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

(11) **EP 4 136 989 A1**

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

(43) Date of publication:
22.02.2023 Bulletin 2023/08

(21) Application number: **21788674.6**

(22) Date of filing: **30.03.2021**

(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/CN2021/083744

(87) International publication number:
WO 2021/208714 (21.10.2021 Gazette 2021/42)

(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: **16.04.2020 CN 202020562071 U**

(71) Applicant: **Shenzhen Merit Technology Co., Ltd.**
Shenzhen, Guangdong 518000 (CN)

(72) Inventors:
- **LIAO, Yancheng**
  Shenzhen, Guangdong 518000 (CN)
- **ZHANG, Xingfu**
  Shenzhen, Guangdong 518000 (CN)

(74) Representative: **Michalski Hüttermann & Partner Patentanwälte mbB**
Kaistraße 16A
40221 Düsseldorf (DE)

(54) ELECTRICALLY-HEATED AEROSOL PRODUCING APPARATUS

(57) An electrically-heated aerosol producing apparatus (10), comprising a power supply component (12) and an atomizer (11). An air inlet channel (101) is provided at one end of the atomizer (11) connected to the power supply component (12) and in proximity to the power supply component (12). The atomizer (11) comprises an upper cover (100) and an accommodating element (200). The upper cover (100) is capable of accommodating the accommodating element (200). An accommodating cavity (223) used for accommodating an aerosol generating substrate (20) is provided within the accommodating element (200). The air inlet channel (101) runs through the upper cover (100) and the accommodating element (200) and is used for supplying a gas from the external environment to the aerosol generating substrate (20) in the accommodating cavity (223).

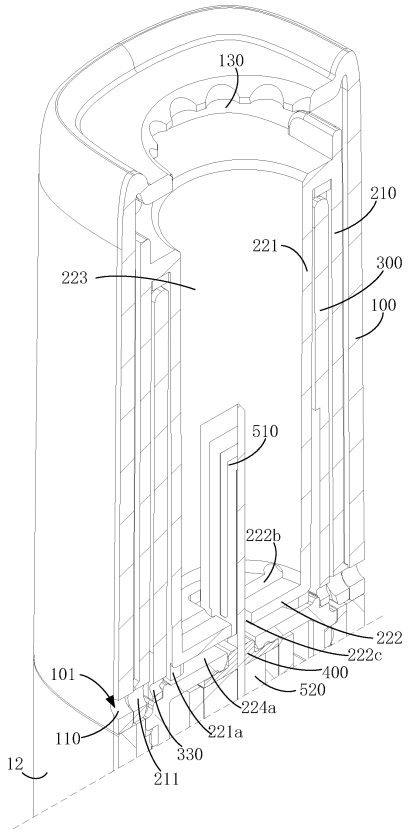

FIG. 3

EP 4 136 989 A1

Description

CROSS-REFERENCE TO RELATED DISCLOSURE

[0001] The application claims priority benefit of Chinese patent application No. 2020205620711, filed on April 16, 2020, entitled "ELECTRICALLY-HEATED AEROSOL PRODUCING APPARATUS", the entire content of the disclosure is incorporated herein for all purposes.

TECHNICAL FIELD

[0002] The present disclosure relates to a technical field of generating aerosol, in particular to an electrically-heated aerosol generating device.

BACKGROUND

[0003] Electrically-heated aerosol generating devices can heat a solid-state aerosol generating substrate such as a cigarette in a heat-not-burn manner, thereby generating smoke that can be inhaled by a user. The electrically-heated aerosol generating device generally includes a power supply assembly, a heating element and an accommodating element. The aerosol generating substrate is received in the accommodating element. The power supply assembly supplies power to the heating element, the heating element converts electrical energy into heat, and the aerosol generating substrate absorbs the heat to be atomized to form smoke.

[0004] Generally, in a conventional electrically-heated aerosol generating device, an air inlet channel is provided in the power supply assembly, and ambient air enters the accommodating element through the air inlet channel, thereby carrying smoke to be inhaled by the user. However, a path of the air inlet channel is long, which is prone to be blocked and also makes a structural of the electrically-heated aerosol generating device too complicated.

SUMMARY

[0005] According to embodiments of the disclosure, an electrically-heated aerosol generating device is provided.

[0006] An electrically-heated aerosol generating device is configured to heat an aerosol generating substrate, the electrically-heated aerosol generating device includes: a power supply assembly; an end of the aerosol generating assembly adjacent to the power supply assembly provided with an air inlet channel, wherein the aerosol generating assembly includes an upper cover and an accommodating element received in the upper cover, the accommodating element is provided with an accommodating cavity configured to accommodate the aerosol generating substrate, and the air inlet channel extends through the upper cover and the accommodating element.

[0007] In an embodiment, the aerosol generating assembly further includes a partition cover accommodated in the upper cover, and the partition cover surrounds the accommodating cavity, the air inlet channel further extends through the partition cover.

[0008] In an embodiment, the accommodating element includes an outer sleeve and an inner tube that are connected to each other, the inner tube is accommodated in the outer sleeve, and the accommodating cavity is provided in the inner tube, a mounting hole is provided in the partition cover, the inner tube is matched with the mounting hole, and a space between the outer sleeve and the inner tube accommodates the partition cover.

[0009] In an embodiment, the aerosol generating assembly further comprises a heating element electrically connected to the power supply assembly and configured to be inserted in the aerosol generating substrate, the inner tube comprises a barrel and a bottom plate that are connected to each other, the barrel and the bottom plate cooperatively enclose the accommodating cavity, the bottom plate is provided with an inserting hole in communication with the accommodating cavity, and the heating element extends through the inserting hole to enable a part of the heating element to be accommodated in the accommodating cavity.

[0010] In an embodiment, a buffer channel is formed between the partition cover and the inner tube, the buffer channel is in communication both with the air inlet channel and the inserting hole simultaneously, the ambient air entering the air inlet channel enters the aerosol generating substrate through the buffer channel and the inserting hole in sequence.

[0011] In an embodiment, the bottom plate is located in a cavity enclosed by the barrel, and the bottom plate divides the cavity into a buffer cavity and the accommodating cavity, the barrel is provided with a first air inlet hole that forms a part of the air inlet channel, the partition cover abuts against the barrel and closes the buffer cavity to form the buffer channel, the ambient air in the air inlet hole enters the buffer channel.

[0012] In an embodiment, a surface of the bottom plate configured to support the aerosol generating substrate is recessed to form a groove, and the groove is in communication with the inserting hole.

[0013] In an embodiment, the bottom plate is connected to an end of the barrel to enable all of the cavity enclosed by the barrel to form the accommodating cavity, the inner tube further comprises a protrusion located in the accommodating cavity, the aerosol generating substrate is capable of abutting against the protrusion to seal a part of the accommodating cavity to form a buffer channel, the barrel is provided with a first air inlet hole that forms a part of the air inlet channel, the buffer channel is in communication both with the first air inlet hole and the inserting hole simultaneously, and the ambient air entering the first air inlet hole enters the aerosol generating substrate directly through the buffer channel.

[0014] In an embodiment, the protrusion is provided

on the bottom plate, and the protrusion protrudes relative to a surface of the bottom plate.

[0015] In an embodiment, the aerosol generating assembly further includes a sealing element, the partition cover is provided with a through hole in communication with the mounting hole, and the sealing element is filled in the through hole to seal the mounting hole, and the heating element extends through the sealing element.

[0016] In an embodiment, the barrel is provided with a first air inlet hole, the outer sleeve is provided with a second air inlet hole, the partition cover is provided with a third air inlet hole in communication with the mounting hole, the upper cover is provided with a fourth air inlet hole in communication with external atmosphere, and the first air inlet hole, the second air inlet hole, the third air inlet hole, and the fourth air inlet hole cooperatively form the air inlet channel.

[0017] In an embodiment, at least a part of the partition cover is accommodated in the accommodating element.

[0018] In an embodiment, a bottom wall of the mounting hole abuts against the barrel of the inner tube.

[0019] In an embodiment, the aerosol generating assembly further includes a fixing base below the mounting hole, and the heating element is inserted into the fixing base and is electrically connected the power supply assembly.

[0020] In the electrically-heated aerosol generating device of the present disclosure, the air inlet channel is arranged adjacent to the power supply assembly, so that the flow path of ambient air reaching the aerosol generating substrate in the accommodating cavity through the air inlet channel is short, which can reduce the possibility of blockage of the air inlet channel and also simplifies a structure of the electrically-heated aerosol generating device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] The above and other objects and features of the present invention will become apparent and more readily appreciated from the following description of the embodiments with reference to the following figures, wherein like reference numerals refer to like parts throughout the various figures unless otherwise specified.

FIG. 1 is a perspective view of an electrically-heated aerosol generating device according to a first embodiment.

FIG. 2 is a cross-sectional view of the electrically-heated aerosol generating device shown in FIG. 1 with a cigarette.

FIG. 3 is a cross-sectional view of the electrically-heated aerosol generating device shown in FIG. 1 without a cigarette.

FIG. 4 is an exploded cross-sectional view of the electrically-heated aerosol generating device shown in FIG. 1.

FIG. 5 is an exploded view of the electrically-heated aerosol generating device shown in FIG. 1.

FIG. 6 is an exploded view of the electrically-heated aerosol generating device shown in FIG. 1 viewed from another aspect.

FIG. 7 is an exploded cross-sectional view of the electrically-heated aerosol generating device according to a second embodiment.

FIG. 8 is a cross-sectional view of the electrically-heated aerosol generating device shown in FIG. 7 with a cigarette.

FIG. 9 is a cross-sectional view of the electrically-heated aerosol generating device shown in FIG. 7 without a cigarette.

FIG. 10 is an exploded view of the electrically-heated aerosol generating device shown in FIG. 7.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0022] In order to facilitate the understanding of the present disclosure, the present disclosure is described more comprehensively below with reference to the relevant accompanying drawings. Preferred embodiments of the present disclosure are shown in the accompanying drawings. However, the present disclosure may be implemented in many different forms and is not limited to the embodiments described herein. On the contrary, the purpose of providing these embodiments is to make the public content of the present disclosure more thoroughly and comprehensively understood.

[0023] It should be noted that when a component is called "fixed to" another component, it can be directly on another component or there can be a centered component. When a component is considered to be "connected" to another component, it can be directly connected to another component or there may be intermediate components at the same time. The terms "vertical", "horizontal", "left", "right" and similar expressions used herein are for illustrative purposes only and do not mean that they are the only embodiments.

[0024] Unless otherwise defined, all technical and scientific terms used herein have the same meanings as those commonly understood by those skilled in the technical field of the present disclosure. The terms used in the specification of the present disclosure herein are only for the purpose of describing specific embodiments, and are not intended to limit the present disclosure. As used herein, the term "and/or" includes any and all combinations of one or more related listed items.

[0025] Referring to FIGS. 1 and 2, an electrically-heated aerosol generating device 10 provided by the present application is configured to heat an aerosol generating substrate to generate aerosol, and the aerosol generating substrate may be a cigarette 20 used with the electrically-heated aerosol generating device 10. The cigarette 20 is substantially similar to traditional cigarette used in burning manner in structure. The electrically-heated aerosol generating device 10 includes a power

supply assembly 12 and an aerosol generating assembly 11. The power supply assembly 12 supplies power to the aerosol generating assembly 11, the aerosol generating assembly 11 converts electrical energy into heat, and the aerosol generating substrate absorbs the heat to be atomized to form smoke.

First embodiment

[0026] Referring to FIGS. 3, 4 and 5, the aerosol generating assembly 11 includes an upper cover 100, an accommodating element 200, a partition cover 300, a sealing element 400, and a heating element 510. The upper cover 100 is capable of accommodating the partition cover 300 and the accommodating element 200, and the upper cover 100 can be made of a material with good thermal insulation performance. The upper cover 100 has a substantially cylindrical structure, and a cross-section of the upper cover 100 can be substantially in a shape of a racetrack. The upper cover 100 encloses an opened cavity 120 at an end of the upper cover 100. The upper cover 100 is further provided with an opening 130 in communication with the opened cavity 120, and the cigarette 20 may extend through the opening 130. The upper cover 100 may also be integrally formed with the accommodating element 200, that is, they are one element, the accommodating element 200 is formed by an inner surface of a top wall of the upper cover 100 extending downward.

[0027] The accommodating element 200 includes an outer sleeve 210 and an inner tube 220, the outer sleeve 210 and the inner tube 220 are connected to each other, and the accommodating element 200 may be made of a material with good thermal insulation performance. The outer sleeve 210 is a cylindrical structure having substantially the same shape as that of the upper cover 100. The outer sleeve 210 is accommodated in the opened cavity 120 of the upper cover 100, the inner tube 220 is accommodated in the outer sleeve 210. The inner tube 220 includes a barrel 221 and a bottom plate 222. The barrel 221 encloses a cylindrical cavity, the bottom plate 222 is located adjacent to an end of the barrel 221, the bottom plate 222 is connected to an inner wall of the barrel 221 and is located in the cavity of the barrel 221. The bottom plate 222 divides the cavity enclosed by the barrel 221 into two parts, i.e., an upper part and a lower part, so that the upper part of the cavity forms an accommodating cavity 223, and the lower part of the cavity forms a buffer cavity 224. The accommodating cavity 223 is configured to accommodate the cigarette 20.

[0028] When the cigarette 20 is located in the accommodating cavity 223, an end of the cigarette 20 is in contact with an upper surface of the bottom plate 222, and the upper surface of the bottom plate 222 may also be provided with an inserting hole 222c and a groove 222b. The inserting hole 222c is a through hole and extends through the upper surface and the lower surface of the bottom plate 222, so that the inserting hole 222c is in communication with the buffer cavity 224 and the accommodating cavity 223. The groove 222b is formed by a part of the upper surface which is recessed downward to a certain depth in the direction of the buffer cavity 224, and the groove 222b does not extends through the lower surface of the bottom plate 222. Meanwhile, the groove 222b extends to the inserting hole 222c, so that the groove 222b is in communication with the inserting hole 222c. A plurality of the grooves 222b may be provided, and the plurality of grooves 222b may be symmetrically distributed relative to the inserting holes 222c. When the cigarette 20 is in contact with the upper surface of the bottom plate 222, ambient air entering the inserting hole 222c can also enter the groove 222b. Therefore, the ambient air can not only enter the cigarette 20 through the inserting hole 222c, but also enters the cigarette 20 though the groove 222b, thereby increasing a contact area between the cigarette 20 and the ambient air.

[0029] A shape of the partition cover 300 is matched with a shape of the opened cavity 120 of the upper cover 100, and a space between the outer sleeve 210 and the inner tube 220 forms a receiving space. During assembling, a part of the partition cover 300 can substantially fill the entire receiving space, that is, a part of the partition cover 300 is accommodated in the receiving space. The partition cover 300 is provided with a mounting hole 310 extending in a vertical direction, and a shape of the mounting hole 310 is matched with a shape of the inner tube 220, that is, the mounting hole 310 can be a circular hole. During assembling, the inner tube 220 of the accommodating element 200 is inserted in the mounting hole 310, and the inner tube 220 can be in clearance fit with the mounting hole 310. Accordingly, the entire partition cover 300 is arranged surrounding the inner tube 220 and thus surrounding the accommodating cavity 223. At the same time, a bottom wall of the mounting hole 310 abuts against the barrel 221 of the inner tube 220, so that the bottom wall of the mounting hole 310 acts as a closure to a lower opening of the buffer cavity 224, thereby sealing the buffer cavity 224 to form a buffer channel 224a. Accordingly, the buffer channel 224a is communication with the inserting hole 222c. The partition cover 300 can be made of a material with good thermal insulation performance.

[0030] The partition cover 300 is also provided with a through hole 320 extending in the vertical direction. The through hole 320 is communication with the mounting hole 310, and the sealing element 400 is filled in the through hole 320, so that the sealing element 400 is tightly fitted with the through hole 320. The seal 400 may be a flexible silicone material. When the sealing element 400 cooperates with the through hole 320, the sealing element 400 can perform a good sealing effect on the mounting hole 310 and prevent the air in the mounting hole 310 from leaking from the through hole 320.

[0031] The heating element 510 is shaped as a substantially sheet and is vertically arranged. A lower portion of the heating element 510 extends through the sealing element 400. An upper portion of the heating element

510 passes through the buffer cavity 224 and the inserting hole 222c of the bottom plate 222 in sequence and is accommodated in the accommodating cavity 223, and a top end of the heating element 510 is sharp. The heating element 510 also includes a substrate and a heating film, the heating film is screen printed or coated on the substrate, that is, the substrate can be used as a carrier for the heating film, and the heating film can be made of a metal material with low electrical resistance and good thermal conductivity. The heating film is electrically connected to the power source assembly 12, and when the power source assembly 12 supplies power to the heating film, the heating film converts the electrical energy into the heat energy. The cigarettes 20 can absorb the heat energy of the heating film to be atomized to form smoke.

[0032] Referring to FIGS. 4, 5, and 6, the aerosol generating assembly 11 may further include a fixing base 520 located below the mounting hole 310. The substrate of the heating element 510 is inserted on the fixing base 520, and the substrate of the heating element 510 can be connected to the power supply assembly 12 through conductive electrodes, so that the power supply assembly 12 is electrically connected to the heating element 510 through the conductive electrodes. The sealing element 400 may only be filled in the through hole 320 of the partition cover 300. Of course, in order to improve an installation stability of the sealing element 400 and a sealing performance of the mounting hole 310, the lower portion of the sealing element 400 may be directly fixed on the fixing base 520, so as to prevent the sealing element 400 from loosening in the through hole 320, thus ensuring the sealing element 400 to be always tightly fitted with the through hole 320.

[0033] The barrel 221 is also provided with a first air inlet hole 221a extending in a horizontal direction. The first air inlet hole 221a is located at an end of the barrel 221 adjacent to the power supply assembly 12. The first air inlet hole 221a is a through hole and extends through the entire barrel 221 in the radial direction, so that the first air inlet hole 221a is in communication with the buffer channel 224a. Due to the sealing effect of the sealing element 400, the air in the buffer channel 224a cannot leak from the through hole 320. An end of the outer sleeve 210 adjacent to the power supply assembly 12 is provided with a second air inlet hole 211, and the second air inlet hole 211 extends in the horizontal direction. The partition cover 300 is provided with a third air inlet hole 330. The third air inlet hole 330 is located at an end of the partition cover 300 adjacent to the power supply assembly 12. The third air inlet hole 330 is in communication with the mounting hole 310 and extends in the horizontal direction. The upper cover 100 is provided with a fourth air inlet hole 110. The fourth air inlet hole 110 is located at an end of the upper cover 100 adjacent to the power supply assembly 12. The fourth air inlet hole 110 is in communication with external atmosphere and the opened cavity 120. The fourth air inlet hole 110 also extends in the horizontal direction. Since the first air inlet hole 221a, the second air inlet hole 211, the third air inlet hole 330, and the fourth air inlet hole 110 are all located adjacent to the power supply assembly 12 and extend in the horizontal direction, the first air inlet hole 221a, the second air inlet hole 211, the third air inlet hole 330, and the fourth air inlet hole 110 cooperatively form an air inlet channel 101. The air inlet channel 101 is adjacent to the power supply assembly 12 and extends in the horizontal direction, so that the ambient air enters the interior of the aerosol generating assembly 11 from the end of the aerosol generating assembly 11 adjacent to the power supply assembly 12. Accordingly, the air inlet channel 101 is in communication with an external atmosphere and the buffer channel 224a.

[0034] When the cigarette 20 is used for smoking, the cigarette 20 can be inserted downward into the accommodating cavity 223 of the inner tube 220 from the opening 130 of the upper cover 100. Due to the action of a sharp part at the top of the heating element 510, the heating element 510 can be inserted into the cigarette 20. When the lower end of the cigarette 20 is in contact with the upper surface of the bottom plate 222, the cigarette 20 cannot continue to move downward relative to the inner tube 220, so that a part of the cigarette 20 is exposed outside the aerosol generating assembly 11. At this time, the bottom plate 222 supports and limits the cigarette 20, and the user can be in contact with the part of the cigarette 20 exposed outside the aerosol generating assembly 11 to perform smoking. During the smoking process, the heating element 510 generates heat to form an appropriate temperature. Since the heating element 510 is inserted in the cigarette 20, the cigarette 20 will quickly absorb the heat of the heating element 510 and reduce heat loss as little as possible. The temperature generated by the heat will not cause the cigarette 20 to burn, thereby preventing the cigarette 20 from producing more harmful substances, while the temperature generated by the heating element 510 can effectively atomize the cigarette 20 to form smoke.

[0035] When the user inhales, the ambient air enters the inserting hole 222c through the air inlet channel 101 and the buffer channel 224a in sequence, a part of the air entering the inserting hole 222c enters the interior of the cigarette 20 from a middle portion of the cigarette 20, and another part of the air entering the inserting hole 222c flows into the groove 222b, and further into the interior of the cigarette 20 from an edge of the cigarette 20, the air entering the interior of the cigarette 20 will carry smoke to be inhaled by the user.

[0036] Due to the partition cover 300, a part of the partition cover 300 is accommodated between the outer sleeve 210 and the inner tube 220, and the partition cover 300 is located outside the accommodating cavity 223 and surrounds the inner tube 220. When the heating element 510 generates heat, the heat in the accommodating cavity 223 should be transferred to the upper cover 100 through the inner tube 220, the partition cover 300, and the outer sleeve 210 in sequence, and then the heat is

transferred from the upper cover 100 to the outside. Since the inner tube 220, the partition cover 300 and the outer sleeve 210 absorb a lot of heat, the heat transferred to the upper cover 100 is smaller, thereby ensuring that the temperature of the outer surface of the upper cover 100 in direct contact with the outside is lower, thereby preventing the user from feeling uncomfortable when touching the upper cover 100 that is too hot. At the same time, the heat directly transferred to the outside from the upper cover 100 is greatly reduced, so that a part of the heat is stored in the inner tube 220, the baffle 300, and the outer sleeve 210, that is, the inner tube 220, the baffle 300, and the outer sleeve 210 play a role in heat preservation to maintain the accommodating cavity 223 to be in a certain temperature. When smoking again, the cigarettes 20 can absorb the residual heat in the accommodating cavity 223 and be atomized quickly, thereby improving the utilization rate of energy. Furthermore, the air inlet channel 101 is located adjacent to the power supply assembly 12, so that the flow path of the ambient air reaching the cigarette 20 through the air inlet channel 101, the buffer channel 224a and the inserting hole 222c is shorter, which can reduce the possibility of blockage of the air inlet channel 101, the buffer channel 224a and the inserting hole 222c, and also makes the structure of the electrically-heated aerosol generating device 10 simper.

Second embodiment

[0037] Referring to FIGS. 7, 8, and 9, the main difference between the second embodiment and the first embodiment lies in the structure of the inner tube 220 and the position of the buffer channel 224a. For other similarities, please refer to the related descriptions in the first embodiment, which will not be repeated here.

[0038] Referring to FIGS. 8, 9, and 10, specifically, the inner tube 220 includes a barrel 221, a bottom plate 222, and a protrusion 230. The bottom plate 222 is connected to the lower end of the barrel 221, so that the bottom plate 222 seals the lower end of the cavity enclosed by the barrel 221, so that all of the cavity enclosed by the barrel 221 forms the accommodating cavity 223. An inserting hole 222c is defined on the bottom plate 222. The inserting hole 222c is a through hole and extends through both the upper and lower surfaces of the base plate 222. The heating element 510 extends through the inserting hole 222c and is located in the accommodating cavity 223. The protrusion 230 is connected to the upper surface of the bottom plate 222 and is located in the accommodating cavity 223, and the protrusion 230 protrudes from the bottom plate 222 by a certain length. Of course, the protrusion 230 may not be connected to the bottom plate 222, but be directly connected to the barrel 221. In the case of inserting the cigarette 20 downward from the opening 130 of the upper cover 100 into the accommodating cavity 223 of the inner tube 220, when the lower end of the cigarette 20 abuts against the surface of the protrusion 230, the cigarette 20 cannot continue to move downward relative to the inner tube 220, so that a part of the cigarette 20 is exposed outside the entire aerosol generating assembly 11. At this time, the protrusion 230 supports and limits the cigarette 20. In addition, the cigarette 20 will seal the part of the accommodating cavity 223 between the cigarette 20 and the bottom plate 222, such that the part can form a buffer channel 224a. Accordingly, the buffer channel 224a is in communication with the inserting hole 222c. When the inner tube 220 is inserted into the mounting hole 310 of the partition cover 300, the lower surface of the bottom plate 222 and the bottom wall of the mounting hole 310 are in close contact with each other, thereby eliminating the buffer channel 224a (located outside the first accommodating cavity 223) between the bottom wall of the mounting hole 310 and the bottom surface of the bottom plate 222 as in the first embodiment, and the buffer channel 224a in the second embodiment is located inside the accommodating cavity 223 by the protrusion 230.

[0039] The barrel 221 of the inner tube 220 is provided with a first air inlet hole 221a, and the first air inlet hole 221a can be a circular hole and extend in a horizontal direction. The first air inlet hole 221a is in communication with the buffer channel 224a. When the user inhales, the ambient air entering the first air inlet hole 221a enters the cigarette 20 through the buffer channel 224a successively, and the ambient air does not need to enter the cigarette 20 through the inserting hole 222c as in the first embodiment. After the ambient air enters the buffer channel 224a through the first air inlet hole 221a, the ambient air in the buffer channel 224a is in almost full contact with the end surface of the cigarette 20, so that the ambient air and the cigarette 20 form a larger release area, so that a sufficient amount of the ambient air can enter the inside of the cigarette 20 to carry the smoke. Since the ambient air does not need to enter the cigarette holder 20 through the inserting hole 222c, the inserting hole 222c only serves to allow the heating element 510 to extend through, and does not have an air conduction function as in the first embodiment.

[0040] The positions of the second air inlet hole 211, the third air inlet hole 330, and the fourth air inlet hole 110 are the same as those of the first embodiment, that is, the first air inlet hole 221 a, the second air inlet hole 211, and the third air inlet hole 330, and the fourth air inlet hole 110 also cooperatively form the air inlet channel 101. When the user inhales, the ambient air enters the inside of the cigarette 20 through the air inlet channel 101 and the buffer channel 224a successively to carry smoke.

[0041] Similarly, since the partition cover 300 is provided, a part of the partition cover 300 is accommodated between the outer sleeve 210 and the inner tube 220. When the heating element 510 generates heat, the heat in the accommodating cavity 223 should be transferred to the upper cover 100 through the inner tube 220, the partition cover 300, and the outer sleeve 210 in se-

quence, and then the heat is transferred from the upper cover 100 to the outside. Since the inner tube 220, the partition cover 300, and the outer sleeve 210 absorb a lot of heat, the heat transferred to the upper cover 100 is smaller, thereby ensuring that the temperature of the outer surface of the upper cover 100 in direct contact with the outside is lower, thereby preventing the user from feeling uncomfortable when they touch the upper cover 100 that is too hot. At the same time, the heat directly transferred to the outside from the upper cover 100 is greatly reduced, so that a part of the heat is stored in the inner tube 220, the baffle 300 and the outer sleeve 210, that is, the inner tube 220, the baffle 300 and the outer sleeve 210 play a role in heat preservation to enable the accommodating cavity 223 to be in a certain temperature. When smoking again, the cigarettes 20 can absorb the residual heat in the accommodating cavity 223 and atomize quickly, thereby improving the utilization rate of energy. Furthermore, the air inlet channel 101 is located adjacent to the power supply assembly 12, so that the flow path of the ambient air reaching the cigarette 20 through the air inlet channel 101 and the buffer channel 224a is shorter, which can reduce the possibility of blockage of the air inlet channel 101 and the buffer channel 224a, and also simplifies the structure of the electrically-heated aerosol generating device 10.

[0042] The foregoing descriptions are merely specific embodiments of the present disclosure, but are not intended to limit the protection scope of the present disclosure. Any variation or replacement readily figured out by a person skilled in the art within the technical scope disclosed in the present disclosure shall all fall within the protection scope of the present disclosure.

[0043] The foregoing descriptions are merely specific embodiments of the present disclosure, but are not intended to limit the protection scope of the present disclosure. Any variation or replacement readily figured out by a person skilled in the art within the technical scope disclosed in the present disclosure shall all fall within the protection scope of the present disclosure. Therefore, the protection scope of the present disclosure shall be subject to the protection scope of the appended claims.

Claims

1. An electrically-heated aerosol generating device configured to heat an aerosol generating substrate, the electrically-heated aerosol generating device comprising:

   a power supply assembly; and
   an aerosol generating assembly connected to the power supply assembly, an end of the aerosol generating assembly adjacent to the power supply assembly provided with an air inlet channel, wherein the aerosol generating assembly comprises an upper cover and an accommodating element received in the upper cover, the accommodating element is provided with an accommodating cavity configured to accommodate the aerosol generating substrate, and the air inlet channel extends through the upper cover and the accommodating element.

2. The electrically-heated aerosol generating device according to claim 1, wherein the aerosol generating assembly further comprises a partition cover accommodated in the upper cover, and the partition cover surrounds the accommodating cavity, the air inlet channel further extends through the partition cover.

3. The electrically-heated aerosol generating device according to claim 2, wherein the accommodating element comprises an outer sleeve and an inner tube that are connected to each other, the inner tube is accommodated in the outer sleeve, and the accommodating cavity is provided in the inner tube, a mounting hole is provided in the partition cover, the inner tube is matched with the mounting hole, and a space between the outer sleeve and the inner tube accommodates the partition cover.

4. The electrically-heated aerosol generating device according to claim 3, wherein the aerosol generating assembly further comprises a heating element electrically connected to the power supply and configured to be inserted in the aerosol generating substrate, the inner tube comprises a barrel and a bottom plate that are connected to each other, the barrel and the bottom plate cooperatively enclose the accommodating cavity, the bottom plate is provided with an inserting hole in communication with the accommodating cavity, and the heating element extends through the inserting hole to enable a part of the heating element to be accommodated in the accommodating cavity.

5. The electrically-heated aerosol generating device according to claim 4, wherein a buffer channel is formed between the partition cover and the inner tube, the buffer channel is in communication both with the air inlet channel and the inserting hole simultaneously, the ambient air entering the air inlet channel enters the aerosol generating substrate through the buffer channel and the inserting hole in sequence.

6. The electrically-heated aerosol generating device according to claim 5, wherein the bottom plate is located in a cavity enclosed by the barrel, and the bottom plate divides the cavity into a buffer cavity and the accommodating cavity, the barrel is provided with a first air inlet hole that forms a part of the air inlet channel, the partition cover abuts against the barrel and closes the buffer cavity to form the buffer chan-

nel, the ambient air in the air inlet hole enters the buffer channel.

7. The electrically-heated aerosol generating device according to claim 5, wherein a surface of the bottom plate configured to support the aerosol generating substrate is recessed to form a groove, and the groove is in communication with the inserting hole.

8. The electrically-heated aerosol generating device according to claim 4, wherein the bottom plate is connected to an end of the barrel to enable all of the cavity enclosed by the barrel to form the accommodating cavity, the inner tube further comprises a protrusion located in the accommodating cavity, the aerosol generating substrate is capable of abutting against the protrusion to seal a part of the accommodating cavity to form a buffer channel, the barrel is provided with a first air inlet hole that forms a part of the air inlet channel, the buffer channel is in communication both with the first air inlet hole and the inserting hole simultaneously, and the ambient air entering the first air inlet hole enters the aerosol generating substrate directly through the buffer channel.

9. The electrically-heated aerosol generating device according to claim 8, wherein the protrusion is provided on the bottom plate, and the protrusion protrudes relative to a surface of the bottom plate.

10. The electrically-heated aerosol generating device according to claim 4, wherein the aerosol generating assembly further comprises a sealing element, the partition cover is provided with a through hole in communication with the mounting hole, and the sealing element is filled in the through hole to seal the mounting hole, and the heating element extends through the sealing element.

11. The electrically-heated aerosol generating device according to claim 4, wherein the barrel is provided with a first air inlet hole, the outer sleeve is provided with a second air inlet hole, the partition cover is provided with a third air inlet hole in communication with the mounting hole, the upper cover is provided with a fourth air inlet hole in communication with external atmosphere, and the first air inlet hole, the second air inlet hole, the third air inlet hole, and the fourth air inlet hole cooperatively form the air inlet channel.

12. The electrically-heated aerosol generating device of claim 2, wherein at least a part of the partition cover is accommodated in the accommodating element.

13. The electrically-heated aerosol generating device of claim 4, wherein a bottom wall of the mounting hole abuts against the barrel of the inner tube.

14. The electrically-heated aerosol generating device according to claim 4, wherein the aerosol generating assembly further comprises a fixing base below the mounting hole, and the heating element is inserted into the fixing base and is electrically connected the power supply assembly.

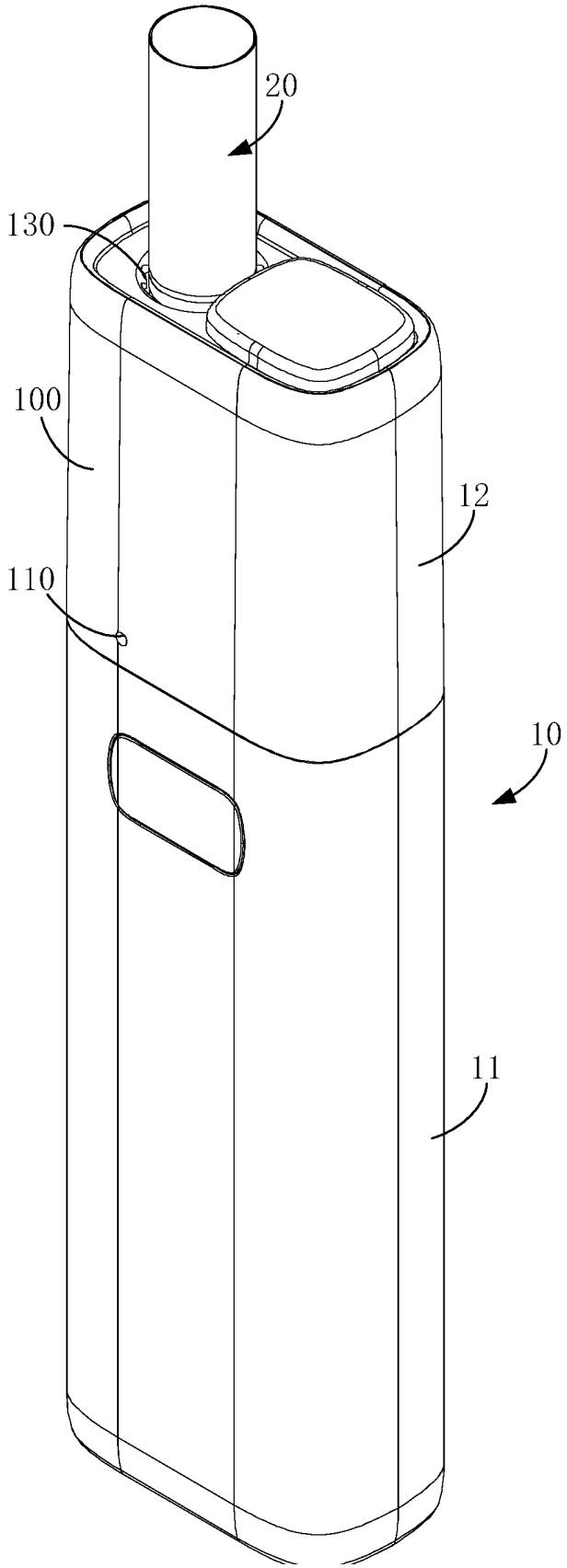

FIG. 1

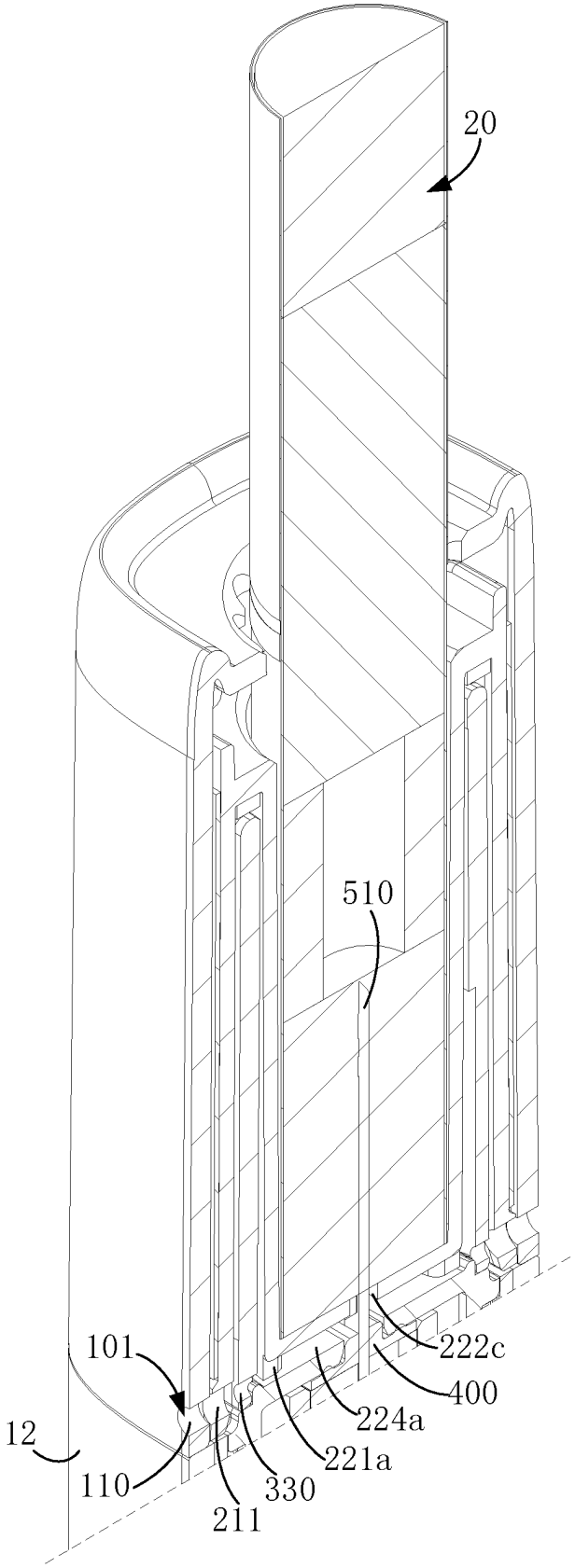

FIG. 2

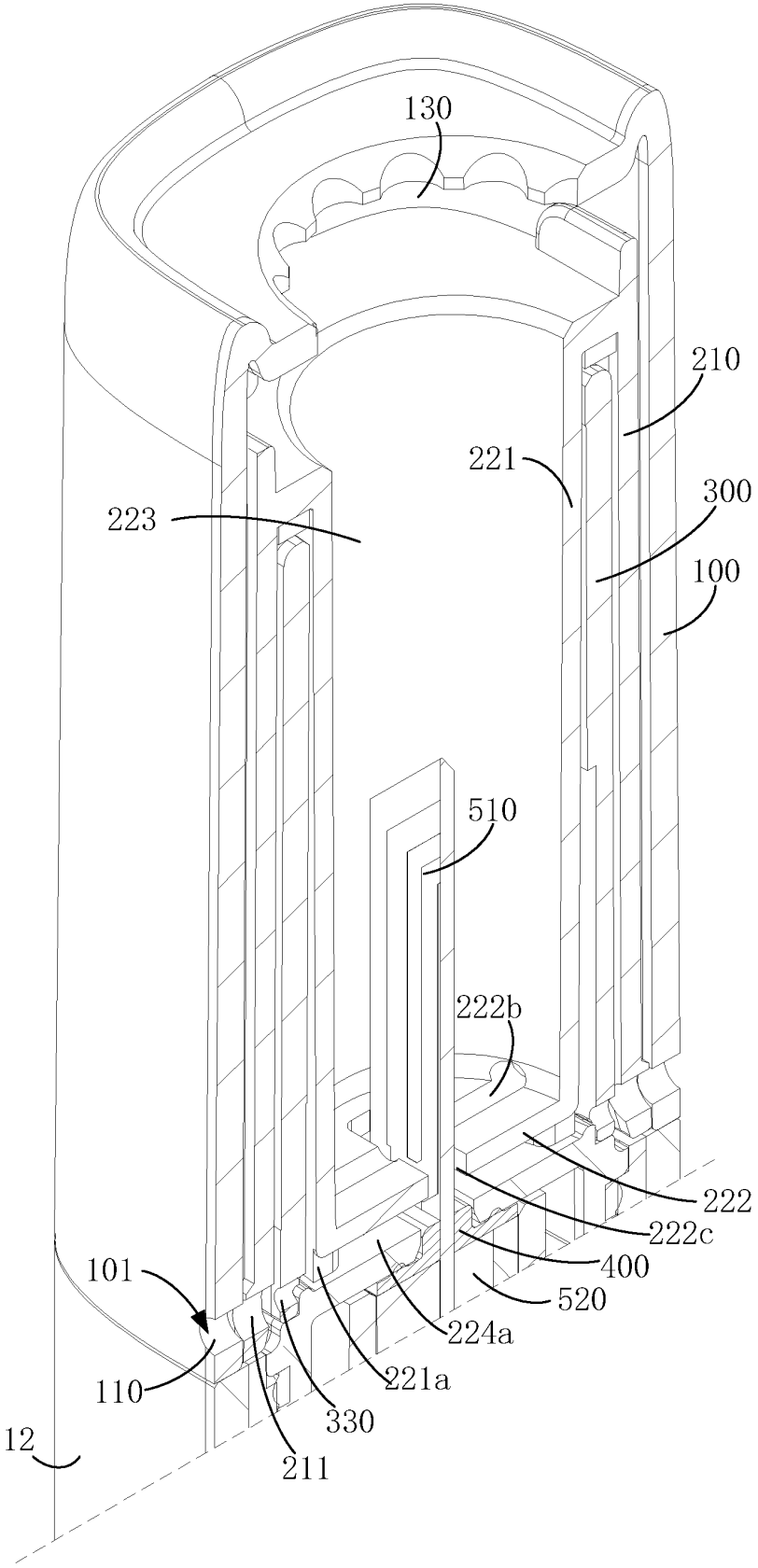
130
210
221
300
223
100
510
222b
222
222c
400
101
520
224a
110
221a
330
12
211

FIG. 3

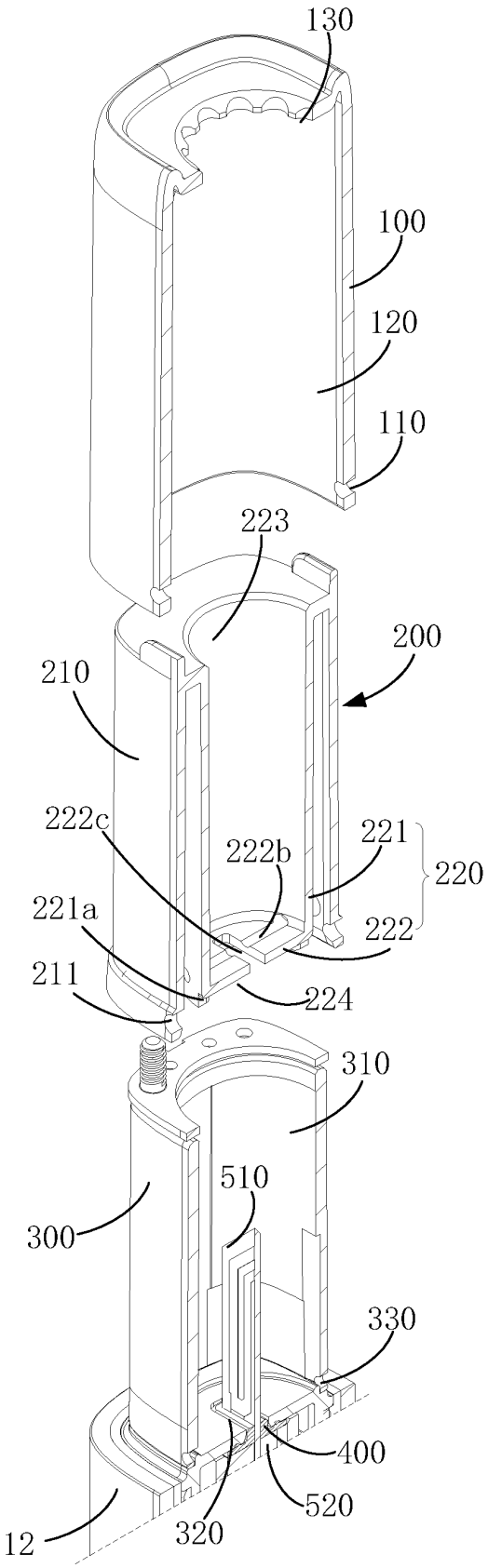
130
100
120
110
223
200
210
222c
222b
221
220
221a
222
211
224
310
510
300
330
400
520
320
12

FIG. 4

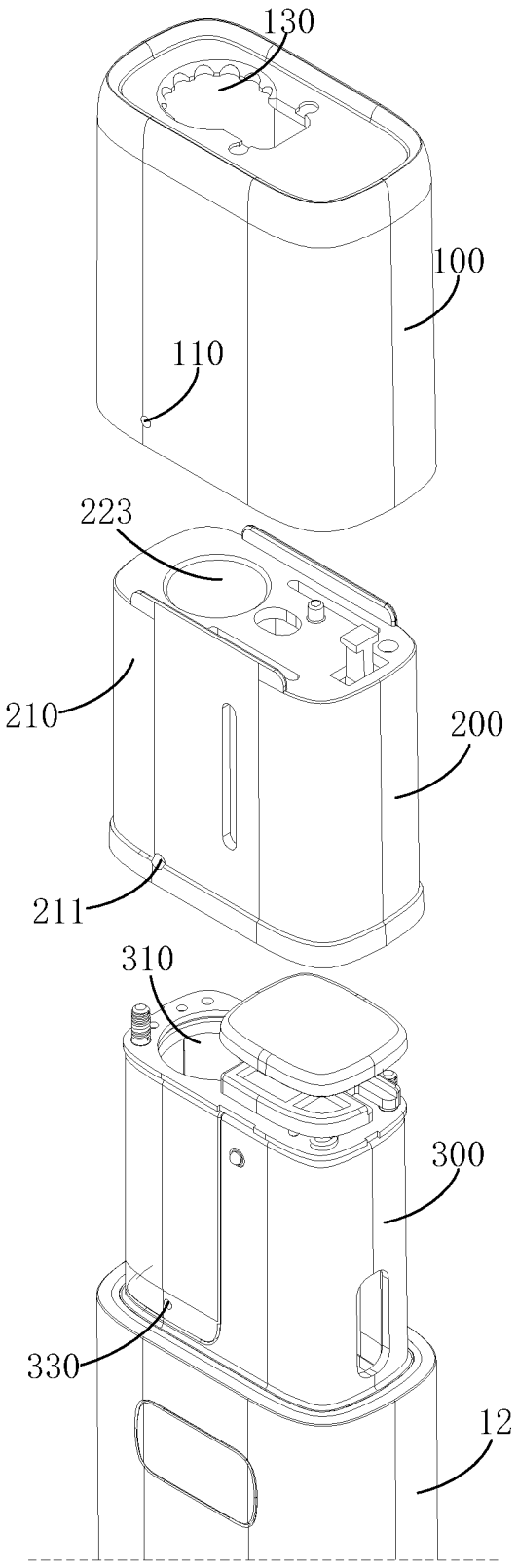

FIG. 5

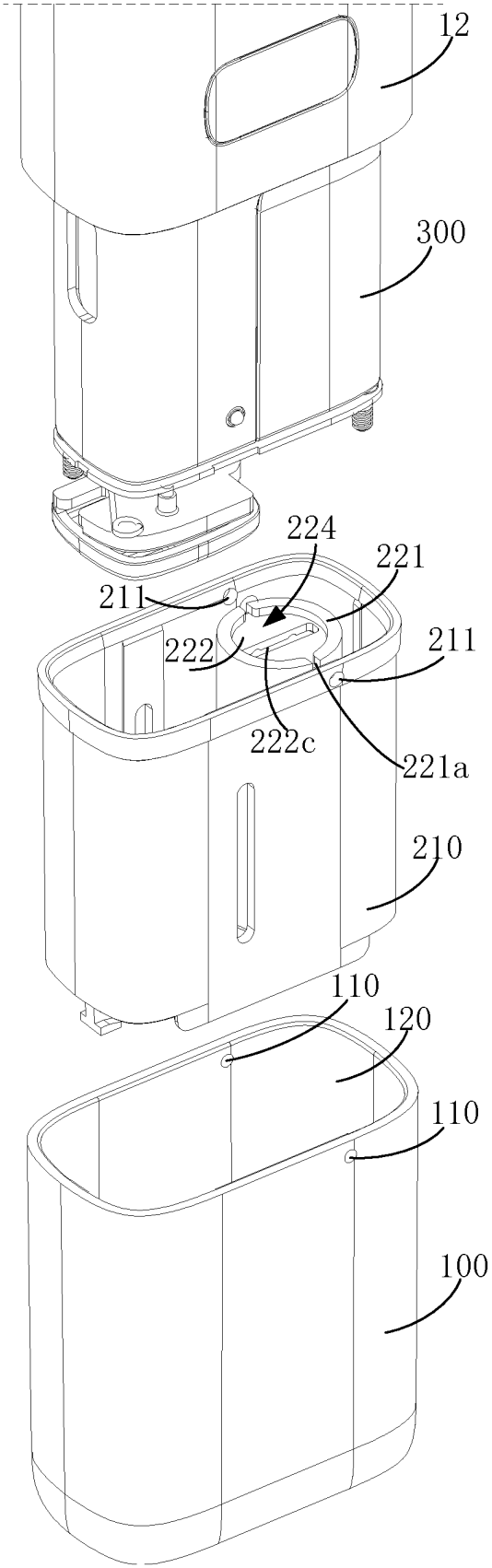

FIG. 6

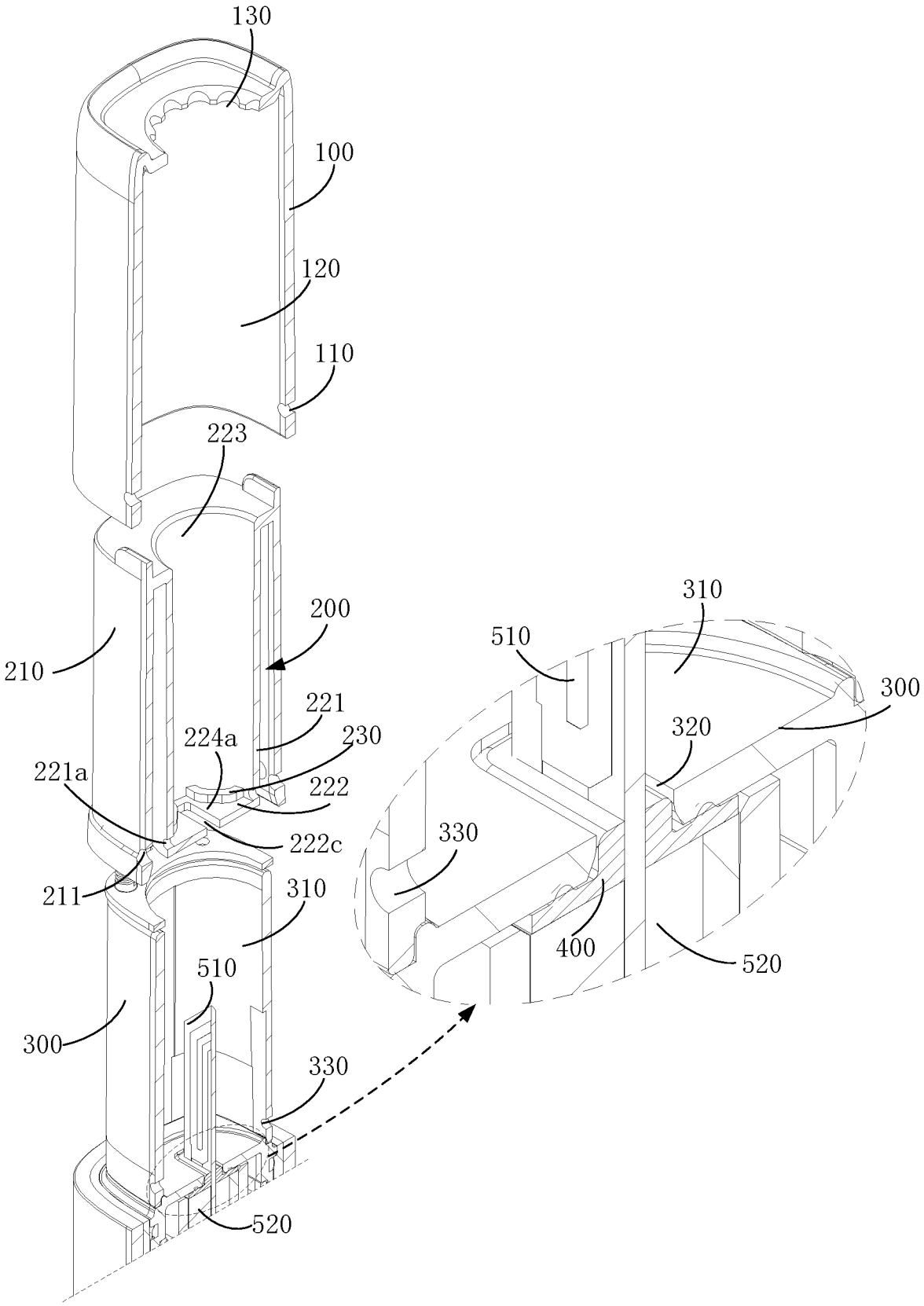
130
100
120
110
223
200
210
221
224a
230
221a
222
222c
211
310
510
300
330
520
310
510
300
320
330
400
520

FIG. 7

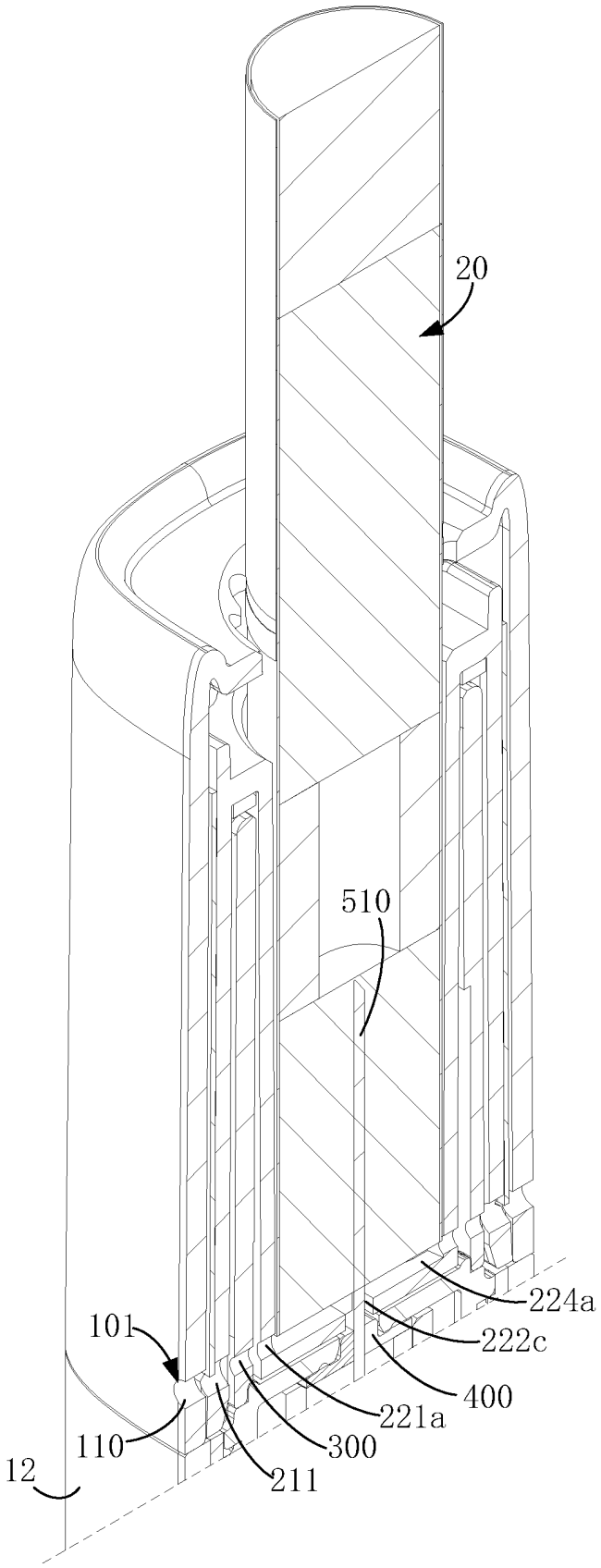

FIG. 8

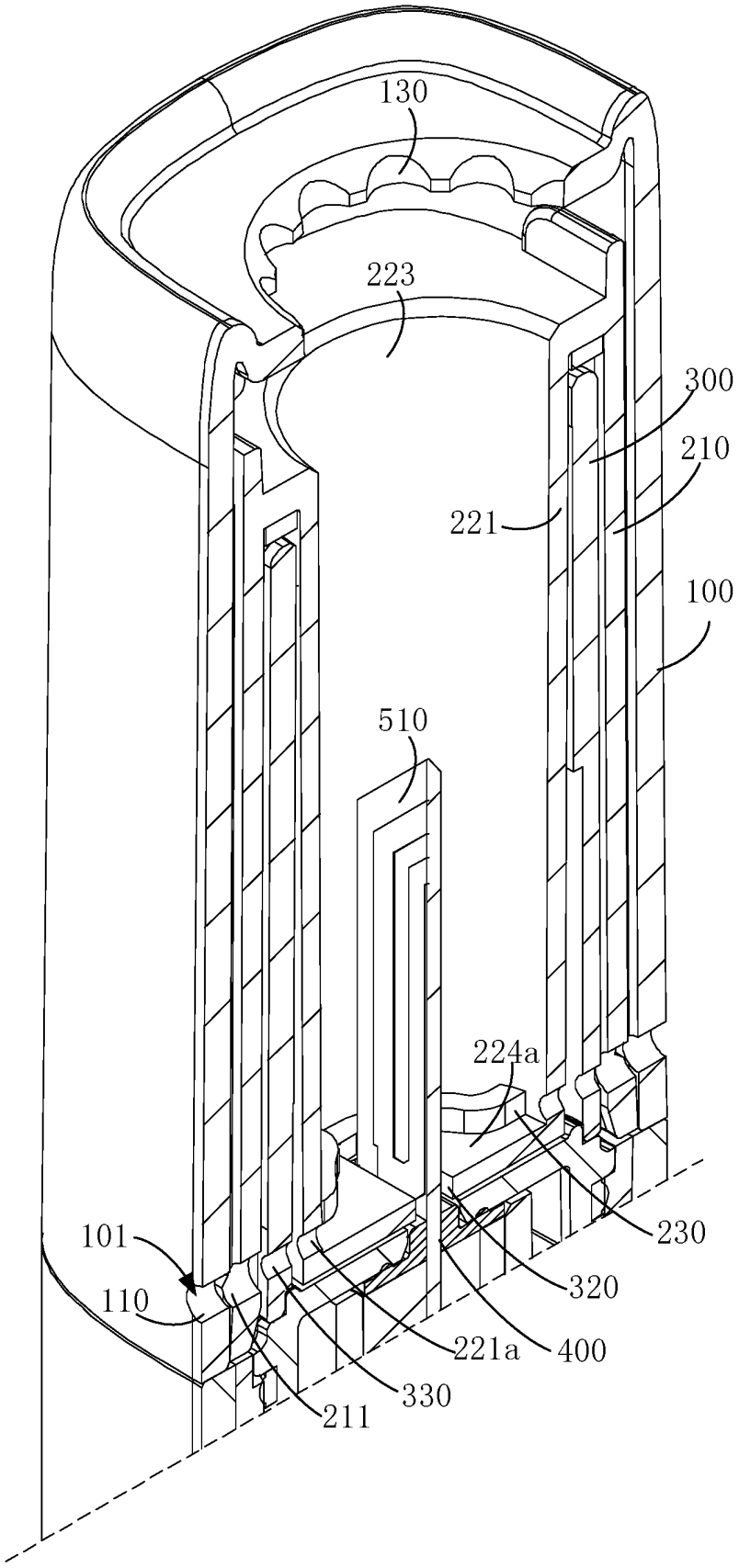
130
223
300
210
221
100
510
224a
230
320
101
110
221a
400
330
211

FIG. 9

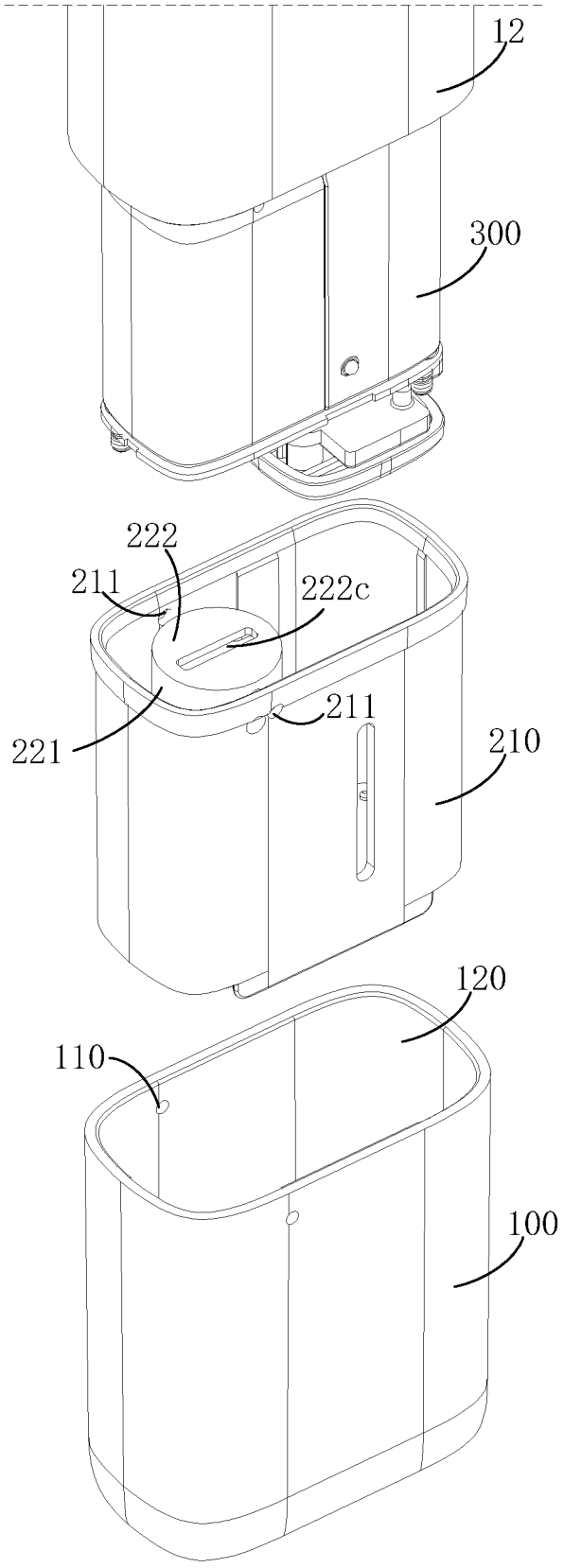

FIG. 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2021/083744

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)

A24F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNPAT, CNKI, WPI, EPODOC: 电子烟, 气溶胶, 加热片, 低温, 不燃烧, 烘烤, 进气, 入口, 气流, 孔, 电源, 电池, 雾化, electronic cigarette, aerosol, heating, sheet, low temperature, nonflammable, bake, inlet, air intake, induction, entrance, flow, hole, aperture, power, atomizing

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 110574968 A (ZHUSI CO., LTD.) 17 December 2019 (2019-12-17) description, paragraphs [0036]-[0056], and figures 1-9	1-14
A	CN 108778380 A (NERUDIA LTD.) 09 November 2018 (2018-11-09) entire document	1-14
A	CN 206923683 U (CHINA TOBACCO HUNAN INDUSTRIAL CO., LTD.) 26 January 2018 (2018-01-26) entire document	1-14
A	CN 108323823 A (VAPETALK ELECTRONIC TECHNOLOGY (SHENZHEN) COMPANY LIMITED.) 27 July 2018 (2018-07-27) entire document	1-14
A	CN 208259009 U (CHINA TOBACCO HUNAN INDUSTRIAL CO., LTD.) 21 December 2018 (2018-12-21) entire document	1-14
A	CN 108813737 A (VAPETALK ELECTRONIC TECHNOLOGY (SHENZHEN) COMPANY LIMITED.) 16 November 2018 (2018-11-16) entire document	1-14

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

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"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
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"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
09 June 2021	**24 June 2021**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088** **China**	Authorized officer
Facsimile No. **(86-10)62019451**	Telephone No.

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

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2021/083744

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
CN	110574968	A	17 December 2019	None			
CN	108778380	A	09 November 2018	GB	2547699	A	30 August 2017
				CN	207100508	U	16 March 2018
				GB	201603418	D0	13 April 2016
				WO	2017144861	A1	31 August 2017
				JP	2019511213	A	25 April 2019
				KR	20180120713	A	06 November 2018
				EP	3419705	A1	02 January 2019
				EP	3419705	B1	12 February 2020
				RU	2018133599	A	26 March 2020
				CA	3015445	A1	31 August 2017
				US	2019046741	A1	14 February 2019
CN	206923683	U	26 January 2018	None			
CN	108323823	A	27 July 2018	CN	208211470	U	11 December 2018
CN	208259009	U	21 December 2018	CN	110393312	A	01 November 2019
CN	108813737	A	16 November 2018	CN	208676375	U	02 April 2019

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

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

- CN 2020205620711 **[0001]**