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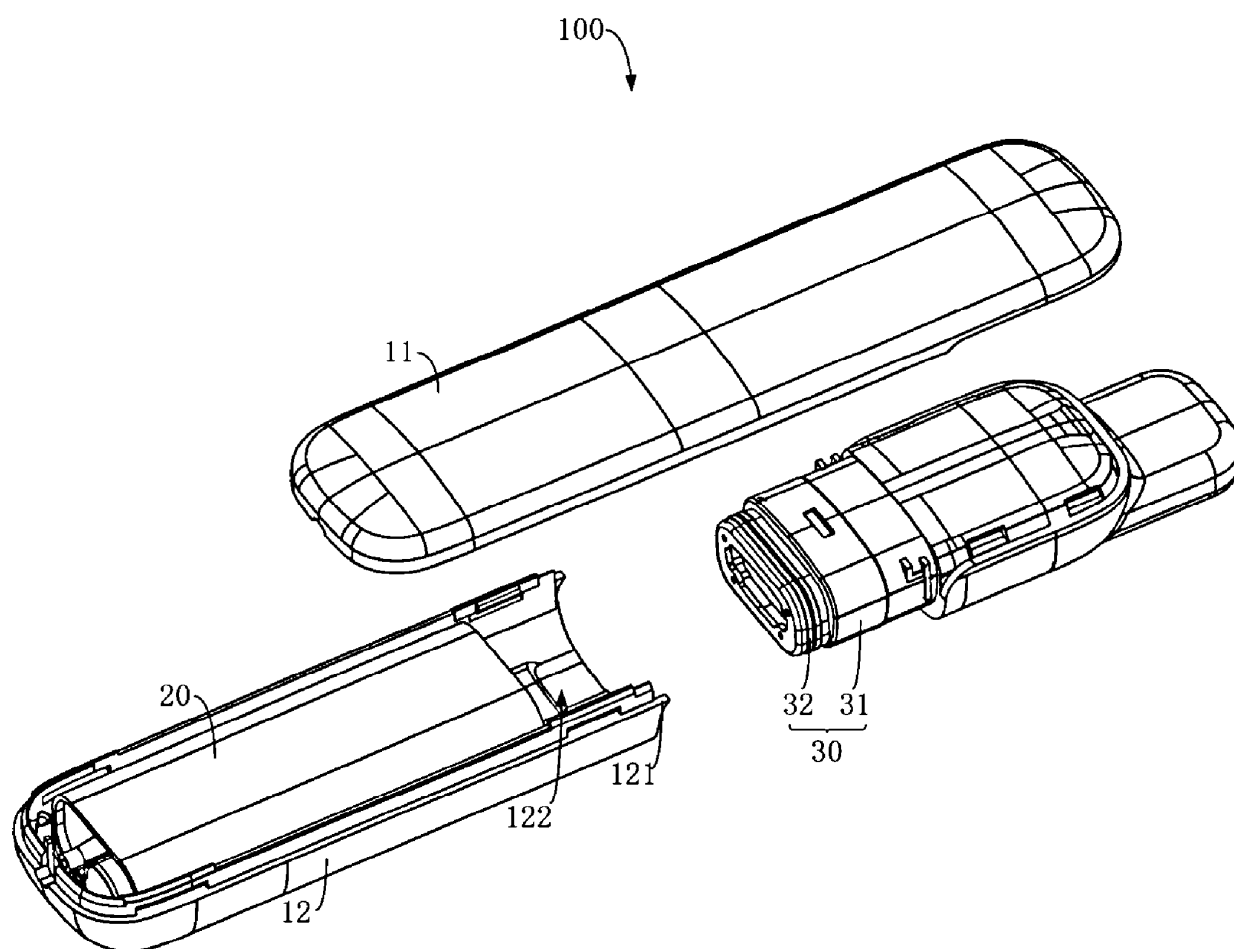
(54) **AEROSOL GENERATING DEVICE**

(57) Provided is an aerosol generating device including a housing assembly including a first housing and a second housing, the second housing comprising a first opening and an accommodation groove, a battery module configured to supply power to the aerosol generating device, and a cartridge module including a protective member and a cartridge including a second opening, wherein the cartridge is connected between the second opening and the battery module, and the second opening, the cartridge, and the battery module are accommodated within the accommodation groove,

the first opening is detachably connected to the second opening, the second housing and the protective member are arranged sequentially in a direction from the battery module to the cartridge, the protective member includes a positioning surface disposed at an edge of one side of the protective member facing the second housing, a cross-section of the first opening is disposed to be in contact with the positioning surface, and the second housing and the protective member are detachably connected to the first housing, and the first housing is coupled with the accommodation groove.

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FIG. 2



Description

Technical Field

[0001] The present disclosure relates to the field of atomization technology, and more particularly, to an aerosol generating device.

Background Art

[0002] An aerosol generating device is typically battery-powered and heats a liquid-phase aerosol generating material (e.g., an e-liquid) therein to form smoke, which may then be inhaled (or 'puffed') by a user.

[0003] An aerosol generating device generally includes a housing, a cartridge module, and a battery module, wherein the cartridge module is for storing and heating a liquid-phase aerosol generating material, the battery module is for providing electric energy to the cartridge module, and the cartridge module heats the aerosol generating material when driven by electric energy to form smoke, thereby allowing a user to puff the smoke. Chinese Utility Model Patent Publication No. CN215455386U, issued on June 17, 2021, discloses an electronic atomizer including a housing, a cartridge module, and a battery module. From among them, the housing includes a first housing and a second housing, the cartridge module and the battery module are installed between the first housing and the second housing, a snap groove is installed on the circumferential outer wall of the second housing, a protrusion is formed on the circumferential inner wall of the first housing, and, as the first housing and the second housing are assembled in directions to face each other, the protrusion extends into the snap groove, and the inner wall of the first housing comes into contact with the outer wall of the second housing, thereby completing the assembly of the first housing and the second housing. As a result, both the cartridge module and the battery module may be accommodated in the outer housing. However, according to the method, the first housing and the second housing need to be separated during a disassembly process, and, since the inner wall of the first housing and the outer wall of the second housing are in close contact with each other and the gap therebetween is too small, the first housing and the second housing need to be separated by using dedicated tools, and thus it may be difficult to detach the outer housing.

Disclosure of Invention

Technical Problem

[0004] The present disclosure provides an aerosol generating device for resolving a technical problem in the prior art, that is, the difficulty of detaching the housing of the aerosol generating device.

Solution to Problem

[0005] To solve the above-described technical problem of the difficulty of detaching the housing of the aerosol generating device, the present disclosure provides an aerosol generating device that includes a housing assembly including a first housing and a second housing, the second housing comprising a first opening and an accommodation groove, a battery module configured to supply power to the aerosol generating device, and a cartridge module including a protective member and a cartridge including a second opening, wherein the cartridge is connected between the second opening and the battery module, and the second opening, the cartridge, and the battery module are accommodated within the accommodation groove, the first opening is detachably connected to the second opening, the second housing and the protective member are arranged sequentially in a direction from the battery module to the cartridge, the protective member includes a positioning surface disposed at an edge of one side of the protective member facing the second housing, a cross-section of the first opening is disposed to be in contact with the positioning surface, and the second housing and the protective member are detachably connected to the first housing, and the first housing is coupled with the accommodation groove. Preferably, the first housing includes a first engaging surface disposed on an edge of one side of the first housing facing the second housing, the second housing includes a second engaging surface disposed on an edge of one side of the second housing facing the first housing, the protective member includes a third engaging surface disposed on an edge of one side of the protective member facing the first housing, and the second engaging surface and the third engaging surface are in contact with the first engaging surface.

[0006] Preferably, the second housing further includes a first snap connector disposed on an edge of one side of the second housing facing the first housing, the protective member includes a second snap connector disposed on an edge of one side of the protective member facing the first housing, the first housing further includes a first bump block and a second bump block, the first bump block extends into the first snap connector to connect the first housing to the second housing, and the second bump block extends into the second snap connector to connect the first housing to the protective member.

[0007] At this time, a cross-sectional area of the first bump block gradually increases in a direction from the second housing toward the first housing, and a cross-sectional area of the second bump block gradually increases in a direction from the second housing toward the first housing.

[0008] Preferably, the second housing includes a base and a flange, the base and the flange are arranged to surround the accommodation groove, the

second engaging surface is located on an outer edge of the base facing one side of the first housing, the flange protrudes from the second engaging surface and includes a cover gap surrounded by an outer wall of the flange and the second engaging surface, the first housing extends into the cover gap, the first housing is in contact with the outer wall of the flange, and the first snap connector is disposed in the flange.

[0009] Optionally, the protective member includes a seat and a cover, the seat is connected to the cover, the cover is disposed in a sleeve-like shape on an outer surface of the seat facing the opposite side of the first housing, the seat protrudes from the cover in a direction from the second housing toward the first housing, the second snap connector is positioned on an outer surface of the seat facing the first housing, the second engaging surface is installed on a section of the cover facing the seat, the seat protrudes from the cover in a direction from the protective member toward the second housing, the second opening is located on one side of the seat facing the second housing, and the second opening protrudes from the positioning surface.

[0010] Optionally, the aerosol generating device further includes a contact portion disposed on the second opening, wherein a lengthwise direction of the contact portion is identical to the direction from the first housing to the second housing.

[0011] Also, the contact portion includes two contact portions arranged to face each other, the two contact portions are respectively arranged on both sides of the second opening, and the contact portion is in contact with an inner wall of the first housing and an inner wall of the first opening.

[0012] Optionally, one end of the cartridge is mounted within the second opening, another end of the cartridge protrudes from the second opening end, and the cartridge further includes a mounting chamber disposed on the another end.

[0013] Also, the battery module includes a battery, a circuit board, and wires, and the circuit board is located inside the mounting chamber, the battery is located outside the mounting chamber, and the battery is connected to the circuit board via the wires.

[0014] Optionally, the aerosol generating device further includes an induction microphone, wherein the battery module further includes a sleeve including a container chamber, and the sleeve is accommodated within the accommodation groove, and the battery is accommodated in the container chamber.

[0015] Also, at least one of the first housing and the second housing includes an air inlet, the sleeve further includes an air inlet passage, an accommodation chamber, and an induction passage arranged below the sleeve, the air inlet passage is communicated with the air inlet and the container chamber, the induction passage is disposed to be spaced apart from the air inlet passage, and the accommodation chamber is communicated with the air inlet, the induction passage

is communicated with the accommodation chamber and the container chamber, and the induction microphone is mounted within the accommodation chamber.

[0016] Optionally, the aerosol generating device further includes a nozzle connected to the protective member, wherein the cartridge includes an atomizing bracket including an atomizing chamber and an atomizing core, the atomizing core is mounted within the atomizing chamber, one end of the atomizing bracket is hermetically connected to an inner wall of the protective member, an aerosol generating material inlet chamber is disposed in the atomizing bracket, and an aerosol generating material storage is disposed in the protective member. the aerosol generating material storage is communicated with the aerosol generating material inlet chamber, and the atomizing chamber is communicated with the aerosol generating material inlet chamber, and an air guide passage is disposed in the protective member, a puff passage is disposed in the nozzle, both ends of the air guide passage are respectively communicated with the atomizing chamber and the puff passage, and smoke generated by the atomizing core sequentially passes through the atomizing chamber, the air guide passage, and the puff passage.

[0017] Optionally, the nozzle and the protective member have an integrated structure, an outer wall of the air guide passage is in contact with the atomizing bracket, and an opening of an end of the air guide passage, spaced apart from the puff passage, is located on one side of the atomizing core facing an opposite side of the nozzle.

Advantageous Effects of Invention

[0018] Aerosol generating devices of embodiments of the present disclosure may enable rapid disassembly of the housing assembly without dedicated tools.

Brief Description of Drawings

[0019] One or more embodiments will be exemplarily described herein with reference to images in drawings corresponding thereto, but these illustrative descriptions do not limit the embodiments, elements having the same reference numerals or symbols in the drawings are represented as similar elements, and, unless specifically stated otherwise, the images in the drawings do not constitute a proportional limitation.

FIG. 1 is a structural diagram of an aerosol generating device according to an embodiment of the present disclosure.

FIG. 2 is an exploded view of the aerosol generating device of FIG. 1.

FIG. 3 is another exploded view of the aerosol generating device of FIG. 1.

FIG. 4 is a partial exploded view of the aerosol generating device of FIG. 1.

FIG. 5 is a schematic detachment diagram of the aerosol generating device of FIG. 1.

FIG. 3 is a partial exploded view of the aerosol generating device of FIG. 1 at another angle.

FIG. 7 is a structural diagram of a second housing of the aerosol generating device of FIG. 1.

FIG. 8 is a structural diagram of a protective member (or a protective seat) of the aerosol generating device of FIG. 1.

FIG. 9 is a cross-sectional view of the aerosol generating device of FIG. 1.

FIG. 10 is a cross-sectional view of the aerosol generating device of FIG. 1 at another angle.

FIG. 11 is an exploded view of a cartridge module of the aerosol generating device of FIG. 1.

Best Mode for Carrying out the Invention

Mode For The Invention

[0020] For convenience of understanding of the present disclosure, the present disclosure will be described in more detail with reference to the drawings and specific embodiments below. It should be noted that, when an element is described as being "connected" to another element, it may be directly on the other element, or there may be one or more intervening elements present. The directional or positional relationships indicated by the terms "above," "below," "left," "right," "top," "bottom," "top," and "bottom" used in this specification are based on the directional or positional relationships illustrated in the drawings and are merely for convenience and simplification in describing the present disclosure, and do not necessarily indicate that a device or an element indicated needs to have a specific orientation, be configured and operate in a specific orientation, and should not be construed as a limitation to the present disclosure. Also, terms such as "first," "second," etc. are for descriptive purposes only and should not be construed as indicating or implying relative importance.

[0021] Unless defined otherwise, all technical and scientific terms used herein have the same meaning as those commonly understood by one of ordinary skill in the art to which the present disclosure belongs. The terms used in the specification of the present disclosure are for the purpose of describing specific embodiments only and are not intended to limit the embodiments of the present disclosure.

[0022] FIG. 1 is a schematic structural view of an aerosol generating device 100 according to an embodiment of the present disclosure; FIG. 2 is an exploded view of the aerosol generating device 100 of FIG. 1; FIG. 3 is another exploded view of the aerosol generating device 100 of FIG. 1; and FIG. 4 is a partial exploded view of the aerosol generating device 100 of FIG. 1.

[0023] Referring to FIGS. 1, 2, 3, and 4 together, an

embodiment of the present disclosure provides the aerosol generating device 100 including a housing assembly 10, a battery module 20, and a cartridge module 30.

5 [0024] The housing assembly 10 includes a first housing 11 and a second housing 12, the second housing 12 includes a first opening 121, and an accommodation groove 122 may be arranged in the second housing 12.

10 [0025] The battery module 20 may provide power to the aerosol generating device 100.

[0026] The cartridge module 30 includes a protective member 31 and a cartridge 32, the protective member 31 includes a second opening 311, the cartridge 32 is connected between the second opening 311 and the battery module 20, and the second opening 311 and the cartridge 32 may be accommodated in the accommodation groove 122 together with the battery module 20. Also, the first opening 121 is detachably connected to the second opening 311, the second opening 311 is in contact with the groove wall (or 'inner wall') of the accommodation groove 122, and the second housing 12 and the protective member 31 may be sequentially arranged in a direction from the battery module 20 toward the cartridge 32.

25 [0027] The protective member 31 may further include a positioning surface 312. The positioning surface 312 is located on the outer edge of one side of the protective member 31 facing the second housing 12, the cross-section of the second housing 12 is in contact with the positioning surface 312, the second housing 12 and the protective member 31 are both detachably connected to the first housing 11, and the first housing 11 may cover the accommodation groove 122.

30 [0028] When assembling the housing assembly 10, first, after the battery module 20 and the cartridge 32 are connected, one end of the second housing 12 is mounted within the second opening 311, the second housing 12 is aligned with the positioning surface 312, and the second housing 12 and the protective member 31 are in contact with each other, and thus the battery module 20, the cartridge 32, and the second opening 311 may all be accommodated within the accommodation groove 122.

35 [0029] Finally, the assembly of the aerosol generating device 100 may be completed by fitting or combining the second housing 12 and the protective member 31, such that the second housing 12 and the protective member 31 face the first housing 11. The assembly of the aerosol generating device 100 according to embodiments of the present disclosure may be simplified through the above-stated structure, and the modularization of product assemblies may be simplified, thereby improving production efficiency.

40 [0030] The housing assembly 10 may be released by pressing the second housing 12 and the first housing 11 in directions facing each other, and simultaneously pressing the protective member 31 and the first housing 11.

ing 11 in directions facing each other. However, the present disclosure is not limited thereto. At this time, when the housing assembly 10 is released, a point at which the first housing 11 receives force corresponds to a position where the second housing 12 and the protective member 31 contact each other, and points at which the second housing 12 and the protective member 31 receive force are the middle positions of the second housing 12 and the protective member 31, respectively.

[0031] Hereinafter, with reference to FIG. 5, directions in which the first housing 11, the second housing 12, and the protective member 31 receive force will be described in detail.

[0032] FIG. 5 is a schematic detachment diagram of the aerosol generating device 100 of FIG. 1.

[0033] At this time, a position A of the first housing 11 is a point of receiving an upward force in the drawing, and the position A may correspond to a position where the cross-section of the first opening 121 and the positioning surface 312 come into contact with each other.

[0034] Also, a position B of the second housing 12 is a position of receiving a downward force in the drawing, a position C of the protective member 31 is a position of receiving a downward force in the drawing, and there are curved driving devices on sides of the first housing 11 facing each other. Therefore, after the second housing 12 and the protective member 31 are separated until the second housing 12 is separated from the first housing 11 and the protective member 31, the protective member 31 may be separated from the first housing 11, thereby completing the disassembly of the aerosol generating device 100.

[0035] In summary, the aerosol generating device 100 according to the present embodiment may be disassemble without using dedicated tools, and thus rapid disassembly is possible. After disassembly of the housing assembly 10 is completed, the battery module 20 and cartridge 32 inside may be taken out of the aerosol generating device 100.

[0036] According to an embodiment, both the first housing 11 and the second housing 12 may be housings having generally flat shapes, but are not limited thereto. According to another embodiment, the first housing 11 and the second housing 12 may have a generally semi-circular cylindrical shape. The lengthwise direction of the first housing 11 may coincide with a direction from the battery module 20 toward the cartridge 32, and the lengthwise direction of the first housing 11 and the lengthwise direction of the second housing 12 may coincide with the lengthwise direction of the protective member 31.

[0037] Also, according to the present embodiment, the aerosol generating device 100 may store a liquid-phase aerosol generating material (e-liquid) and form smoke for a user to inhale by heating the aerosol generating material. The battery module 20 serves as a power source for the aerosol generating device 100

and may provide electrical energy to the aerosol generating device 100. The cartridge 32 is an element that stores and heats an aerosol generating material, and may be a disposable cartridge or a reusable aerosol generating material injection cartridge 32.

[0038] Referring back to FIG. 3, according to an embodiment, the first housing 11 includes a first engaging surface 111, and the first engaging surface 111 may be located on an outer edge of the first housing 11 facing one side of the second housing 12. Also, the second housing 12 includes a second engaging surface 123, the second engaging surface 123 may be positioned on an outer edge of the second housing 12 facing one side of the first housing 11, the protective member 31 includes a third engaging surface 313, and the third engaging surface 313 may be positioned on an outer edge of the protective member 31 facing one side of the first housing 11. Here, both the second engaging surface 123 and the third engaging surface 313 may come into contact with the first engaging surface 111.

[0039] In detail, the second housing 12 and the protective member 31 are both connected to the first housing 11, the second engaging surface 123 and the third engaging surface 313 are both in contact with the first engaging surface 111, and, as the cross section of the first opening 121 is in contact with the positioning surface 312, the connection or coupling between the second housing 12, the protective member 31, and the first housing 11 may become tighter, the appearance may be improved, and the introduction of dust from the outside may be prevented.

[0040] According to some other embodiments, the second engaging surface 123 and the third engaging surface 313 may be positioned side-by-side, and thus, after the second housing 12 and the protective member 31 come into contact with each other, positions of the second engaging surface 123 and the third engaging surface 313 may be determined together, thereby facilitating the assembly.

[0041] FIG. 6 is a partially exploded view of the aerosol generating device 100 of FIG. 1 in another angle; FIG. 7 is a structural view of the second housing 12 of the aerosol generating device 100 of FIG. 1.

[0042] Referring to FIGS. 6 and 7, according to an embodiment, the second housing 12 includes a first snap connector 124, and the first snap connector 124 may be located on an outer edge of one side of the second housing 12 facing the first housing 11. Also, the protective member 31 includes a second snap connector 314, and the second snap connector 314 may be located on an outer edge of one side of the protective member 31 facing the first housing 11.

[0043] The first housing 11 may include a first bump block 112 and a second bump block 113, the first bump block 112 may extend into the first snap connector 124 to connect the first housing 11 to the second housing 12, and the second bump block 113 may extend into the second snap connector 314 to connect the first

housing 11 to the protective member 31. At this time, the cross-sectional area of the first bump block 112 may gradually increase in the direction from the second housing 12 to the first housing 11, and the cross-sectional area of the second bump block 113 may gradually increase in the direction from the second housing 12 to the first housing 11. However, shapes of the cross-sections of the first bump block 112 and the second bump block 113 are not limited thereto.

[0044] In detail, the first housing 11 is connected to the second housing 12, the first bump block 112 extends into the first snap connector 124, and the first bump block 112 comes into contact with the inner wall of the first snap connector 124. At this time, the cross-sectional area of the first bump block 112 gradually increases in the direction from the second housing 12 to the first housing 11, thereby acting as a guide during the process in which the first bump block 112 extends into the first snap connector 124. By the same principle, the cross-sectional area of the second bump block 113 acts as a guide during the process in which the second bump block 113 extending into the second snap connector 314. This may improve the convenience of connecting the second housing 12 and the protective member 31 to the first housing 11.

[0045] Also, according to the present embodiment, in the direction from the second housing 12 toward the first housing 11, the length of the first bump block 112 is smaller than the length of the first snap connector 124. Referring to the drawings of the specification, during the disassembly of the first housing 11 and the second housing 12, the first housing 11 moves upward (i.e., the first bump block 112 moves upward); the second housing 12 moves downward (i.e., the first snap connector 124 moves downward until the lower wall of the first bump block 112 and the lower wall of the first snap connector 124 are separated from each other), thereby separating the first bump block 112 from the first snap connector 124 (i.e., the second housing 12 may be separated from the first housing 11). During the process, slight deformation may appear in the first housing 11. By the same principle, the same effect may be applied to the second bump block 113 and the second snap connector 314.

[0046] According to an embodiment, the second housing 12 may include a base 125 and a flange 126.

[0047] The base 125 and the flange 126 are arranged to surround the accommodation groove 122, the second engaging surface 123 is located on the outer edge of one side of the base 125 facing the first housing 11, the flange 126 protrudes from the second engaging surface 123, and the outer wall of the flange 126 and the second engaging surface 123 may be arranged to surround a cover gap 127. The first housing 11 extends into the cover gap 127, the first housing 11 contacts the outer wall of the flange 126, and the first snap connector 124 may be positioned on the flange 126.

[0048] In detail, the base 125 and the flange 126 are manufactured integrally, the base 125 has a generally flat shape, the flange 126 has a generally semi-elliptical ring-like shape, and the flange 126 may be annularly arranged on the inner wall of the base 125 along the cross-section of the base 125 facing the first housing 11. When the first housing 11 is connected to the second housing 12, the first housing 11 extends into the cover gap 127, and the inner wall of the first housing 11 comes into contact with the outer wall of the flange 126, and thus the first housing 11 and the second housing 12 may be fitted more closely after being aligned. As a result, the gap between the first housing 11 and the second housing 12 is reduced, thereby reducing the introduction of dust from the outside.

[0049] The first snap connector 124 is arranged on the flange 126, the first bump block 112 and the first housing 11 are manufactured integrally, and the first bump block 112 extends into the first snap connector 124 in the direction from the cover gap 127 toward the first snap connector 124, thereby completing snap connector between the first housing 11 and the second housing 12. The first snap connector 124 is not connected to the outside, and thus the appearance of the surface of the second housing 12 may be improved and the introduction of dust may be reduced.

[0050] FIG. 8 is a detailed structural view of the protective member 31 of FIG. 1.

[0051] Referring to FIG. 8, according to an embodiment, the protective member 31 may include a seat 315 and a cover 316.

[0052] The seat 315 is connected to the cover 316, and the cover 316 is disposed or installed in a sleeve-like shape on the outer surface of the seat 315 facing the opposite side of the first housing 11, and the seat 315 may protrude from the cover 316 in the direction from the second housing 12 to the first housing 11. The second snap connector 314 is disposed on the outer surface of the seat 315 facing the first housing 11. In the direction from the protective member 31 toward the second housing 12, the third engaging surface 313 is disposed on a cross-section of one end of the cover 316 facing the seat 315, the seat 315 protrudes from the cover 316, the second opening 311 is located on one side of the seat 315 facing the second housing 12, and the second opening 311 may protrude from the positioning surface 312.

[0053] In detail, the seat 315 and the cover 316 are manufactured integrally, the cover 316 may have a generally flat shape, and the seat 315 may have a generally semi-elliptical shape.

[0054] The cover 316 is disposed in a sleeve-like shape on an outer surface of the seat 315 facing the opposite side of the first housing 11, the seat 315 protrudes from the cover 316 on one side facing the first housing 11, and the second engaging surface 123 may be located on a cross-section of one end of the cover 316 facing the seat 315. After the first housing 11 and

the protective member 31 are fitted together, the outer surface of the first housing 11 and the outer surface of the cover 316 are arranged to surround the outer surface of the aerosol generating device 100, and the seat 315 is accommodated between the first housing 11, the second housing 12, and the cover 316 to protect the internal structure of the aerosol generating device 100. Here, the second snap connector 314 is positioned on the seat 315, and, after the first housing 11 and the protective member 31 are fitted, the second snap connector 314 is shielded to prevent introduction of dust into the cartridge 32.

[0055] One side of the seat 315 facing the second housing 12 protrudes from the cover 316, the second opening 311 protrudes from the positioning surface 312, and the second opening 311 may protrude from the cover 316. In other words, after the first housing 11 and the protective member 31 are fitted, the second opening 311 is accommodated between the first housing 11 and the second housing 12, and the cartridge 32 is connected to the second opening 311, and thus the cartridge 32 may be protected.

[0056] According to an embodiment, a contact portion 3111 is installed on the second opening 311, a direction from the first housing 11 to the second housing 12 coincides with the lengthwise direction of the contact portion 3111, two contact portions 3111 that are installed facing each other are respectively located on both sides of the second opening 311, and the contact portions 3111 are in contact with the inner wall of the first housing 11 and the inner wall of the first opening 121.

[0057] In detail, the contact portion 3111 has a roughly long rod-like shape, the contact portion 3111 and the second opening 311 are manufactured integrally, two contact portions 3111 are provided, and the two contact portions 3111 are arranged to face each other.

[0058] When the second housing 12 comes into contact with the protective member 31, the two contact portions 3111 installed to face each other come into contact with both sides of the inner wall of the first opening 121. After the first housing 11 and the second housing 12 are fitted, when pressure is applied to the outer surface of the second housing 12, the second housing 12 may be deformed or sink into the first housing 11. However, the aerosol generating device 100 according to the present disclosure may prevent the second housing 12 from being deformed as the inner wall of the second housing 12 is supported by the contact portions 3111.

[0059] Also, the contact portions 3111 improve the assembly effect of the housing assembly 10. For convenience of understanding, referring to FIGS. 3 and 4, the second housing 12 is aligned with the protective member 31, the second housing 12 comes into contact with the protective member 31, and the two contact portions 3111 installed to face each other increase the

lengths of the two opposing sides of the side walls of the first opening 121. In other words, the opening of the first opening 121 is expanded to facilitate the contact between the second housing 12 and the protective member 31.

[0060] The first housing 11 is aligned with the second housing 12, and the two contact portions 3111 installed to face each other expand the opening of the first housing 11 to facilitate the fitting of the first housing 11 and the second housing 12.

[0061] In summary, the two contact portions 3111 installed to face each other may reduce the difficulty of assembling the housing assembly 10 and improve the assembly efficiency of the housing assembly 10.

[0062] FIG. 9 is a structural diagram of a cross-section of the aerosol generating device 100 of FIG. 1; FIG. 10 is a structural view of a partial cross-section of the aerosol generating device 100 of FIG. 1 in another angle; FIG. 11 is an exploded view of a cartridge module of the aerosol generating device of FIG. 1.

[0063] Referring to FIGS. 9, 10, and 11, according to some embodiments, an end of the cartridge 32 is mounted within the second opening 311, the other end of the cartridge 32 protrudes from the second opening 311, and a mounting chamber 321 may be disposed at the end of the cartridge 32 that protrudes from the second opening 311.

[0064] The battery module 20 may include a battery 21, a circuit board 22, and wires, the circuit board 22 is positioned within the mounting chamber 321, the battery 21 is positioned outside the mounting chamber 321, and the battery 21 is connected to the circuit board 22 via wires.

[0065] In detail, one end of the cartridge 32 is hermetically connected into the second opening 311 by a sealed silica gel, the other end of the cartridge 32 protrudes from the second opening 311 and, after the first housing 11 and the second housing 12 are fitted, the other end of the cartridge 32 is accommodated within the accommodation groove 122, the battery 21 and the wire are accommodated within the accommodation groove 122, and the circuit board 22 is also accommodated within the accommodation groove 122 along the mounting chamber 321.

[0066] The purpose of the installation is, since the second housing 12 is first disassembled; and, after the second housing 12 is disassembled, the battery 21 is mounted outside the mounting chamber 321, to enable a user to retrieve or replace the battery 21 by cutting wires between the battery 21 and the circuit board 22 without cutting the circuit board 22, by directly exposing the battery 21 and the wires outside the mounting chamber 321. Therefore, the aerosol generating device 100 according to the present disclosure may achieve the effect of quickly retrieving or replacing the battery 21 through the structure.

[0067] According to an embodiment, the aerosol generating device 100 may further include an induction mi-

crophone 40, and the battery module 20 may further include a sleeve 23.

[0068] The sleeve 23 is accommodated within the accommodation groove 122, a container chamber 231 is disposed within the sleeve 23, and the battery 21 may be accommodated within the container chamber 231. An air inlet 50 is disposed in at least one of the first housing 11 and the second housing 12, and an air inlet passage 232 is disposed below the sleeve 23, and the air inlet passage 232 may be communicated with the air inlet 50 and the container chamber 231.

[0069] An accommodation chamber 233 and an induction passage 234 are arranged below the sleeve 23. The induction passage 234 is disposed to be spaced apart from the air inlet passage 232. The accommodation chamber 233 is communicated with the air inlet 50. The induction passage 234 is communicated with the accommodation chamber 233 and the container chamber 231. The induction microphone 40 is mounted inside the accommodation chamber 233.

[0070] In detail, outside gas is introduced into the container chamber 231 through the air inlet 50 and the air inlet passage 232, and a part of the gas may be introduced from the container chamber 231 into the cartridge module 30 for a user to puff. Another part of the gas is introduced into the induction passage 234, and the induction microphone 40 may operate the cartridge module 30 by generating a control signal by inducing the gas to the induction passage 234, and the smoke flows along with the gas and is provided for a user to inhale. Here, the induction passage 234 is independent of the air inlet passage 232 to prevent smoke from flowing back and contaminating the induction microphone 40 in the accommodation chamber 233.

[0071] It is described here that the induction microphone 40 is a fluid sensor capable of capturing a gas movement signal, and it will be understood that, when the induction microphone 40 reacts to a change in the air pressure and operates a sensor within the induction microphone 40, the aerosol generating device 100 may heat a liquid-phase aerosol generating material.

[0072] The air inlet 50 is disposed in at least one of the first housing 11 and the second housing 12, and it may be understood that the air inlet 50 is disposed on the first housing 11 and the second housing 12, and the air inlet 50 may be formed after the first housing 11 and the second housing 12 are fitted.

[0073] According to the present embodiment, after the first housing 11 and the second housing 12 are fitted, the air inlet 50 may be arranged to penetrate through the first housing 11 and the second housing 12. Therefore, during the process of combining the first housing 11 and the second housing 12, it is possible to align air inlets 50 to check whether the first housing 11 and the second housing 12 are properly fitted, and thus the assembly accuracy of the first housing 11 and the second housing 12 may be improved.

[0074] Also, by installing the sleeve 23 in the form of

a sleeve on the outside of the battery 21, the surface of the battery 21 is prevented from being damaged during the process of combining the first housing 11 and the second housing 12.

[0075] Referring back to FIGS. 6 and 7, according to some embodiments, a third bump block 114 may be placed on the first housing 11 and a fourth bump block 128 may be placed on the second housing 12. At this time, the direction from the third bump block 114 to the fourth bump block 128 is identical to the direction from the first housing 11 to the second housing 12. Two third bump blocks 114 are extended and installed to face each other, the two third bump blocks 114 are respectively positioned on opposite sides of the inner wall of the first housing 11, two fourth bump blocks 128 are extended and installed to face each other, and the two fourth bump blocks 128 are respectively positioned on opposite sides of the inner wall of the second housing 12.

[0076] After the first housing 11 is fitted with the second housing 12, the two third bump blocks 114, the two fourth bump blocks 128, the inner wall of the first housing 11, and the inner wall of the base 125 all come into contact with the outer wall of the sleeve 23 in the circumferential direction to fix the position of the sleeve 23, thereby preventing the position of the sleeve 23 from being changing during the movement of the aerosol generating device 100.

[0077] According to an embodiment, the aerosol generating device 100 further includes a nozzle 60 connected to the protective member 31, and the cartridge 32 may further include an atomizing bracket 322 and an atomizing core 323.

[0078] An atomizing chamber 3221 is disposed at the atomizing bracket 322, the atomizing core 323 is mounted in the atomizing chamber 3221, and one end of the atomizing bracket 322 may be hermetically connected to the inner wall of the protective member 31.

[0079] Also, an aerosol generating material inlet chamber 3222 is disposed at the atomizing bracket 322, an aerosol generating material storage 317 is disposed in the protective member 31, the aerosol generating material storage 317 is communicated with the aerosol generating material inlet chamber 3222; the atomizing chamber 3221 is communicated with the aerosol generating material inlet chamber 3222, an air guide passage 318 is disposed in the protective member 31, and a puff passage 61 may be disposed in the nozzle 60. Two ends of the air guide passage 318 are respectively communicated with the atomizing chamber 3221 and the puff passage 61, and the smoke generated by the atomizing core 323 may sequentially pass through the atomizing chamber 3221, the air guide passage 318, and the puff passage 61.

[0080] In detail, the aerosol generating material inlet chamber 3222 is disposed on one side of the atomizing bracket 322 facing the nozzle 60, the peripheral outer wall of the one side of the atomizing bracket 322 facing

the nozzle 60 is hermetically connected to the inner wall of the protective member 31 by a sealing silica gel, and the aerosol generating material storage 317 may be disposed in the protective member 31. Here, both the aerosol generating material inlet chamber 3222 and the aerosol generating material storage 317 are for storing a liquid-phase aerosol generating material. The aerosol generating material storage 317 stores most of the aerosol generating material, and the aerosol generating material may be atomized by passing through the aerosol generating material inlet chamber 3222 and then entering the atomizing chamber 3221. Since the aerosol generating material inlet chamber 3222 and the aerosol generating material storage 317 jointly store the liquid-phase aerosol generating material, the size of the protective member 31 does not need to be set excessively large, and the size of the atomizing bracket 322 does not need to be set excessively large. Therefore, the internal structure of the aerosol generating device 100 may become much simpler or more compact.

[0081] The smoke formed after an aerosol generating material is heated may move in the direction along the atomizing chamber 3221, the air guide passage 318, and the puff passage 61, and, compared to other technologies, this structure does not need the installation of a separate air duct. In other words, through the above-stated structure, the internal structure of the aerosol generating device 100 becomes simpler or more compact.

[0082] According to an embodiment, the nozzle 60 and the protective member 31 have an integrated structure, the outer wall of the air guide passage 318 is in contact with the atomizing bracket 322, and one opening of the air guide passage 318 facing the opposite side of the puff passage 61 is located on one side of the atomizing core 323 away from the nozzle 60.

[0083] In detail, the nozzle 60 and the protective member 31 have an integrated structure, and the protective member 31 may further include an air guide portion 319.

[0084] The air guide portion 319 is generally tubular in shape, and the air guide portion 319 and the seat 315 may be manufactured as one piece. The nozzle 60 and the air guide portion 319 are manufactured as one piece, the air guide passage 318 is arranged to penetrate through the air guide portion 319, and the air guide passage 318 is connected to the puff passage 61.

[0085] The atomizing bracket 322 is adjacent to the outer wall that contacts the air guide portion 319 of the cover 316, and the air guide portion 319 functions to support the atomizing bracket 322. One end of an opening spaced from the puff passage 61 in the air guide passage 318 is located on one side of the atomizing core 323 facing the opposite side of the nozzle 60, and the smoke generated by heating an aerosol generating material by the atomizing core 323 need to

first move to one end of a port in the air guide passage 318 in the direction spaced from the nozzle 60 and then move along a path from the air guide passage 318 to the puff passage 61.

[0086] The purpose of such an installation is to ensure that, when the smoke moves from the air guide passage 318 to the puff passage 61, condensate (or 'droplets') is generated and, when the condensate drips, the dripping condensate does not drip onto the atomizing core 323. The aerosol generating device 100 of the present disclosure may prevent the atomizing core 323 from being contaminated by condensate through the above-stated structure.

[0087] According to the present embodiment, the outer surface of one side of the nozzle 60 spaced from the first housing 11 may be parallel to the outer surface of one side of the protective member 31 facing the opposite side of the first housing 11.

[0088] According to the present embodiment, the atomizing bracket 322 includes an upper bracket 3223 and a lower bracket 3224, the atomizing core 323 is mounted on the lower bracket 3224, the upper bracket 3223 is combined with the lower bracket 3224 to form the atomizing chamber 3221, and the aerosol generating material inlet chamber 3222 is installed on the upper bracket 3223.

[0089] The upper bracket 3223 is combined with the lower bracket 3224 to form the atomizing chamber 3221, and the atomizing core 323 is mounted inside the atomizing chamber 3221. The atomizing core 323 heats and vaporizes an aerosol generating material to form vapor, and materials, such as a heating wire, cotton, and a tubular ceramic heating core may be used for the atomizing core 323.

[0090] The mounting chamber 321 is installed on one side of the lower bracket 3224 facing the opposite side of the upper bracket 3223, the circuit board 22 is mounted inside the mounting chamber 321, and the atomizing core 323 is connected to the circuit board 22 through a wire.

[0091] Also, to avoid contamination of the circuit board 22 by unheated aerosol generating material or by condensation, according to the present embodiment, the cartridge 32 may further include a liquid absorption member 324.

[0092] A porous ceramic material is used in the liquid absorption member 324, to absorb oily materials, such as aerosol generating material. Here, the liquid absorption member 324 is mounted on the lower bracket 3224 and is positioned between the circuit board 22 and the atomizing core 323, and a plurality of beads 3241 spaced apart from one another may be arranged on the liquid absorption member 324.

[0093] Any beads 3241 adjacent to one another are arranged to surround an aerosol generating material storage tank 3242, and an aerosol generating material that is not heated in a timely manner or condensate formed by the aerosol generating material may be ac-

commodated in the aerosol generating material storage tank 3242 after dropping and adsorbed by the liquid absorption member 324, and, as a result, the aerosol generating device 100 may prevent the circuit board 22 from being contaminated.

[0094] Also, a mounting hole 3243 is formed on the liquid absorption member 324, a tangential terminal 70 is disposed on one end of the atomizing core 323 adjacent to the liquid absorption member 324, and the tangential terminal 70 may extend into the mounting hole 3243 and penetrate through the liquid absorption member 324 to be connected to the circuit board 22. The use of the atomizing core 323 may be secured by the above-stated structure. A layer of a plastic material is placed in the form of a sleeve on the tangential terminal 70 to prevent interference of an aerosol generating material with the electrical connection of the tangential terminal 70.

[0095] To conclude, the above-stated embodiments are merely for describing the technical solutions of the present disclosure, and are not limited thereto; in the context of the present disclosure, combinations of technical features of the above-stated embodiments or other embodiments may be implemented, operations may be implemented in any order, various modifications exist in different aspects of the present disclosure as described above, and, for the sake of simplicity, the modifications may not be described in detail; referring to the detailed description of the present disclosure through the above-stated embodiments, one of ordinary skill in the art may modify the technical solutions described in each of the above-stated embodiments, or equivalently replace some of the other technical features; and it will be understood that the essence of the technical solutions does not depart from the scope of the technical solutions of each embodiment of the present disclosure by such modification or replacement.

Claims

1. An aerosol generating device comprising:

a housing assembly comprising a first housing and a second housing, the second housing comprising a first opening and an accommodation groove;

a battery module configured to supply power to the aerosol generating device;

and

a cartridge module comprising a protective member and a cartridge comprising a second opening,

wherein the cartridge is connected between the second opening and the battery module, and the second opening, the cartridge, and the battery module are accommodated within the accommodation groove,

the first opening is detachably connected to the second opening,

the second housing and the protective member are arranged sequentially in a direction from the battery module to the cartridge,

the protective member comprises a positioning surface disposed at an edge of one side of the protective member facing the second housing, a cross-section of the first opening is disposed to be in contact with the positioning surface, and

the second housing and the protective member are detachably connected to the first housing, and the first housing is coupled with the accommodation groove.

2. The aerosol generating device of claim 1, wherein the first housing comprises a first engaging surface disposed on an edge of one side of the first housing facing the second housing,

the second housing comprises a second engaging surface disposed on an edge of one side of the second housing facing the first housing, the protective member comprises a third engaging surface disposed on an edge of one side of the protective member facing the first housing, and

the second engaging surface and the third engaging surface are in contact with the first engaging surface.

3. The aerosol generating device of claim 2, wherein the second housing further comprises a first snap connector disposed on an edge of one side of the second housing facing the first housing,

the protective member comprises a second snap connector disposed on an edge of one side of the protective member facing the first housing,

the first housing further comprises a first bump block and a second bump block,

the first bump block extends into the first snap connector to connect the first housing to the second housing, and

the second bump block extends into the second snap connector to connect the first housing to the protective member.

4. The aerosol generating device of claim 3, wherein a cross-sectional area of the first bump block gradually increases in a direction from the second housing toward the first housing, and a cross-sectional area of the second bump block gradually increases in a direction from the second housing toward the first housing.

5. The aerosol generating device of claim 3, wherein the second housing comprises a base and a flange,

the base and the flange are arranged to surround the accommodation groove,
the second engaging surface is located on an outer edge of the base facing one side of the first housing,
the flange protrudes from the second engaging surface and comprises a cover gap surrounded by an outer wall of the flange and the second engaging surface,
the first housing extends into the cover gap,
the first housing is in contact with the outer wall of the flange, and the first snap connector is disposed in the flange.

6. The aerosol generating device of claim 3, wherein the protective member comprises a seat and a cover,

the seat is connected to the cover,
the cover is disposed in a sleeve-like shape on an outer surface of the seat facing the opposite side of the first housing,
the seat protrudes from the cover in a direction from the second housing toward the first housing,
the second snap connector is positioned on an outer surface of the seat facing the first housing,
the second engaging surface is disposed on a section of the cover facing the seat,
the seat protrudes from the cover in a direction from the protective member toward the second housing,
the second opening is located on one side of the seat facing the second housing,
and
the second opening protrudes from the positioning surface.

7. The aerosol generating device of claim 3, further comprising a contact portion disposed on the second opening,
wherein a lengthwise direction of the contact portion is identical to the direction from the first housing to the second housing.

8. The aerosol generating device of claim 7, wherein the contact portion comprises two contact portions arranged to face each other,

the two contact portions are respectively arranged on both sides of the second opening, and
the contact portion is in contact with an inner

wall of the first housing and an inner wall of the first opening.

9. The aerosol generating device of claim 1, wherein one end of the cartridge is mounted within the second opening,

the other end of the cartridge protrudes from the second opening end, and
the cartridge further comprises a mounting chamber disposed on the another end.

10. The aerosol generating device of claim 9, wherein the battery module comprises a battery, a circuit board, and wires, and
the circuit board is located inside the mounting chamber, the battery is located outside the mounting chamber, and the battery is connected to the circuit board via the wires.

11. The aerosol generating device of claim 7, further comprising an induction microphone,

wherein the battery module further comprises a sleeve comprising a container chamber,
the sleeve is accommodated within the accommodation groove, and the battery is accommodated in the container chamber.

12. The aerosol generating device of claim 11, wherein at least one of the first housing and the second housing comprises an air inlet,

the sleeve further comprises an air inlet passage, an accommodation chamber, and an induction passage arranged below the sleeve,
the air inlet passage is communicated with the air inlet and the container chamber,
the induction passage is disposed to be spaced apart from the air inlet passage, and
the accommodation chamber is communicated with the air inlet, the induction passage is communicated with the accommodation chamber and the container chamber, and the induction microphone is mounted within the accommodation chamber.

13. The aerosol generating device of claim 1, further comprising a nozzle connected to the protective member,

wherein the cartridge comprises an atomizing bracket including an atomizing chamber and an atomizing core,
the atomizing core is mounted within the atomizing chamber,
one end of the atomizing bracket is hermeti-

cally connected to an inner wall of the protective member, an aerosol generating material inlet chamber is disposed in the atomizing bracket, and an aerosol generating material storage is disposed in the protective member. 5
the aerosol generating material storage is communicated with the aerosol generating material inlet chamber, and the atomizing chamber is communicated with the aerosol generating material inlet chamber, and 10
an air guide passage is disposed in the protective member, a puff passage is disposed in the nozzle, both ends of the air guide passage are respectively communicated with the atomizing chamber and the puff passage, and smoke 15
generated by the atomizing core sequentially passes through the atomizing chamber, the air guide passage, and the puff passage.

14. The aerosol generating device of claim 13, wherein the nozzle and the protective member have an integrated structure, 20

an outer wall of the air guide passage is in contact with the atomizing bracket, and 25
an opening of an end of the air guide passage, spaced apart from the puff passage, is located on one side of the atomizing core facing an opposite side of the nozzle.

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FIG. 1

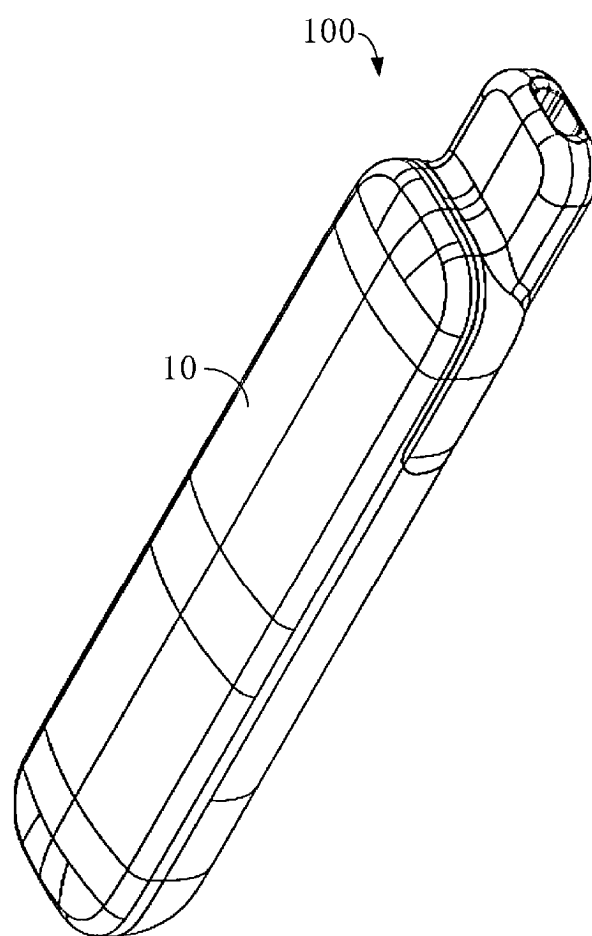


FIG. 2

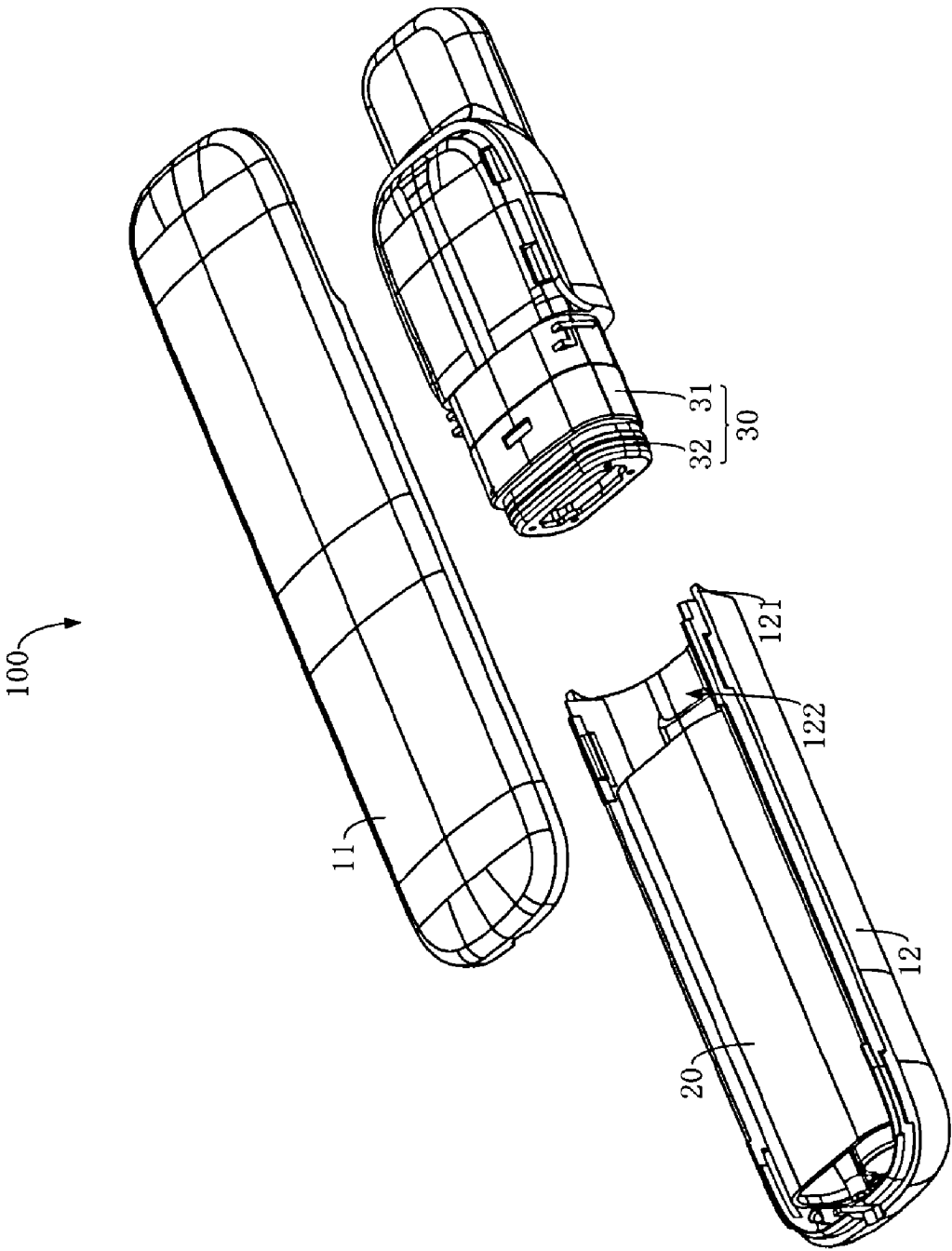


FIG. 3

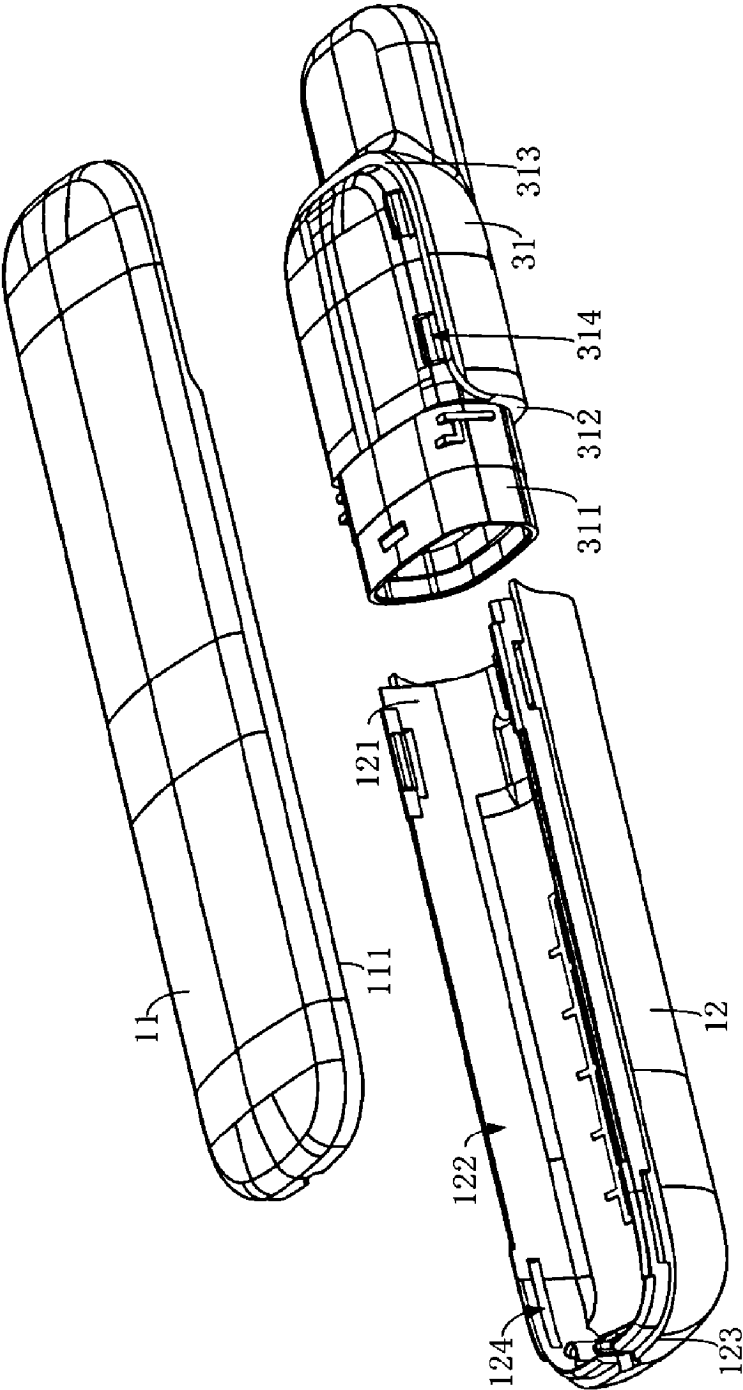


FIG. 4

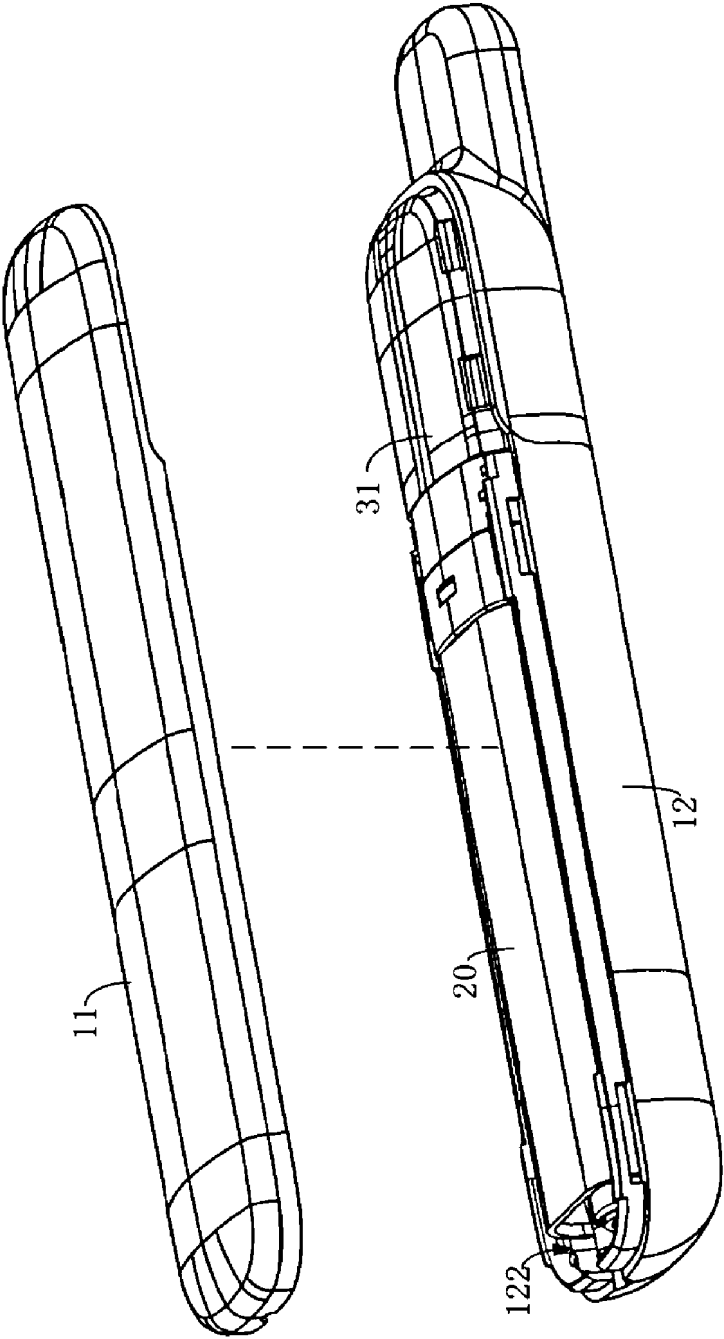


FIG. 5

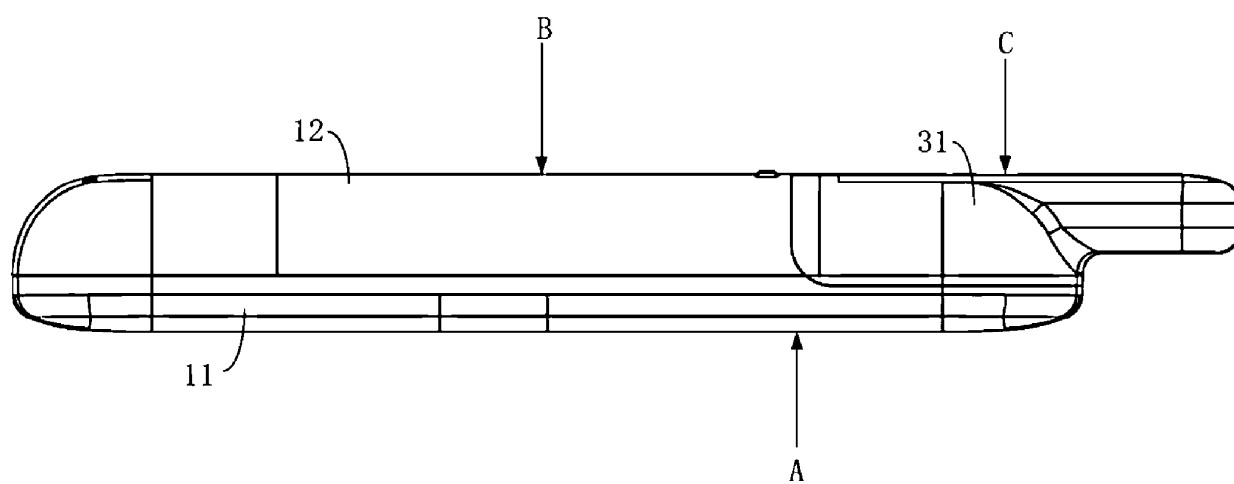


FIG. 6

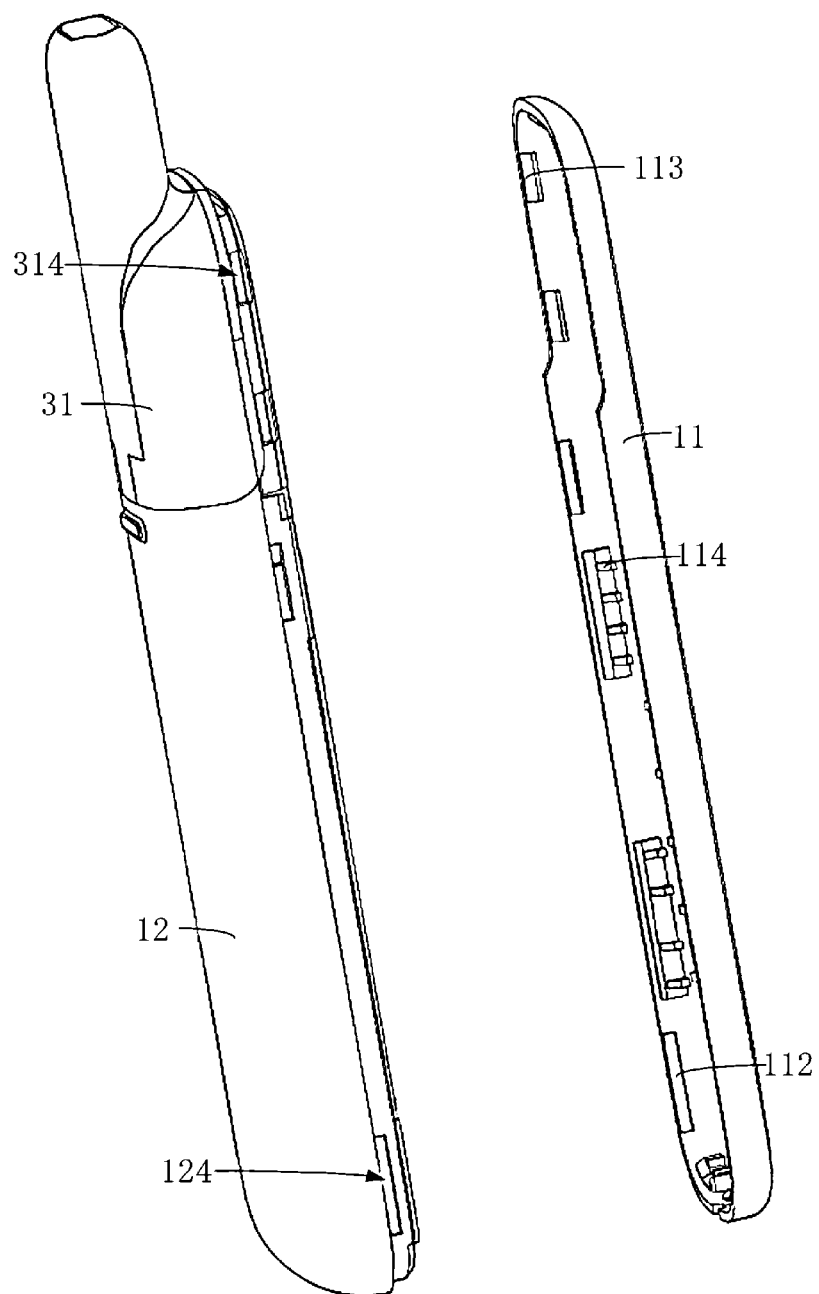


FIG. 7

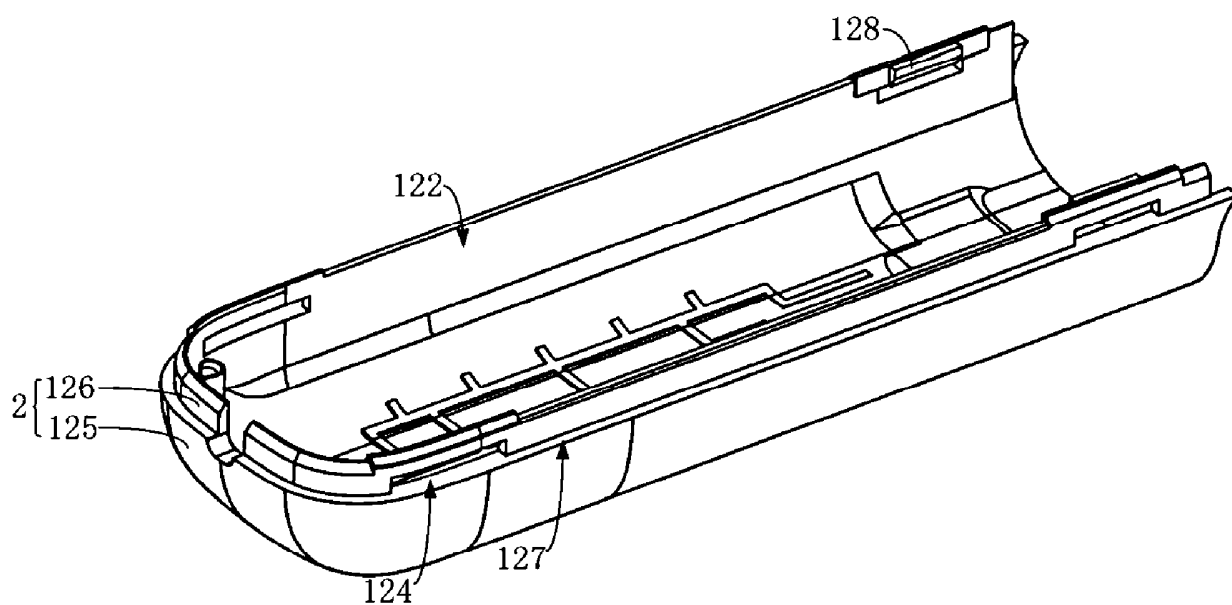


FIG. 8

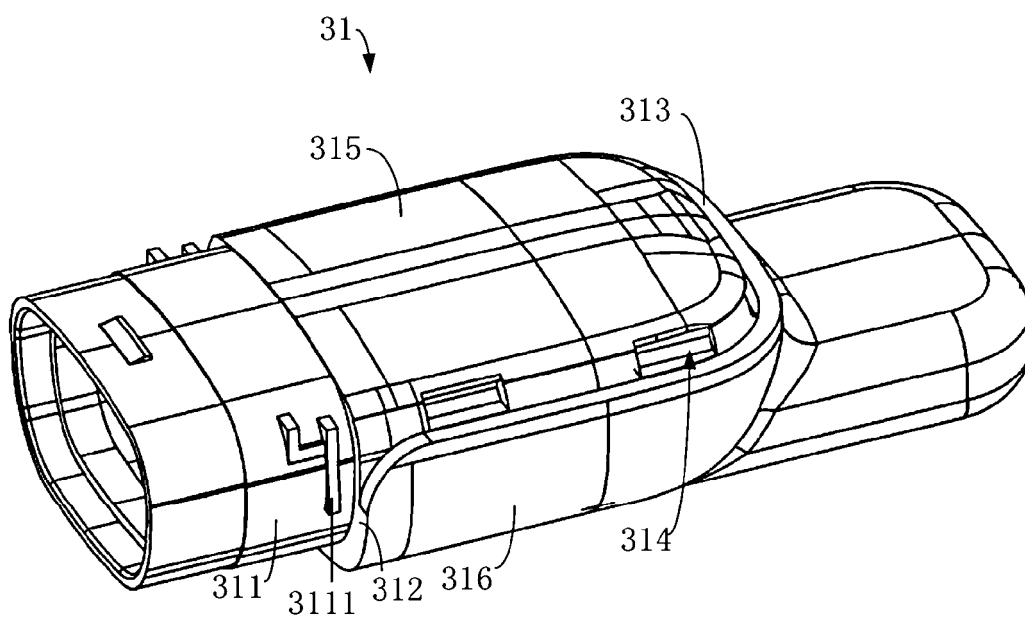


FIG. 9

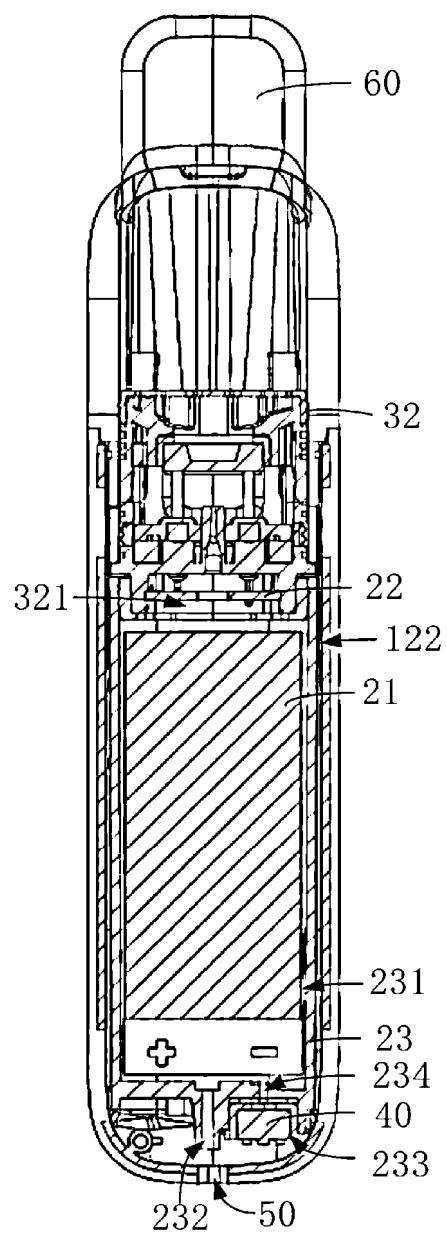


FIG. 10

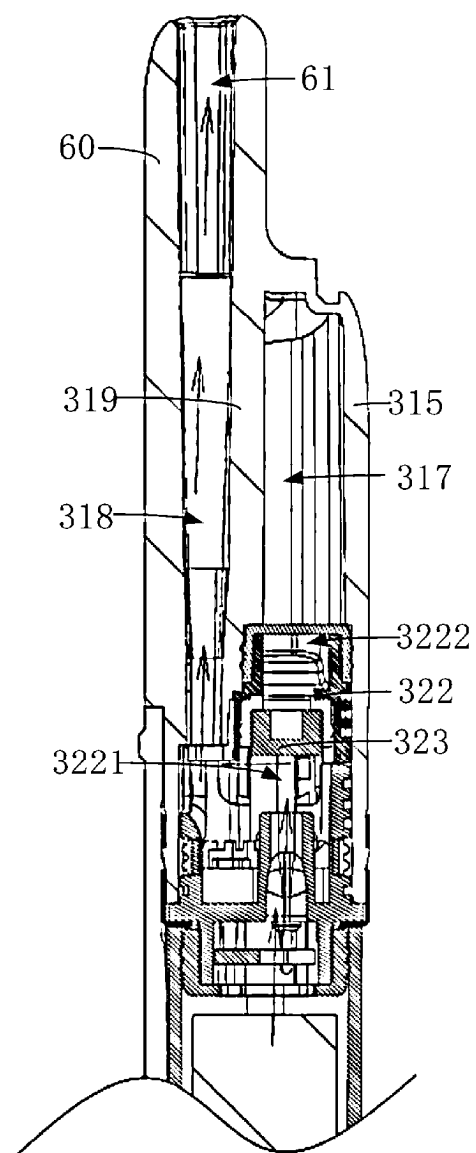
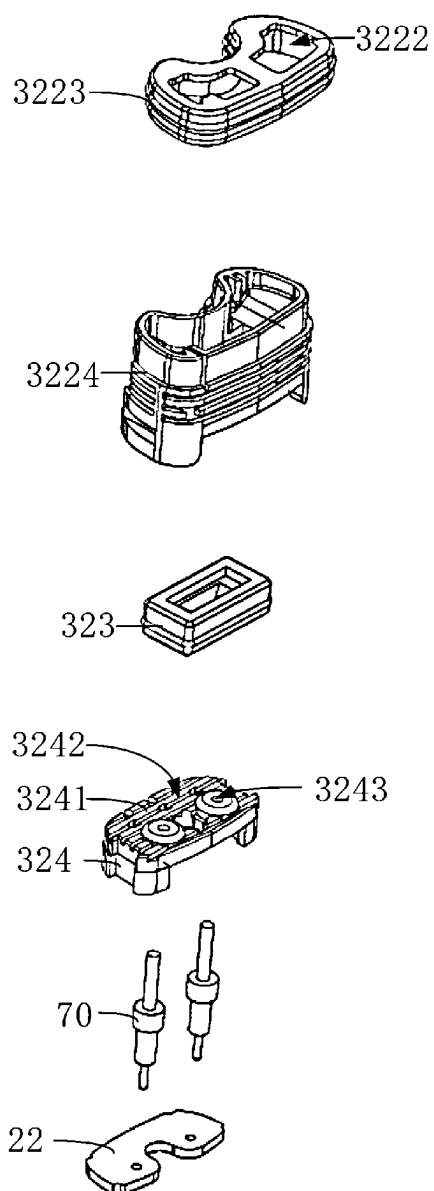


FIG. 11



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2024/017263

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/40(2020.01)i; A24F 40/42(2020.01)i; A24F 40/46(2020.01)i; A24F 40/485(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 40/40(2020.01); A24F 40/42(2020.01); A24F 40/46(2020.01); A24F 40/65(2020.01); A24F 47/00(2006.01);
A61M 15/06(2006.01)

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

Korean utility models and applications for utility models: IPC as above
Japanese utility models and applications for utility models: IPC as above

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

eKOMPASS (KIPO internal) & keywords: 제1 하우징(first housing), 제1 개구단(first opening), 수용 홈(receiving groove), 제2 하우징(second housing), 하우징 어셈블리(housing assembly), 배터리 모듈(battery module), 제2 개구단(second opening), 보호 부재(protective member), 카트리지 모듈(cartridge module), 위치 결정면(positioning surface), 에어로솔(aerosol), 체결면(fastening surface), 장착 챔버(mounting chamber), 무화 챔버(atomizing chamber), 무화 브레킷(atomizing bracket), 무화 코어(atomizing core)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	JP 2023-088231 A (NINGBO YILAN YASI SKIN CARE PRODUCTS CO., LTD. et al.) 26 June 2023 (2023-06-26) See paragraph [0020]; and figures 1-4.	1-14

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

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“&” document member of the same patent family

Date of the actual completion of the international search

10 February 2025

Date of mailing of the international search report

10 February 2025

Name and mailing address of the ISA/KR

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Authorized officer

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2024/017263

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Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	KR 10-2022-0043210 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 05 April 2022 (2022-04-05) See abstract; claim 1; and figure 2.	1-14

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/KR2024/017263

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