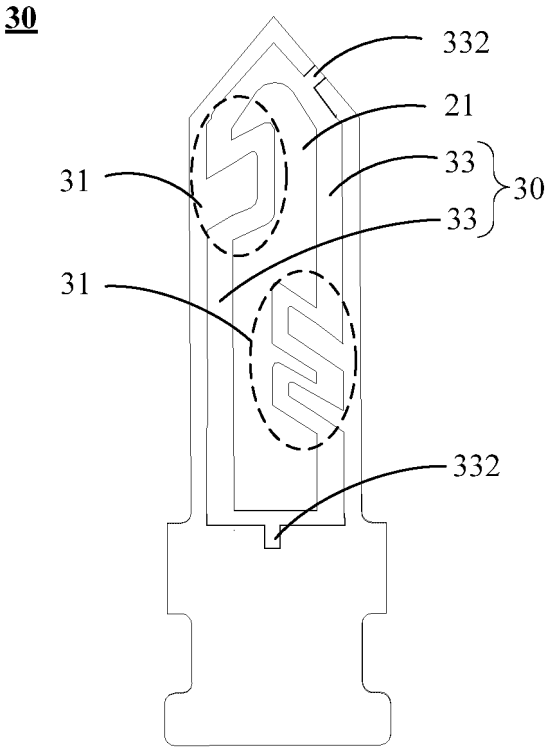

FIG. 9

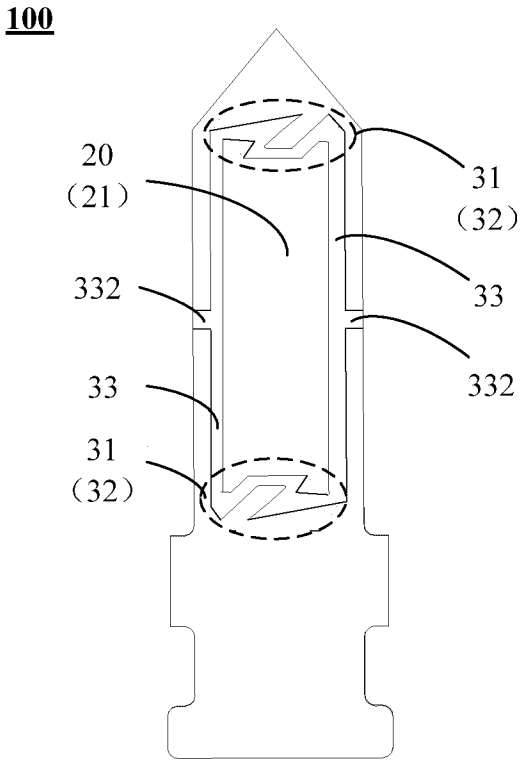

FIG. 10

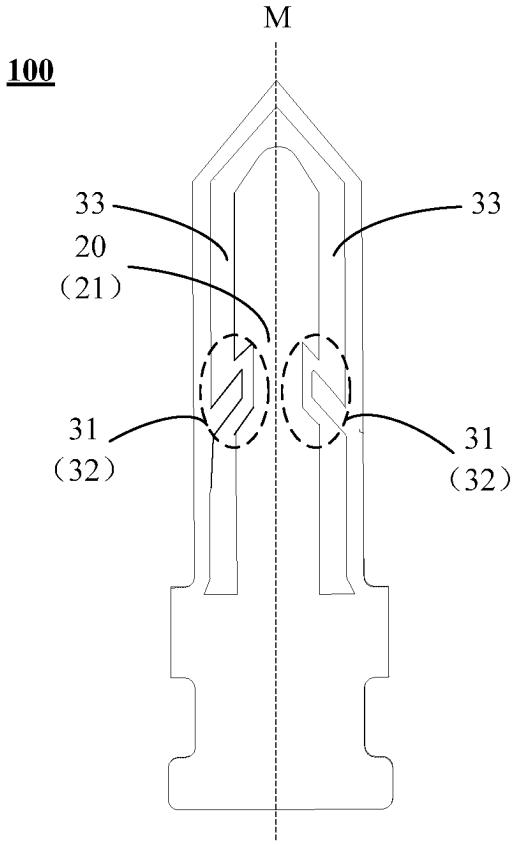

FIG. 11

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2022/077325

A. CLASSIFICATION OF SUBJECT MATTER

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

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A24F40; A24F47

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, ENTXTC, VEN; 发热, 加热, 导电, 导线, 高温, 串联, 并联, 弯折, 弯曲, heating, heater, conduct+, resistance, wire, line, high temperature, region, zone, meander, bent, series, parallel, connection

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 214710374 U (SHENZHEN SMOORE TECHNOLOGY LTD.) 16 November 2021 (2021-11-16) description, paragraphs 29-74, and figures 1-8	1-12
X	CN 112826149 A (JIAXING WISDOM ELECTRONICS CO., LTD.) 25 May 2021 (2021-05-25) description, paragraphs 48-57, and figures 1-9	1-12
X	CN 112425821 A (SHANGHAI TOBACCO GROUP CO., LTD. et al.) 02 March 2021 (2021-03-02) description, paragraphs 40-75, and figures 1-5	1-12
X	CN 111227314 A (SHENZHEN BUDDY TECHNOLOGY DEVELOPMENT CO., LTD.) 05 June 2020 (2020-06-05) description, paragraphs 6-20 and 27-38, and figures 1-4	1-12
X	CN 215075462 U (SHENZHEN HUACHENGDA DEVELOPMENT CO., LTD.) 10 December 2021 (2021-12-10) description, paragraphs 25-31, and figures 1-5	1-12
X	WO 2022013258 A1 (JT INTERNATIONAL SA) 20 January 2022 (2022-01-20) description, paragraphs 41-63, and figures 1-7	1-2, 7, 12

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

* Special categories of cited documents:
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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"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
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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
21 October 2022	**01 November 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/CN2022/077325

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 214710374 U	16 November 2021	CN 114246374 A	29 March 2022
CN 112826149 A	25 May 2021	CN 214629897 U	09 November 2021
CN 112425821 A	02 March 2021	CN 214509381 U	29 October 2021
CN 111227314 A	05 June 2020	CN 211960907 U	20 November 2020
CN 215075462 U	10 December 2021	None	
WO 2022013258 A1	20 January 2022	None	

Form PCT/ISA/210 (patent family annex) (January 2015)