



(51) International Patent Classification:

A24F 40/50 (2020.01)	A24F 40/30 (2020.01)
A24F 40/60 (2020.01)	A24F 40/65 (2020.01)
A24F 40/42 (2020.01)	G06F 21/31 (2013.01)
A24F 40/44 (2020.01)	A24F 40/51 (2020.01)
H02M 1/00 (2007.01)	A24F 40/46 (2020.01)

(72) Inventors: **CHO, Byung-sung**; 104-2404, Digital-ro 24, Gwangmyung-si, Gyeonggi-do 14241 (KR). **KIM, Minkyu**; 506-1401 Sindorim-ro 16, Guro-gu, Seoul 08211 (KR). **PARK, Jueon**; 1405-304, Magok joongang-ro 33, Gangseo-gu, Seoul 07630 (KR). **LEE, Jongsub**; 320-805, Sungnamdaero 1000, Joongwon-gu, Sungnam-si, Gyeonggi-do 13436 (KR).

(21) International Application Number:

PCT/KR2022/010591

(74) Agent: **PARK, Byung Chang**; 2F Taehwa Bldg. 21, Yeongdong-daero 86-gil, Gangnam-gu, Seoul 06174 (KR).

(22) International Filing Date:

20 July 2022 (20.07.2022)

(81) Designated States (unless otherwise indicated, for every kind of national protection available):

AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM,

(25) Filing Language:

English

(26) Publication Language:

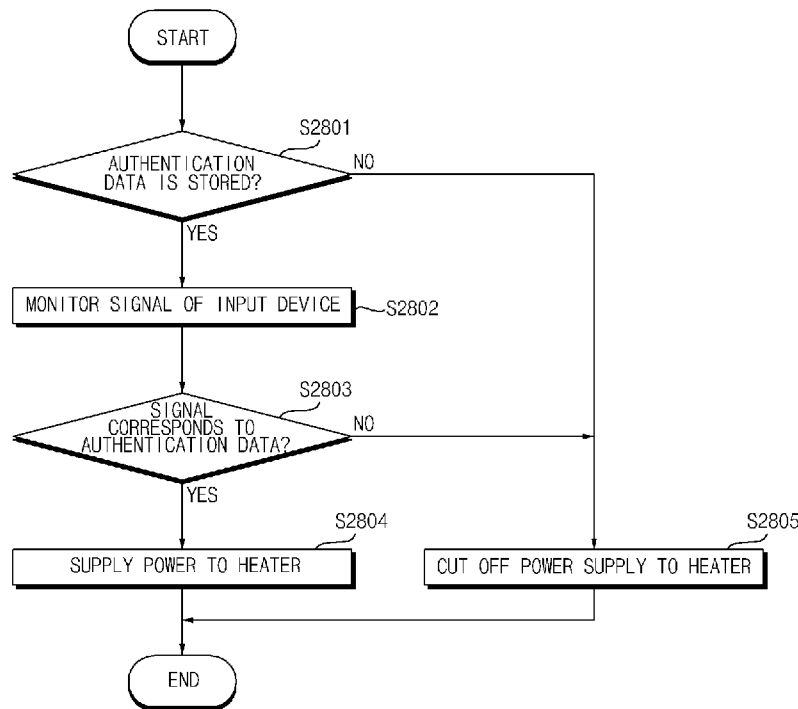
English

(30) Priority Data:

10-2021-0094969	20 July 2021 (20.07.2021)	KR
10-2021-0094970	20 July 2021 (20.07.2021)	KR

(71) Applicant: **KT&G CORPORATION** [KR/KR]; 71, Beotkkot-gil, Daedeok-gu, Daejeon 34337 (KR).

(54) Title: AEROSOL-GENERATING DEVICE



(57) Abstract: An aerosol generating device is provided. The aerosol generating device includes: a heater configured to heat an aerosol; an input device including at least one of a sensor and a button, the sensor and the button being configured to output a signal corresponding to contact of an object; a memory; and a controller configured to: based on a determination that authentication data for user authentication is not stored in the memory, cut off power supply to the heater; based on a determination that the authentication data is stored in the memory, determine whether a signal received from the input device corresponds to the authentication data; and based on a determination that the signal corresponds to the authentication data, supply power to the heater.



TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

- (84) Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

- *with international search report (Art. 21(3))*

Description

Title of Invention: AEROSOL-GENERATING DEVICE

Technical Field

- [1] The present disclosure relates to an aerosol-generating device.

Background Art

- [2] An aerosol-generating device is a device that extracts certain components from a medium or a substance by forming an aerosol. The medium may contain a multi-component substance. The substance contained in the medium may be a multi-component flavoring substance. For example, the substance contained in the medium may include a nicotine component, an herbal component, and/or a coffee component. Recently, various research on aerosol-generating devices has been conducted.

Disclosure of Invention

Technical Problem

- [3] It is an object of the present disclosure to solve the above and other problems.
- [4] It is another object of the present disclosure to provide an aerosol-generating device capable of improving gas flow efficiency and thus improving the efficiency of transfer of heat from an aerosol to a stick.
- [5] It is still another object of the present disclosure to provide an aerosol-generating device capable of blocking use by a person who does not have authority to use the aerosol-generating device.
- [6] It is yet another objective of the present disclosure to provide an aerosol generating device capable of performing user authentication in various ways by using various types of touch inputs.
- [7] It is yet another objective of the present disclosure to provide an aerosol generating device capable of performing user authentication in various ways by using various types of inputs using a button.

Solution to Problem

- [8] According to an aspect of the subject matter described in this application, an aerosol generating device includes: a heater configured to heat an aerosol; an input device including at least one of a sensor and a button, the sensor and the button being configured to output a signal corresponding to contact of an object; a memory; and a controller configured to: based on a determination that authentication data for user authentication is not stored in the memory, cut off power supply to the heater; based on a determination that the authentication data is stored in the memory, determine whether a signal received from the input device corresponds to the authentication data; and based on a determination that the signal corresponds to the authentication data, supply power

to the heater.

Advantageous Effects of Invention

[9] According to at least one of embodiments of the present disclosure, gas flow efficiency may be improved, and accordingly, the efficiency of transfer of heat from an aerosol to a stick may be improved.

[10] According to at least one of embodiments of the present disclosure, it is possible to block use by a person who does not have authority to use an aerosol-generating device.

[11] According to at least one of the embodiments of the present disclosure, user authentication may be performed in various ways by using various user touch inputs to an aerosol generating device.

[12] According to at least one of the embodiments of the present disclosure, user authentication may be performed in various ways by using various types of inputs using a button.

[13] Additional applications of the present disclosure will become apparent from the following detailed description. However, because various changes and modifications will be clearly understood by those skilled in the art within the spirit and scope of the present disclosure, it should be understood that the detailed description and specific embodiments, such as preferred embodiments of the present disclosure, are merely given by way of example.

Brief Description of Drawings

[14] The above and other objects, features, and other advantages of the present disclosure will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

[15] FIGs. 1 to 26 are views showing examples of an aerosol-generating device according to embodiments of the present disclosure;

[16] FIG. 27 is a block diagram of an aerosol-generating device according to an embodiment of the present disclosure;

[17] FIG. 28 is a flowchart showing an operation method of the aerosol-generating device according to another embodiment of the present disclosure;

[18] FIGs. 29 to 36 are views for explaining the operation of the aerosol-generating device;

[19] FIGs. 37A and 37B are flowcharts showing an operation method of the aerosol-generating device according to another embodiment of the present disclosure; and

[20] FIG. 38 is a view for explaining the operation of the aerosol-generating device.

Best Mode for Carrying out the Invention

[21] Hereinafter, the embodiments disclosed in the present specification will be described in detail with reference to the accompanying drawings, and the same or similar

elements are denoted by the same reference numerals even though they are depicted in different drawings, and redundant descriptions thereof will be omitted.

- [22] In the following description, with respect to constituent elements used in the following description, the suffixes "module" and "unit" are used only in consideration of facilitation of description, and do not have mutually distinguished meanings or functions.
- [23] In addition, in the following description of the embodiments disclosed in the present specification, a detailed description of known functions and configurations incorporated herein will be omitted when the same may make the subject matter of the embodiments disclosed in the present specification rather unclear. In addition, the accompanying drawings are provided only for a better understanding of the embodiments disclosed in the present specification and are not intended to limit the technical ideas disclosed in the present specification. Therefore, it should be understood that the accompanying drawings include all modifications, equivalents, and substitutions within the scope and spirit of the present disclosure.
- [24] It will be understood that although the terms "first", "second", etc., may be used herein to describe various components, these components should not be limited by these terms. These terms are only used to distinguish one component from another component.
- [25] It will be understood that when a component is referred to as being "connected to" or "coupled to" another component, it may be directly connected to or coupled to another component, or intervening components may be present. On the other hand, when a component is referred to as being "directly connected to" or "directly coupled to" another component, there are no intervening components present.
- [26] As used herein, the singular form is intended to include the plural forms as well, unless the context clearly indicates otherwise.
- [27] Referring to FIG. 1, an aerosol-generating device may include at least one of a body 100, a cartridge 200, or a cap 300.
- [28] The body 100 may include at least one of a lower body 110 or an upper body 120. The lower body 110 may accommodate various components necessary for power supply or control, such as a battery or a controller. The lower body 110 may form the external appearance of the aerosol-generating device. The upper body 120 may be disposed on the lower body 110. The cartridge 200 may be coupled to the upper body 120. The body 100 may be referred to as a main body 100.
- [29] The upper body 120 may include at least one of a mount 130 or a column 140. The mount 130 may be disposed on the lower body 110. The mount 130 may provide a space 134 into which the lower portion of the cartridge 200 is inserted. The mount 130 may have an open upper side, and may define therein the space 134. The mount 130

may surround the lower portion of the cartridge 200 inserted into the space 134. The mount 130 may fix the cartridge 200. The mount 130 may support the lower portion of the cartridge 200.

[30] The column 140 may be disposed on the lower body 110. The column 140 may have an elongated shape. The column 140 may extend upwards from one side of the mount 130. The column 140 may face one side wall of the cartridge 200. The column 140 may be disposed parallel to the cartridge 200. The column 140 may have a shape that covers the side wall of the cartridge 200. The column 140 may support the side wall of the cartridge 200.

[31] A first chamber C1 may be formed in a portion of the inside of a first container 210, and an insertion space 214 may be formed in another portion of the inside of the first container 210. The insertion space 214 may be disposed adjacent to the column 140. The column 140 may be disposed adjacent to the other portion of the inside of the first container 210 in which the insertion space 214 is formed.

[32] The cartridge 200 may be detachably coupled to the body 100. The cartridge 200 may provide space for storing liquid therein. The cartridge 200 may have the insertion space 214 formed therein. One end of the insertion space 214 may be open to form an opening. The insertion space 214 may be exposed to the outside through the opening. The opening may be defined as one end of the insertion space 214.

[33] The cartridge 200 may include at least one of a first container 210 or a second container 220. The second container 220 may be coupled to the first container 210.

[34] The first container 210 may be coupled to the upper side of the second container 220. The first container 210 may provide space for storing liquid therein. The first container 210 may have an open upper side, and may have formed therein the insertion space 214, which is elongated in the vertical direction. A stick 400 (refer to FIG. 3) may be inserted into the insertion space 214. One side wall of the first container 210 may face the column 140. The column 140 may cover the side wall of the first container 210. The first container 210 may be disposed on the mount 130.

[35] The second container 220 may be coupled to the lower side of the first container 210. The second container 220 may provide space for mounting a wick 261 (refer to FIG. 2) and a heater 262 (refer to FIG. 2) therein. The second container 220 may be inserted into the space 134 provided by the mount 130. The space 134 in the mount 130 may be referred to as a cartridge accommodation space 134. The mount 130 may surround the second container 220. The second container 220 may be coupled to the mount 130.

[36] The cap 300 may be detachably coupled to the body 100. The cap 300 may cover the cartridge 200. The cap 300 may cover at least a portion of the body 100. The cap 300 may protect the cartridge 200 and/or at least a portion of the body 100 from the outside. A user may separate the cap 300 from the body 100 in order to replace the

cartridge 200.

- [37] The cap 300 may be coupled to the upper portion of the body 100. The cap 300 may be coupled to the upper side of the lower body 110. The cap 300 may cover the upper body 120. The cap 300 may cover the cartridge 200. A side wall 301 of the cap 300 may surround the side portion of the cartridge 200. The side wall 301 of the cap 300 may surround the side portion of the upper body 120. An upper wall 303 of the cap 300 may cover the upper portion of the cartridge 200. The upper wall 303 of the cap 300 may cover the upper portion of the column 140.
- [38] The cap 300 may have an insertion hole 304 formed therein. The upper wall 303 of the cap 300 may be open to form the insertion hole 304. The insertion hole 304 may be formed at a position corresponding to the insertion space 214. The insertion hole 304 may communicate with one end or the upper end of the insertion space 214.
- [39] The cap 300 may have a cap inlet 304a formed therein. One side of the cap 300 may be open to form the cap inlet 304a. For example, the upper wall 303 of the cap 300 may be open to form the cap inlet 304a. For example, the side wall 301 of the cap 300 may be open to form the cap inlet 304a. The cap inlet 304a may communicate with the outside. Air may be introduced into the aerosol-generating device through the cap inlet 304a.
- [40] Referring to FIGs. 1 and 2, the cartridge 200 may be coupled to the body 100. The cartridge 200 may provide the first chamber C1 for storing liquid therein. The cartridge 200 may provide the insertion space 214, which is formed separately from the first chamber C1. The cartridge 200 may have formed therein an opening. One end of the insertion space 214 may be open to form the opening in the cartridge 200. The opening may expose the insertion space 214 to the outside.
- [41] The first container 210 may include an outer wall 211, which surrounds an inner space formed therein. The first container 210 may include an inner wall 212, which partitions the space surrounded by the outer wall 211 into the first chamber C1 on one side and the elongated insertion space 214 on another side. The insertion space 214 may have a shape that is elongated in the vertical direction. The inner wall 212 of the first container 210 may be formed inside the first container 210. A stick 400 (refer to FIG. 3) may be inserted into the insertion space 214.
- [42] The second container 220 may be coupled to the first container 210. The second container 220 may include a second chamber C2 communicating with the insertion space 214. The second chamber C2 may be formed in the second container 220. The second chamber C2 may be connected to the opposite end or the lower end of the insertion space 214.
- [43] One side of the cartridge 200 may be open to form a cartridge inlet 224. The outer wall of the second container 220 may be open to form the cartridge inlet 224. The

cartridge inlet 224 may communicate with the insertion space 214. The cartridge inlet 224 may communicate with the second chamber C2. The cartridge inlet 224 may be formed in a side wall 221 of the second container 210.

- [44] The wick 261 may be disposed in the second chamber C2. The wick 261 may be connected to the first chamber C1. The wick 261 may receive liquid from the first chamber C1. The heater 262 may heat the wick 261. The heater 262 may be disposed in the second chamber C2. The heater 262 may be wound around the wick 261 multiple times. The heater 262 may be electrically connected to a battery 190 and/or a control device. The heater 262 may be a resistive coil. When the heater 262 generates heat and thus the wick 261 is heated, the liquid supplied to the wick 261 is atomized, and accordingly, an aerosol may be generated in the second chamber C2.
- [45] Accordingly, the first chamber C1 in the first container 210, in which the liquid is stored, may be disposed so as to surround the stick 400 (refer to FIG. 3) and/or the insertion space 214, into which the stick 400 is inserted, with the result that the efficiency of use of space for storing the liquid may be improved.
- [46] In addition, the distance from the stick 400 to the wick 261, which is connected to the first chamber C1, and the heater 262 may be reduced, thus making it possible to increase the efficiency of transfer of heat from the aerosol.
- [47] A printed circuit board (PCB) assembly 150 may be mounted in the column 140. At least one of a light source 153 or a sensor 154 may be mounted on a PCB 151 of the PCB assembly 150 (refer to FIG. 16). The PCB assembly 150 may be mounted so as to face the side portion of the cartridge 200. The light source 153 of the PCB assembly 150 may provide light to the cartridge 200. The sensor 154 of the PCB assembly 150 may sense information about the inside and the outside of the cartridge 200. The sensor 154 mounted on the PCB assembly 150 may be referred to as a first sensor 154.
- [48] A sensor 180 may be mounted on one side of the upper portion of the lower body 110. The sensor 180 may be disposed above a partition wall 112 of the lower body 110. The sensor 180 may sense the flow of air that is introduced into the cartridge 200. The sensor 180 may be an airflow sensor or a pressure sensor. The sensor 180 may be referred to as a second sensor 180.
- [49] The sensor 180 may be inserted into the mount 130. The sensor 180 may be disposed so as to face the side portion of the mount. The sensor 180 may be disposed adjacent to the cartridge inlet 224. The sensor 180 may be disposed so as to face the cartridge inlet 224.
- [50] The lower body 110 may accommodate the battery 190 therein. The lower body 110 may accommodate various control devices therein. The battery 190 may supply power to various components of the aerosol-generating device. The battery 190 may be charged through a charging port 119, which is formed in one side or the lower portion

of the lower body 110.

- [51] The partition wall 112 of the lower body 110 may cover the upper portion of the battery 190. The partition wall 112 of the lower body 110 may be disposed below the mount 130 and/or the column 140. A body frame 114 of the lower body 110 may support the side portion of the battery 190. The body frame 114 may separate the space in which the battery 190 is accommodated from the space in which the control devices are accommodated.
- [52] Referring to FIGs. 2 and 3, the stick 400 may have an elongated shape. The stick 400 may contain a medium therein. The stick 400 may be inserted into the insertion space 214.
- [53] A cover 310 may open and close the insertion space 214. The cover 310 may open and close an opening that exposes the insertion space 214 to the outside. The cover 310 may be mounted adjacent to the opening in the insertion space 214. The cover 310 may be mounted adjacent to one end or the upper end of the insertion space 214. For example, the cover 310 may be mounted to the upper end of the first container 210 at a position adjacent to the insertion space 214. For example, the cover 310 may be mounted to the cap 300 at a position adjacent to the insertion space 214.
- [54] The cover 310 may be pivotably mounted. The cover 310 may be pivoted to open and close the insertion space 214. The cover 310 may be pivoted toward the inside of the insertion space 214 to open the insertion space 214. The direction in which the cover 310 is pivoted to open the insertion space 214 may be referred to as a first direction. The cover 310 may be pivoted toward the outside of the insertion space 214 to close the insertion space 214. The direction in which the cover 310 is pivoted to close the insertion space 214 may be referred to as a second direction.
- [55] When an end of the stick 400 is brought into contact with the cover 310 and pushes the cover 310, the cover 310 may be pivoted in the first direction to open the insertion space 214. The stick 400 may push the cover 310, and may be inserted into the insertion space 214. When the stick 400 is separated from the insertion space 214, the cover 310 may be pivoted in the second direction to close the insertion space 214.
- [56] A spring 312 (refer to FIG. 9) may provide elastic force to the cover 310 in the second direction. One end of the spring 312 may support the cover 310, and the other end of the spring 312 may support the upper end of the first container 210 or the cap 300. The spring 312 may be wound around a pivot shaft of the cover 310.
- [57] The cover 310 may be mounted near the insertion hole 304 in the cap 300. The cover 310 may be pivotably mounted to the cap 300. The cover 310 may be pivoted to open and close the insertion hole 304. The cover 310 may be pivoted in the first direction to open the insertion hole 304. The cover 310 may be pivoted in the second direction to close the insertion hole 304.

- [58] The stick 400 may be inserted into the insertion space 214 through the insertion hole 304 in the cap 300. When the end of the stick 400 is brought into contact with the cover 310 and pushes the cover 310, the cover 310 may be pivoted in the first direction to open the insertion space 214 and the insertion hole 304. The stick 400 may push the cover 310, and may be inserted into the insertion space 214 through the insertion hole 304. When the stick 400 is separated from the insertion space 214, the cover 310 may be pivoted in the second direction to close the insertion space 214 and the insertion hole 304.
- [59] When the stick 400 is inserted into the insertion space 214, one end of the stick 400 may be exposed to the outside of the cap 300, and the other end of the stick 400 may be disposed above the second chamber C2 at a position adjacent to the second chamber C2. The user may hold the exposed end of the stick 400 in the mouth, and may inhale air.
- [60] Air may be introduced into the aerosol-generating device through the cap inlet 304a. The air introduced through the cap inlet 304a may flow into the cartridge inlet 224. The air may flow into the cartridge 200 through the cartridge inlet 224. The air that has passed through the cartridge inlet 224 may be introduced into the second chamber C2, and may then flow toward the insertion space 214. The air may pass through the stick 400 together with the aerosol generated in the second chamber C2.
- [61] As described above, when the stick 400 is inserted into the insertion space 214, the insertion space 214 may be opened by the pivoting movement of the cover 310.
- [62] In addition, simultaneously with separation of the stick 400 from the insertion space 214, the insertion space 214 may be automatically closed by the pivoting movement of the cover 310.
- [63] In addition, the inside of the insertion space 214 may be protected from external foreign substances.
- [64] Referring to FIGs. 4 to 6, the cartridge 200 may be detachably coupled to the upper body 120. The upper body 120 may be disposed on the lower body 110. The upper body 120 may include at least one of the mount 130 or the column 140.
- [65] The mount 130 may provide a space 134 having an open top. The inner side surface 131 and the bottom 133 of the mount 130 may surround at least a portion of the space 134. The inner side wall 141 of the column 140 may surround one side of the space 134. The second container 220 may be inserted into the space 134 provided by the mount 130. The mount 130 may surround the second container 220 inserted into the space 134.
- [66] The cartridge 200 may be coupled to the mount 130 in a snap-fit manner. The second container 220 may be coupled to the mount 130 in a snap-fit manner. The second container 220 may be detachably engaged with the mount 130. When the second

container 220 is inserted into the space 134 in the mount 130, a depressed portion 221a formed in the second container 220 and a protruding portion 131a formed on the mount 130 may be engaged with each other.

[67] The depressed portion 221a may be formed so as to be recessed into the side wall 221 of the second container 220. The depressed portion 221a may be formed in a plural number, and the plurality of depressed portions 221a may be respectively formed in one side and the opposite side of the side wall 221 of the container 220. The protruding portion 131a may be formed so as to protrude from the inner side surface 131 of the mount 130. The protruding portion 131a may be provided in a plural number, and the plurality of protruding portions 131a may be respectively formed on one side and the opposite side of the inner side surface 131 of the mount 130. The protruding portions 131a may be formed at positions corresponding to the depressed portions 221a.

[68] When the second container 220 is coupled to the mount 130, the first container 210 may be disposed on the mount 130. The first container 210 may have a shape that protrudes further in a lateral direction than the second container 220. The second container 220 may be inserted into the space 134 surrounded by the mount 130, and the first container 210 may cover the upper portion of the mount 130.

[69] The mount 130 may support the lower portion of the cartridge 200. The mount 130 may support the side portion and the bottom of the second container 220. The mount 130 may support the lower edge of the first container 210.

[70] The column 140 may extend upwards from one side of the mount 130. The column 140 may surround one side of the space 134 in the mount 130. The inner side wall 141 of the column 140 may be integrally formed with and extend from the inner side surface 131 of the mount 130. The outer side wall 142 of the column 140 may be integrally formed with and extend from the outer side surface 132 of the mount 130.

[71] The column 140 may extend to a height corresponding to the height of the cartridge 200. The upper wall 143 of the column 140 may be formed to a height corresponding to the upper end of the cartridge 200. The column 140 may be formed parallel to the cartridge 200.

[72] The insertion space 214 in the cartridge 200 may be formed adjacent to one side wall of the cartridge 200. The insertion space 214 may be formed adjacent to the column 140. The column 140 may cover the side wall of the cartridge 200, in which the insertion space 214 is formed. The side wall of the cartridge 200 may slide along the inner side wall 141 of the column 140, and may be inserted into the mount 130. The column 140 may support the side wall of the cartridge 200.

[73] A window 170, which protects the PCB assembly 150 (refer to FIG. 3), may be disposed so as to cover the inner side wall 141 of the column 140. The window 170 may be disposed between the cartridge 200 and the column 140. The window 170 may

extend in the vertical direction along the column 140. The window 170 may cover one side wall of the cartridge 200, in which the insertion space 214 is formed. The window 170 may support the side wall of the cartridge 200.

[74] Accordingly, the cartridge 200 may be detachably coupled to the body 100.

[75] In addition, the cartridge 200 may be coupled to the body 100, and may thus be stably supported thereby.

[76] An upper edge 113 of the lower body 110 may protrude further outwards than the upper body 120. The upper edge 113 of the lower body 110 may extend along the circumference of the upper body 120. The upper edge 113 of the lower body 110 may be disposed below the upper body 120. When the cap 300 is coupled to the body 100, the lower end of the side wall 301 of the cap 300 may be brought into contact with the upper edge 113 of the lower body 110. The upper edge 113 of the lower body 110 may prevent the cap 300 from moving to a position below the upper body 120.

[77] Referring to FIGs. 7 and 8, the cartridge 200 may have a cover recess 215 formed therein. The cover recess 215 may be adjacent to the opening in the insertion space 214. The cover recess 215 may be recessed from the insertion space 214 in the direction in which the circumference of the insertion space 214 expands. The cover recess 215 may be recessed outwards from the insertion space 214. The cover recess 215 may be recessed from the insertion space 214 in a radially outward direction. The cover recess 215 may be recessed from the insertion space 214 toward the first chamber C1. The cover recess 215 may provide space in which to place the cover 310.

[78] The cover recess 215 may be formed in the first container 210 at a position near one end or the upper end of the insertion space 214. The cover recess 215 may be formed in a manner such that the circumference of the end portion of the insertion space 214 is recessed outwards. The cover 310 may be received in the cover recess 215 (refer to FIGs. 10 and 11). When the cover 310 opens the opening in the insertion space 214, the cover 310 may be received in the cover recess 215. When the cover 310 opens the opening in the insertion space 214, the cover 310 may pivot in the first direction to be received in the cover recess 215.

[79] The cover recess 215 may be formed in a manner such that one end portion or the upper end portion of the inner wall 212 of the first container 210 is recessed outwards from the insertion space 214. The cover recess 215 may be formed in a manner such that the inner wall 212 of the first container 210 is recessed from the insertion space 214 toward the first chamber C1. The inner wall 212 of the first container 210 may define the cover recess 215. The inner wall 212 of the first container 210 may surround at least a portion of the cover recess 215. The inner wall 212 of the first container 210 may be contiguous with the bottom of the cover recess 215. The inner wall 212 of the first container 210 may cover a part of the side portion of the cover recess 215.

- [80] The cartridge 200 may include a first guide 216, which is formed at a position adjacent to the upper portion of the insertion space 214 so as to be inclined in the downward direction of the insertion space 214. The first guide 216 may be formed at the upper end portion of the inner wall 212 of the first container 210. The first guide 216 may be referred to as a first stick guide 216.
- [81] The first guide 216 may be contiguous with the bottom of the cover recess 215. The first guide 216 may be formed on the inner wall 212 of the first container 210 at a position that is contiguous with the bottom of the cover recess 215. The first guide 216 may be formed between the bottom of the cover recess 215 and the insertion space 214. The first guide 216 may be disposed below the cover recess 215. The first guide 216 may be formed so as to be inclined from the bottom of the cover recess 215 toward the lower side of the insertion space 214.
- [82] The first guide 216 may extend in the circumferential direction along at least a portion of the insertion space 214. The first guide 216 may extend in the circumferential direction along the inner wall 212 of the first container 210. The first guide 216 may come into contact with an end portion of the stick 400 (refer to FIG. 3), and may guide insertion of the stick 400 into the insertion space 214.
- [83] Referring to FIG. 8, the cartridge 200 may include at least one of a first container 210, a second container 220, a sealing member 250, a wick 261, or a heater 262. The second container 220 may include at least one of a lower case 230 or a frame 240.
- [84] The first container 210 may provide the first chamber C1 and the insertion space 214. The inner wall 212 of the first container 210 may partition the space surrounded by the outer wall 211 of the first container 210 into the first chamber C1 on one side and the insertion space 214 on another side.
- [85] The outer wall 211 and the inner wall 212 of the first container 210 may surround the side portion of the first chamber C1. The outer wall 211 and the inner wall 212 of the first container 210 may be connected to each other so as to have an extended shape that surrounds the circumference of the first chamber C1. The upper wall 213 of the first container 210 may cover the upper portion of the first chamber C1. The upper wall 213 of the first container 210 may be connected to the outer wall 211 and the inner wall 212 of the first container 210.
- [86] The outer wall 211 and the inner wall 212 of the first container 210 may surround the side portion of the insertion space 214. The insertion space 214 may have a shape that is elongated in the vertical direction. The insertion space 214 may have a shape corresponding to the circumference of the stick 400 (refer to FIG. 3). The insertion space 214 may have a substantially cylindrical shape. The outer wall 211 and the inner wall 212 of the first container 210 may be connected to each other, and may thus have a shape that extends in the circumferential direction so as to surround the circumference

of the insertion space 214. The insertion space 214 may have open upper and lower end portions.

- [87] The second container 220 may provide the second chamber C2. The second chamber C2 may be disposed below the insertion space 214. The second chamber C2 may communicate with the insertion space 214.
- [88] The second container 220 may include at least one of a lower case 230 or a frame 240. The lower case 230 may form the external appearance of the second container 220. The lower case 230 may be coupled to the outer wall 211 or the circumference of the first container 210. The lower case 230 may provide an accommodation space therein. The lower case 230 may support the frame 240. The side wall of the lower case 230 may be open to form the cartridge inlet 224. The cartridge inlet 224 may be formed at a position higher than the bottom of the lower case 230.
- [89] Accordingly, it is possible to prevent the liquid in the second chamber C2 from leaking out of the cartridge 200 through the cartridge inlet 224.
- [90] The lower case 230 may include at least one of an accommodation portion 231 or an extension portion 232. The accommodation portion 231 may provide an accommodation space therein. The accommodation portion 231 may surround the accommodation space. The accommodation portion 231 may accommodate at least a portion of the frame 240 therein. The side wall of the accommodation portion 231 may be the side wall 221 of the second container 220 (refer to FIG. 4). The side wall of the accommodation portion 231 may be open to form the cartridge inlet 224. The extension portion 232 may extend outwards from the upper end of one side of the accommodation portion 231. The extension portion 232 may support a portion of the frame 240. The accommodation portion 231 may be referred to as a case portion 231. The accommodation portion 231 may be referred to as a case part 231.
- [91] The frame 240 may be disposed in the lower case 230. The frame 240 may define the second chamber C2. The frame 240 may surround at least a portion of the second chamber C2. The lower case 230 may surround the remaining portion of the second chamber C2. The frame 240 may form the bottom of the first chamber C1.
- [92] The frame 240 may include at least one of a first frame portion 241 or a second frame portion 242. The first frame portion 241 may form the bottom of the first chamber C1. The first chamber C1 may be surrounded by the outer wall 211, the inner wall 212, the upper wall 213, and the first frame portion 241 of the first container 210.
- [93] The second frame portion 242 may surround at least a portion of the second chamber C2. The second frame portion 242 may define the second chamber C2. The side wall of the second frame portion 242 may surround at least a part of the side portion of the second chamber C2. The bottom of the second frame portion 242 may form the bottom of the second chamber C2. A chamber inlet 2424 may be formed in the side wall of the

second frame portion 242. The chamber inlet 2424 may communicate with the second chamber C2. The second frame portion 242 may be disposed adjacent to the lower side of the inner wall 212 of the first container 210. The chamber inlet 2424 may be formed at a position higher than the bottom of the second chamber C2.

[94] The first frame portion 241 and the second frame portion 242 may be connected to each other. The first frame portion 241 may extend from the second frame portion 242 so as to cover the bottom of the first chamber C1.

[95] The accommodation portion 231 may accommodate the second frame portion 242 therein. The accommodation portion 231 may support the bottom of the second frame portion 242. The accommodation portion 231 may define the second chamber C2 together with the second frame portion 242. The extension portion 232 may support the first frame portion 241. The second frame portion 242 may be disposed in the accommodation portion 231, and the first frame portion 241 may be disposed on the extension portion 232.

[96] A connection passage 2314 may be formed in the accommodation portion 231. The frame 240 may define the connection passage 2314 in the lower case 230. The connection passage 2314 may be formed between the cartridge inlet 224 and the chamber inlet 2424 to interconnect the cartridge inlet 224 and the chamber inlet 2424. The first frame portion 241 may cover the upper portion of the connection passage 2314. The second frame portion 242 may cover the side portion of the connection passage 2314.

[97] A blocking wall 2317 may be formed in the connection passage 2314. The blocking wall 2317 may be formed between the cartridge inlet 224 and the chamber inlet 2424. The blocking wall 2317 may have an elongated shape. The blocking wall 2317 may extend upwards from the bottom of the lower case 230 or the bottom of the frame 240. The blocking wall 2317 may extend to a position higher than the cartridge inlet 224. The blocking wall 2317 may extend to a position higher than the chamber inlet 2424.

[98] Accordingly, it is possible to prevent the liquid in the second chamber C2 from leaking out of the cartridge 200 through the cartridge inlet 224.

[99] A sealing member 250 may be disposed between the first chamber C1 and the second container 220. The sealing member 250 may surround and be in close contact with the edge of the first chamber C1. The sealing member 250 may be made of an elastic material. For example, the sealing member 250 may be made of a material such as rubber or silicon. The sealing member 250 may prevent the liquid stored in the first chamber C1 from leaking from the first chamber C1 into gaps between components.

[100] The sealing member 250 may include at least one of a first sealing portion 251 or a second sealing portion 252. The first sealing portion 251 may extend along the outer wall 211 of the first container 210. The first sealing portion 251 may surround the edge

of the outer wall 211 of the first container 210. The first sealing portion 251 may be disposed between and be in close contact with the outer wall 211 of the first container 210 and the frame 240. The first sealing portion 251 may be disposed between and be in close contact with the outer wall 211 of the first container 210 and the first frame portion 241.

[101] Accordingly, it is possible to prevent the liquid stored in the first chamber C1 from leaking through the gap between the outer wall 211 of the first container 210 and the frame 240.

[102] The second sealing portion 252 may extend from the first sealing portion 251 along the inner wall 212 of the first container 210. The second sealing portion 252 may surround and be in close contact with the edge of the inner wall 212 of the first container 210. The second sealing portion 252 may be disposed between and be in close contact with the inner wall of the first container 210 and the frame 240. The second sealing portion 252 may be disposed between and be in close contact with the inner wall of the first container 210 and the second frame portion 242. The second sealing portion 252 may be inserted into the frame 240. The second sealing portion 252 may be inserted into the second frame portion 242. The lower end of the inner wall 212 of the first container 210 may press the second sealing portion 252 toward the frame 240.

[103] Accordingly, it is possible to prevent the liquid stored in the first chamber C1 from leaking into the gap between the inner wall 212 of the first container 210 and the frame 240.

[104] The mount 130 may include a sensor accommodation portion 137. The sensor accommodation portion 137 may provide space that is formed at the lower portion of one side wall of the mount 130. The second sensor 180 may be accommodated in the sensor accommodation portion 137. The lower case 230 may cover the sensor accommodation portion 137. The lower case 230 may surround one side of the sensor accommodation portion 137. The lower case 230 may cover one side of the sensor accommodation portion 137. One side wall of the accommodation portion 231 of the lower case 230 may face the side portion of the sensor accommodation portion 137. The extension portion 232 of the lower case 230 may cover the upper portion of the sensor accommodation portion 137.

[105] A gap through which air flows may be formed between the sensor accommodation portion 137 and the lower case 230. Air may pass through the gap between the sensor accommodation portion 137 and the lower case 230, and may be introduced into the cartridge inlet 224. The second sensor 180 may sense the flow of air into the cartridge inlet 224 through the gap between the sensor accommodation portion 137 and the lower case 230.

- [106] Referring to FIGs. 8 and 9, the cartridge 200 may include a stick stopper 217, which protrudes inwards from the circumference of the insertion space 214 at a position adjacent to the opposite end or the lower end of the insertion space 214. The stick stopper 217 may protrude in the radially inward direction. The stick stopper 217 may be formed on the outer wall 211 and/or the inner wall 212 of the first container 210.
- [107] The stick stopper 217 may be provided in a plural number. Three stick stoppers 217 may be provided. A plurality of stick stoppers 217 may be arranged along the circumference of the insertion space 214. The stick stoppers 217 may be arranged in the circumferential direction. The stick stoppers 217 may be spaced apart from each other. The stick stoppers 217 may be formed in the shape of a rib or a ring that extends in the circumferential direction along the circumference of the insertion space 214. The stick 400 may be seated over the stick stoppers 217. The stick stoppers 217 may have a shape that gradually widens in the upward direction.
- [108] Accordingly, when the stick 400 is inserted into the insertion space 214, the end of the stick 400 may be brought into contact with the stick stoppers 217, with the result that the stick 400 may be prevented from moving to the second chamber C2 beyond the insertion space 214.
- [109] In addition, it is possible to minimize a reduction in the amount of air flowing from the second chamber C2 to the insertion space 214.
- [110] In addition, the stick stoppers 217 may not impede the aerosol generated in the second chamber C2 from extracting a certain component from the medium in the stick 400.
- [111] Referring to FIGs. 10 and 11, the pivot shaft or the shaft 311 of the cover 310 may be disposed above the insertion space 214. The pivot shaft or the shaft 311 of the cover 310 may be disposed between the insertion space 214 and the insertion hole 304. The cover 310 may be pivoted toward the inside of the insertion space 214 to open the insertion space 214 and/or the insertion hole 304. The direction in which the cover 310 is pivoted toward the inside of the insertion space 214 may be defined as a first direction.
- [112] When the cover 310 is pivoted in the first direction to open the insertion space 214, the cover 310 may be received in the cover recess 215. When the cover 310 opens the insertion space 214, the cover 310 may be received in the cover recess 215, and may overlap the inner wall 212 of the first container 210, which is disposed below the cover recess 215. When the cover 310 opens the insertion space 214, the cover 310 may be disposed parallel to the inner wall 212 of the first container 210, which is located below the cover recess 215.
- [113] The first guide 216 may be formed so as to be inclined from the bottom of the cover recess 215 toward the lower side of the insertion space 214. The first guide 216 may be

formed so as to be inclined such that the insertion space 214 is gradually narrowed toward the lower side thereof. When the cover 310 opens the insertion space 214, the first guide 216 may be disposed adjacent to one end of the cover 310 at a position below the cover 310. When the cover 310 opens the insertion space 214, the first guide 216 may protrude toward the insertion space 214 further than the end of the cover 310.

[114] The cover 310 may be pivoted toward the outside of the insertion space 214 to close the insertion space 214 and/or the insertion hole 304. The direction in which the cover 310 is pivoted toward the outside of the insertion space 214 may be defined as a second direction. One end of the spring 312 may support the cover 310, and the other end of the spring 312 may support the cap 300. The spring 312 may provide elastic force to the cover 310 in the direction in which the cover 310 closes the insertion space 214. The cover 310 may be pivoted in the second direction by the spring 312.

[115] The second guide 306 may be formed so as to be inclined such that the inner space is gradually narrowed toward the lower side thereof. The second guide 306 may be disposed adjacent to the pivoting radius of the cover 310. The second guide 306 may be disposed outside the pivoting radius of the cover 310. The second guide 306 may extend so as to be inclined along the pivoting radius of the cover 310.

[116] One end of the second guide 306 may be adjacent to the insertion hole 304. The end of the second guide 306 may be disposed outside the insertion hole 304. The end of the second guide 306 may be disposed below the insertion hole wall 305. The insertion hole wall 305 may protrude further inwards than the end of the second guide 306. When the cover 310 is pivoted in the second direction to close the insertion space 214, the cover 310 may be brought into contact with the insertion hole wall 305, and thus movement thereof may be restricted.

[117] The other end of the second guide 306 may be adjacent to the insertion space 214. The other end of the second guide 306 may be adjacent to the outer wall 211 of the first container 210, which forms the circumference of the insertion space 214. The other end of the second guide 306 may be disposed above the outer wall 211 of the first container 210, which defines the insertion space 214. The second guide 306 may have a shape that extends so as to be inclined from one end thereof to the other end thereof.

[118] Referring to FIGs. 12 to 15, the stick 400 may push the cover 310 in the inward direction of the insertion space 214 or in the first direction. When the stick 400 pushes the cover 310 and is inserted into the insertion space 214, the cover 310 may open the insertion space 214 and/or the insertion hole 304.

[119] Referring to FIGs. 13 and 14, when the end of the stick 400 passes through the insertion hole 304, the end of the stick 400 may be brought into contact with the insertion hole wall 305. When the end of the stick 400 is brought into contact with the

insertion hole wall 305, the insertion hole wall 305 may guide the stick 400 to the correct position in the insertion hole 304. After passing through the insertion hole 304, the end of the stick 400 may push the cover 310 so that the cover 310 is pivoted in the first direction.

- [120] Referring to FIGs. 14 and 15, when the stick 400 completely passes through the insertion hole 304, the cover 310 may be received in the cover recess 215. The cover 310 may overlap the inner wall 212 of the first container 210, thereby forming one side wall of the insertion space 214 together with the inner wall 212 of the first container 210.
- [121] Referring to FIGs. 21 and 22, the stick 400 may slide along the surface of the cover 310, and may be inserted into the insertion space 214. The second guide 306 may be disposed at a position opposite the pivot shaft of the cover 310 with respect to the insertion hole 304. The second guide 306 may be disposed at a position opposite the cover recess 215. When the stick 400 is inserted into the insertion space 214, the end of the stick 400 may be brought into contact with the second guide 306. When the end of the stick 400 is brought into contact with the second guide 306, the second guide 306 may guide the stick 400 to the correct position in the insertion space 214.
- [122] The first guide 216 may be disposed at a position opposite the second guide 306. The first guide 216 may be disposed below the second guide 216. The first guide 216 may be disposed below the cover recess 215. The first guide 216 may be disposed below the cover 310. The first guide 216 may extend in the circumferential direction along the inner wall 212 of the first container 210. When the stick 400 is inserted into the insertion space 214, the end of the stick 400 may be brought into contact with the first guide 216. After being guided to the correct position by contact with the second guide 306, the end of the stick 400 may be brought into contact with the first guide 216. When the end of the stick 400 is brought into contact with the first guide 216, the first guide 216 may guide the stick 400 to the correct position in the insertion space 214.
- [123] The end of the stick 400 inserted into the insertion space 214 may be brought into contact with the stick stopper 217. The stick stopper 217, with which the end of the stick 400 comes into contact, may prevent the stick 400 from moving to a region below the insertion space 214 or to the second chamber C2.
- [124] Accordingly, when the user pushes the cover 310 using the stick 400, the stick 400 may be guided to the correct position so as to smoothly pass through the insertion hole 304 and to push the cover 310.
- [125] In addition, when the stick 400 pushes the cover 310 and thus the cover 310 is disposed in the insertion space 214, the cover 310 is received in the cover recess 215, so the stick 400 may be brought into close contact with the wall defining the insertion space 214.

- [126] In addition, since the stick 400 is in close contact with the wall defining the insertion space 214, when the user inhales air through the stick 400, it is possible to prevent unnecessary flow of air between the insertion space 214 and the stick 400 and to reduce waste of inhalation force, thereby preventing deterioration in air flow efficiency.
- [127] In addition, even though the cover 310 applies external force to the end of the stick 400 in the second direction when the user pushes the cover 310 using the stick 400, the stick 400 may be guided so as to be correctly inserted into the insertion space 214.
- [128] In addition, it is possible to prevent the stick 400 from moving to the inside of the second chamber C2.
- [129] Referring to FIG. 16, the upper body 120 may be coupled to the upper portion of the lower body 110. The mount 130 may cover the upper portion of the lower body 110. The lower portion of the mount 130 may be surrounded by the upper portion of the side wall 111 of the lower body 110. The mount 130 may be coupled to the upper portion of the lower body 110. The mount 130 may be coupled to the lower body 110 in a snap-fit manner. The mount 130 may be engaged with the lower body 110 so as not to be separated therefrom.
- [130] The second sensor 180 may be disposed on one side of the upper portion of the lower body 110. A sensor support portion 185 may have a shape that extends upwards from the upper portion of the lower body 110. The sensor support portion 185 may support the second sensor 180. The second sensor 180 may be coupled to the sensor support portion 185. The second sensor 180 may be coupled to the sensor support portion 185 so as to be oriented in the lateral direction. The sensor accommodation portion 137 of the mount 130 may accommodate and cover the second sensor 180 and the sensor support portion 185.
- [131] Referring to FIGs. 17 to 19, a fastening hole 135 may be formed in the lower portion of the mount 130. The fastening hole 135 may be formed at a side part of the lower portion of the mount 130. The fastening hole 135 may be formed in a plural number, and the plurality of fastening holes 135 may be arranged along the circumference of the lower portion of the mount 130. A body latch 115 provided at the upper portion of the lower body 110 may be inserted into the fastening hole 135, whereby the mount 130 and the lower body 110 may be engaged with each other (refer to FIGs. 21 and 22).
- [132] A rib groove 136 may be formed in the outer side surface 132 of the mount 130. The rib groove 136 may have a shape that is recessed inwards from the outer side surface 132 of the mount 130. The rib groove 136 may have a shape that extends along the circumference of the outer side surface 132 of the mount 130. A body rib 116, which extends along the inner circumference of the upper portion of the lower body 110, may be inserted into the rib groove 136, whereby the mount 130 and the lower body 110

may be engaged with each other. The body rib 116 may be made of an elastic material. For example, the body rib 116 may be made of a material such as rubber or silicon. The body rib 116 may be in close contact with the rib groove 136. Accordingly, the position of the mount 130 may be reliably fixed to the lower body 110, and the upper body 120 may be prevented from shaking relative to the lower body 110 (refer to FIGs. 21 and 22).

[133] A first fixing portion 138 may be formed at the lower portion of the mount 130. The first fixing portion 138 may be formed so as to be recessed upwards or to protrude downwards from the lower portion of the mount 130. The first fixing portion 138 may be formed at the circumference of the lower portion of the mount 130. The first fixing portion 138 may be formed in a plural number, and the plurality of first fixing portions 138 may be arranged along the circumference of the lower portion of the mount 130. A second fixing portion 118, which is provided at the upper portion of the lower body 110, may be coupled to the first fixing portion 138. Accordingly, the position of the mount 130 may be reliably fixed to the lower body 110, and the upper body 120 may be prevented from shaking relative to the lower body 110 (refer to FIGs. 21 and 22).

[134] The upper body 120 may include the column 140, which extends upwards. The column 140 may extend upwards from one side of the mount 130. The side walls 141 and 142 of the column 140 may be connected to the side walls 131 and 132 of the mount 130. The column 140 may cover a portion of the space 134 provided by the mount 130. The inner wall 141 of the column 140 may have a shape that is concavely recessed outwards. The column 140 may face the side portion of the cartridge 200 (refer to FIG. 6). The column 140 may cover one side portion of the cartridge 200. The column 140 may be open toward one side portion of the cartridge 200.

[135] The column 140 may accommodate the PCB assembly 150. The PCB assembly 150 may provide light to the cartridge 200, or may sense information about the cartridge 200. For example, the information about the cartridge 200 may include at least one of information about a change in the remaining amount of liquid stored in the first chamber C1 in the cartridge 200, information about the type of liquid stored in the first chamber C1 in the cartridge 200, information about whether the stick 400 is inserted into the insertion space 214 in the cartridge 200, information about the type of stick 400 inserted into the insertion space 214 in the cartridge 200, information about the extent of use or the availability of the stick 400 inserted into the insertion space 214 in the cartridge 200, information about whether the cartridge 200 having the stick 400 inserted into the insertion space 214 is coupled to the body 100, or information about the type of cartridge 200 coupled thereto. The information about the cartridge 200 is not limited to the aforementioned information. The column 140 may accommodate a light source 153 configured to emit light. The column 140 may accommodate a first

sensor 154 configured to sense information about the cartridge 200.

[136] The column 140 may provide a mounting space 144 therein. The mounting space 144 may have a shape that extends vertically along the column 140. The inner side wall 141 of the column 140 may surround the mounting space 144. The mounting space 144 may be open toward the space 134 in the mount 130. The mounting space 144 may be open toward one side portion of the cartridge 200.

[137] The PCB assembly 150 may be mounted in the mounting space 144. A plate 160 may cover the PCB assembly 150, and may be disposed in the mounting space 144. The window 170 may cover the PCB assembly 150 and the mounting space 144. The PCB assembly 150, the plate 160, and the window 170 may be sequentially stacked. The mounting space 144 may be referred to as an assembly accommodation space 144.

[138] The PCB assembly 150 may include at least one of a printed circuit board (PCB) 151, a light source 153, or a first sensor 154. The light source 153 may be mounted on the PCB 151. At least one light source 153 may be provided. The first sensor 154 may be mounted on the PCB. The light source 153 and the first sensor 154 may be mounted at different positions on a single PCB. The first sensor 154 may be mounted in a region avoiding the at least one light source 153.

[139] The PCB assembly 150 may be disposed inside the column 140 so as to face the cartridge 200. The PCB assembly 150 may face the first container 210, which is provided with the first chamber C1 and the insertion space 214. The PCB assembly 150 may be elongated vertically along the column 140. A connector 152 for electrical connection may be formed at one end of the PCB assembly 150.

[140] The PCB 151 may be elongated vertically along the column 140. The PCB 151 may be a flexible printed circuit board (FPCB). The connector 152 may be formed at one end of the PCB 151. A plurality of light sources 153 may be arranged on the PCB 151. The first sensor 154 may be located at the center of the PCB 151. The first sensor 154 may be located between the light sources 153, and at least one light source 153 may be disposed on each side of the first sensor 154. The plurality of light sources 153 may be arranged vertically along the PCB 151. The plurality of light sources 153 may be arranged in the longitudinal direction of the column 140. The first sensor 154 may be disposed so as to face the insertion space 214. The light sources 153 may be disposed so as to face the outside of the insertion space 214. The light sources 153 may emit light toward the outside of the insertion space 214 so that the light is provided to the first chamber C1. The light sources 153 may be Light Emitting Diodes.

[141] Accordingly, the light sources 153 may provide uniform light to the first chamber C1.

[142] In addition, it is possible to prevent the paths of light provided by the light sources 153 from being blocked by the stick 400 inserted into the insertion space 214.

- [143] The first sensor 154 may be elongated vertically along the PCB 151. The first sensor 154 may be elongated along the first container 210 or the insertion space 214. The first sensor 154 may face the insertion space 214. The first sensor 154 may sense information about the cartridge 200. For example, the first sensor 154 may sense at least one of information about a change in the remaining amount of liquid stored in the first chamber C1 in the cartridge 200, information about the type of liquid stored in the first chamber C1 in the cartridge 200, information about whether the stick 400 is inserted into the insertion space 214 in the cartridge 200, information about the type of stick 400 inserted into the insertion space 214 in the cartridge 200, information about the extent of use or the availability of the stick 400 inserted into the insertion space 214 in the cartridge 200, information about whether the cartridge 200 having the stick 400 inserted into the insertion space 214 is coupled to the body 100, or information about the type of cartridge 200 coupled thereto. The information about the cartridge 200 is not limited to the aforementioned information.
- [144] The first sensor 154 may sense a change in the electromagnetic characteristics of the cartridge 200 to sense information about the cartridge 200. The first sensor 154 may sense a change in electromagnetic characteristics caused by a neighboring object. For example, the first sensor 154 may be a capacitance sensor. For example, the first sensor 154 may be a magnetic proximity sensor. The type of first sensor 154 is not limited thereto. For example, when the stick 400 is inserted into the insertion space 214 in the cartridge 200 or when there is a change in the volume of the liquid stored in the first chamber C1, the electromagnetic characteristics sensed by the first sensor 154 may change, and the first sensor 154 may measure the change to sense information about the cartridge 200.
- [145] The first sensor 154 may include a conductor. The conductor may be formed to have a length corresponding to the insertion space 214 in the direction in which the insertion space 214 of the cartridge 200 extends. For example, the conductor may be formed to have a maximum length adjacent to the upper and lower sides of the PCB 151 in the longitudinal direction of the column 140, respectively.
- [146] The first sensor 154 may generate and output a signal. The first sensor 154 may generate a signal while current flows through the conductor. The first sensor 154 may generate a signal corresponding to an electromagnetic characteristic of the surroundings, for example, a capacitance around the conductor.
- [147] The window 170 may be coupled to the column 140. The window 170 may be formed of a transparent material. The window 170 may allow light to pass therethrough. The window 170 may be coupled to the column 140 to cover the PCB assembly 150 (refer to FIG. 19). The window 170 may have a shape that extends vertically along the column 140. The window 170 may be disposed between the

column 140 and the cartridge 200. The window 170 may be disposed adjacent to the inner side wall 141 of the column 140. The window 170 may cover one side portion of the cartridge 200. The window 170 may face the side portion of the cartridge 200. The window 170 may be formed to be thin so that the PCB assembly 150 is adjacent to the cartridge 200.

[148] One surface 171a of the window 170 may be in contact with the side portion of the cartridge 200 to support the cartridge 200 (refer to FIGs. 4 to 6). The opposite surface 171b of the window 170 may be in close contact with the PCB assembly 150 (refer to FIG. 20). The surface 171a of the window 170 may be referred to as the front surface of the window 170. The opposite surface 171b of the window 170 may be referred to as the rear surface of the window 170.

[149] The surface 171a of the window 170 may have a shape corresponding to that of the outer wall 211 of the first container 210, which forms the circumference of the insertion space 214. The insertion space 214 may be adjacent to the column 140 and the PCB assembly 150 (refer to FIG. 8). The insertion space 214 may be located between the first chamber C1 and the column 140. The outer wall 211 of the first container 210, which surrounds the circumference of the insertion space 214, may have a round shape that extends along the circumference of the insertion space 214. The surface 171a of the window 170 may have a round shape that surrounds the outer side of the insertion space 214. The surface 171a of the window 170 may have a round shape that surrounds the outer wall 211 of the first container 210, which forms the circumference of the insertion space 214. The surface 171a of the window 170 may have a shape that is concave in the direction opposite the cartridge 200. The surface 171a of the window 170 may support one side wall of the cartridge 200.

[150] At least one recess 174, in which the light source 153 is accommodated, may be formed in the opposite surface 171b of the window 170. The recess 174 may be referred to as a light source recess 174 or a window recess 174. The light source recess 174 may be recessed toward the surface 171a from the opposite surface 171b of the window 170. Each of the plurality of light source recesses 174 may accommodate and cover a respective one of the plurality of light sources 153. Each of the plurality of light source recesses 174 may be formed at a position corresponding to the position of a respective one of the plurality of light sources 153. The plurality of light source recesses 174 may be arranged vertically. The first sensor 154 may be located between the plurality of light source recesses 174, and at least one light source recess 174 may be disposed on each side of the first sensor 154.

[151] The opposite surface 171b of the window 170 may include a planar portion 172, which is formed to be flat. The planar portion 172 may be in close contact with the PCB assembly 150. The planar portion 172 may be inserted into the mounting space

144 in the column 140 (refer to FIG. 17). The light source recess 174 may be formed by depressing the planar portion 172.

[152] The PCB assembly 150 may have a plurality of through-holes 151a formed therein. The through-holes 151a may be formed at one side of the PCB 151. The through-holes 151a may be formed in the upper portion of the PCB 151. The through-holes 151a may be located above the light source 153 and/or the first sensor 154. The through-holes 151a may be located on both sides of the PCB 151.

[153] The window 170 may include a plurality of penetrating protrusions 172a. The penetrating protrusions 172a may protrude from the opposite surface 171b of the window 170. The penetrating protrusions 172a may be formed at positions corresponding to the through-holes 151a. The penetrating protrusions 172a may protrude toward the through-holes 151a. The penetrating protrusions 172a may pass through the through-holes 151a. A plurality of penetrating protrusions 172a may be provided. Each of the plurality of penetrating protrusions 172a may pass through a respective one of the plurality of through-holes 151a. The penetrating protrusions 172a may pass through the through-holes 151a, so the PCB assembly 150 and the window 170 may be disposed at the correct positions.

[154] The window 170 may include a latching protrusion 173. The latching protrusion 173 may be formed on the opposite surface 171b of the window 170. The latching protrusion 173 may protrude from each side of the planar portion 172. The latching protrusion 173 may be provided in a plural number, and the plurality of latching protrusions 173 may be arranged in the vertical direction. Each of the plurality of latching protrusions 173 may have a shape that is elongated vertically so as to correspond to a side flange portion 1451.

[155] The column 140 may include a flange 145. The flange 145 may be disposed inside the inner side wall 141 of the column 140. The flange 145 may protrude inwards from the inner side wall 141 of the column 140. The flange 145 may be integrally formed with the column 140. The flange 145 may protrude toward the inside of the column 140 to form an edge. The flange 145 may extend along the circumference of the assembly accommodation space 144. The flange 145 may have an open center, through which the assembly accommodation space 144 and the cartridge accommodation space 134 may be connected to each other.

[156] The flange 145 may include at least one of a side flange portion 1451, a lower flange portion 1452, or an upper flange portion 1453. The flange 145 may be formed in a manner such that the side flange portion 1451, the lower flange portion 1452, and the upper flange portion 1453 are connected to each other. The side flange portion 1451 may have a shape that is elongated in the longitudinal direction of the column 140. The side flange portion 1451 may be provided in a pair, and the pair of side flange portions

1451 may be spaced apart from each other and may be formed on both sides of the column 140. The lower flange portion 1452 and the upper flange portion 1453 may be disposed between the pair of side flange portions 1451, and may be connected thereto. The side flange portions 1451, the lower flange portion 1452, and the upper flange portion 1453 may be connected to each other to form the periphery of the flange 145. The region surrounded by the side flange portions 1451, the lower flange portion 1452, and the upper flange portion 1453 may be open, so the assembly accommodation space 144 and the cartridge accommodation space 134 may communicate with each other.

[157] The opposite surface 171b of the window 170 may be attached to the flange 145. The edge of the opposite surface of the window 170 may be attached to the flange 145. The opposite surface 171b of the window 170 may be attached to the flange 145 using an adhesive member. The adhesive member may be, for example, a sheet of tape or glue. The adhesive member is not limited thereto. The latching protrusions 173 may be engaged with the flange 145, so the window 170 may be coupled to the flange 145. The latching protrusions 173 may be engaged with the side flange portions 1451. The flange 145 may have a shape corresponding to the shape of the opposite surface 171b of the window 170, which is adjacent to the edge of the window 170. The lower flange portion 1452 and the upper flange portion 1453 may have a concave shape.

[158] Accordingly, the PCB assembly 150 may be protected from the outside, and may be prevented from becoming separated.

[159] In addition, light emitted from the PCB assembly 150 may be provided to the cartridge 200.

[160] In addition, the window 170, the cartridge 200, and the PCB assembly 150 may be reliably coupled or fixed to each other.

[161] The plate 160 may cover the region in the PCB assembly 150 that avoids the at least one light source 153. The plate 160 may be attached to the PCB assembly 150 to cover the first sensor 154. The plate 160 may allow an electromagnetic wave to pass therethrough. The plate 160, through which an electromagnetic wave passes, may not allow visible light to pass therethrough, or may be translucent.

[162] Printed circuits, which are connected to the light sources 153, may be printed on the region in the PCB 151 that is adjacent to the light sources 153. The plate 160 may cover the printed circuits printed on the PCB 151 in the vicinity of the light sources 153. The plate 160 may have a shape that extends vertically along the first sensor 154 and extends further from the vertically extending portion thereof toward the printed circuits.

[163] The plate 160 may expose the light sources 153, rather than covering the same. The light sources 153 may be disposed on both sides of the first sensor 154, with the first sensor 154 interposed therebetween, and may be arranged in the vertical direction.

Portions of the plate 160 that correspond to the positions of the light sources 153 may be open. When the plate 160 is attached to the PCB assembly 150, the light sources 153 may be exposed through the open portions of the plate 160.

[164] Accordingly, light emitted from the light sources 153 may not be blocked, and the first sensor 154 and/or the printed circuits printed on the PCB 151 may not be exposed to the outside, and may be protected from the outside.

[165] In addition, the first sensor 154 may sense a change in the electromagnetic characteristics of the surroundings in the state of being covered by the plate 160.

[166] Referring to FIG. 20, the PCB assembly 150 may be disposed inside the column 140, and may be elongated along the column 140. The PCB 151 may be elongated along the column 140. The connector 152, which is formed at one end of the PCB assembly 150, may be exposed downwards from the upper body 120. The connector 152 may be exposed downwards from the column 140. The connector 152 may be exposed downwards from the mount 130. The lower end of the column 140 may be open to form a gap 146. The connector 152 may be exposed downwards through the gap 146. The gap 146 may communicate with the mounting space 144 (FIG. 17).

[167] The mount 130 may include the sensor accommodation portion 137. The sensor accommodation portion 137 may be formed in one side wall of the mount 130. The sensor accommodation portion 137 may provide a space 137b formed in the side wall of the mount 130 so as to be open downwards to accommodate the second sensor 180 inserted thereto. The space 137b provided by the sensor accommodation portion 137 may be referred to as a sensor accommodation space 137b. The inner side surface of the sensor accommodation portion 137 may form a portion of the inner side surface 131 of the mount 130. The outer side surface of the sensor accommodation portion 137 may form a portion of the outer side surface 132 of the mount 130. The sensor accommodation portion 137 may be formed at a position opposite the column 140 with respect to the cartridge accommodation space 134. The column 140 may extend upwards from one side of the mount 130, and the sensor accommodation portion 137 may be formed at the opposite side of the mount 130.

[168] The inner side surface 131 of the sensor accommodation portion 137 may be open to form a sensing hole 137a. The sensing hole 137a may be formed between the sensor accommodation space 137b and the cartridge accommodation space 134 to interconnect the sensor accommodation space 137b and the cartridge accommodation space 134. The sensing hole 137a may be adjacent to the cartridge inlet 224 (refer to FIG. 8). The sensing hole 137a may face the cartridge inlet 224.

[169] The sensing hole 137a may be open in the lateral direction. The side portion of the second container 220 may be open to form the cartridge inlet 224, and the sensing hole 137a, which is open in the lateral direction, may face the cartridge inlet 224 (refer to

FIG. 8).

- [170] Referring to FIGs. 21 and 22, the partition wall 112 of the lower body 110 may cover the upper side of the battery 190. The partition wall 112 may be disposed in the upper portion of the lower body 110 in a direction intersecting the side wall 111 of the lower body 110. The partition wall 112 may cover the upper sides of internal components of the lower body 110. The partition wall 112 may separate the space in which internal components of the lower body 110 are mounted from the space in which the upper body 120 is coupled. The partition wall 112 may be disposed below the upper body 120. The side wall 111 of the lower body 110 may extend upwards beyond the partition wall 112, and may surround the circumference of the partition wall 112. The inner circumferential surface of the side wall 111 of the lower body 110, which extends above the partition wall 112, may surround the circumference of the lower portion of the mount 130.
- [171] The second sensor 180 may be mounted on one side of the upper portion of the lower body 110. The second sensor 180 may be disposed on the partition wall 112. The second sensor 180 may be disposed at a position corresponding to the sensor accommodation portion 137 of the mount 130. The sensor support portion 185 may extend upwards from one side of the partition wall 112 to support the second sensor 180. The second sensor 180 may be disposed so as to face the lateral direction.
- [172] The upper body 120 may be coupled to the upper side of the lower body 110. The body latch 115 may be formed at the upper portion of the lower body 110. The body latch 115 may be formed at one end of the partition wall 112. The body latch 115 may have a protruding shape. The body latch 115 may be inserted into the fastening hole 135 in the mount 130, so the mount 130 and the lower body 110 may be coupled to each other.
- [173] The body rib 116 may have a shape that protrudes from the inner circumferential surface of the side wall 111 of the lower body 110. The body rib 116 may have a shape that extends along the inner circumferential surface of the side wall 111 of the lower body 110. The body rib 116 may be made of an elastic material. For example, the body rib 116 may be made of a material such as rubber or silicon. The body rib 116 may be disposed above the partition wall 112. The body rib 116 may be inserted into and be in close contact with the rib groove 136 in the mount 130.
- [174] The second fixing portion 118 may be disposed in the upper portion of the lower body 110. The second fixing portion 118 may be formed at a position corresponding to the first fixing portion 138. The second fixing portion 118 may be formed near the partition wall 112. The second fixing portion 118 may have a shape that protrudes upwards or is recessed downwards. The second fixing portion 118 may be provided in a plural number. The second fixing portion 118 may be coupled to the first fixing

portion 138 of the mount 130.

[175] Accordingly, the upper body 120 may be coupled to the lower body 110.

[176] In addition, the position of the mount 130 may be reliably fixed to the lower body 110, and the upper body 120 may be prevented from shaking relative to the lower body 110.

[177] The bottom 133 of the mount 130 may be open to form a connection terminal hole 133a. The connection terminal hole 133a may have a slit shape. The connection terminal hole 133a may be formed in a pair (refer to FIG. 20). A first connection terminal 191 may be formed so as to protrude upwards from the partition wall 112. The first connection terminal 191 may be provided in a pair. The first connection terminal 191 and the connection terminal hole 133a may be formed at positions corresponding to each other. When the upper body 120 is coupled to the lower body 110, the first connection terminal 191 may pass through the connection terminal hole 133a, and may be exposed to the cartridge accommodation space 134. When the second cartridge 200 is coupled to the upper body 120, the heater 262 (refer to FIG. 8) may come into contact with the first connection terminal 191, and may be electrically connected to at least one of devices such as the battery 190 and the control device 193. The devices that are electrically connected to the heater are not limited thereto.

[178] The PCB assembly 150 may be electrically connected to a device provided in the lower body 110 via the connector 152, which is exposed downwards from the upper body 120. One side of the partition wall 112 may be open to form a connector insertion hole 117. The connector insertion hole 117 may be formed at a position corresponding to the column 140. The connector insertion hole 117 may be open upwards. A connection terminal 192 may be located below the connector insertion hole 117 inside the lower body 110. When the upper body 120 is coupled to the lower body 110, the connector 152 may be inserted into the connector insertion hole 117, and may come into contact with the second connection terminal 192. When the connector 152 comes into contact with the second connection terminal 192, the PCB assembly 150 may be electrically connected to at least one of devices such as the battery 190 and the control device 193 via the connector 152. The devices that are electrically connected to the PCB assembly are not limited thereto.

[179] When the upper body 120 is coupled to the lower body 110, the second sensor 180 may be inserted into the space 137b provided by the sensor accommodation portion 137. The sensor accommodation portion 137 may surround the second sensor 180. The sensor accommodation portion 137 may surround the second sensor 180. When the mount 130 is coupled to the lower body 110, the second sensor 180 may be inserted upwards from the lower side of the sensor accommodation space 137b. The sensing hole 137a formed by opening the sensor accommodation portion 137 may be opened

toward the cartridge 200. The sensing hole 137a, which is formed at the sensor accommodation portion 137, may be open toward the cartridge 200. The second sensor 180 may face the sensing hole 137a inside the sensor accommodation portion 137. The second sensor 180 may be disposed so as to face the cartridge inlet 224 (refer to FIG. 8) inside the sensor accommodation portion 137. The second sensor 180 may sense the flow of air around the sensing hole 137a.

[180] Referring to FIGs. 23 to 25, the cartridge 200 may include at least one of the first container 210, the second container 220, the wick 261, or the heater 262. The cartridge 200 may include the sealing member 250.

[181] The first container 210 may be formed to have a hollow shape. The outer wall 211 of the first container 210 may surround the inner space. The first container 210 may provide the first chamber C1 storing liquid therein. One side or the lower side of the first chamber C1 may be open. The first container 210 may include an insertion space 214 into which the stick 400 is capable of being inserted. The first chamber C1 and the stick 400 may be provided separately from each other inside the first container 210. The insertion space 214 may have two open opposite ends, and may be elongated. The insertion space 214 may be elongated vertically, and the upper and lower ends thereof may be open. The circumference of the insertion space 214 may extend in the circumferential direction. The insertion space 214 may have a cylindrical shape.

[182] The inner wall 212 of the first container 210 may be located inside the first container 210, and may partition the inner space in the first container 210. The inner wall 212 of the first container 210 may partition the space surrounded by the outer wall 211 of the first container 210 into the first chamber C1 on one side and the insertion space 214 on the other side. The inner wall 212 of the first container 210 may extend in the circumferential direction to surround at least a portion of the circumference of the insertion space 214.

[183] Accordingly, the efficiency of use of a liquid storage space may be improved, and the user may be provided with improved convenience during an inhalation operation.

[184] The second container 220 may be coupled to the first container 210. The second container 220 may be coupled to one side or the lower side of the first container 210. The second container 220 may block the open side of the first chamber C1. The second container 220 may provide therein the second chamber C2 communicating with the insertion space 214. The wick 261 may be disposed in the second container 220.

[185] The cartridge inlet 224 may communicate with the second chamber C2 and the outside of the cartridge 200. The cartridge inlet 224 may allow the second chamber C2 to communicate with the outside of the cartridge 200. The cartridge inlet 224 may be formed at the outer wall of the second container 220. The cartridge inlet 224 may be formed in the side wall 221 of the second container 220. The cartridge inlet 224 may

be open in the lateral direction. The cartridge inlet 224 may be formed at a position higher than the bottom 222 of the second container 220.

[186] Accordingly, it is possible to prevent droplets in a connection passage 2314 from leaking out of the cartridge 200 through the cartridge inlet 224.

[187] The second container 220 may include at least one of the lower case 230 or the frame 240. The lower case 230 may form the external appearance of the second container 220. The lower case 230 may be disposed below the first container 210. The lower case 230 may be coupled to the first container 210. The lower case 230 may be coupled to the outer wall 211 of the first container 210. The circumference of the lower case 230 may be coupled to the circumference of the first container 210. The cartridge inlet 224 may be formed at the outer wall of the lower case 230. The cartridge inlet 224 may be formed in the side wall 2311 of the lower case 230. The cartridge inlet 224 may be formed at a position higher than the bottom 2312 of the lower case 230. The lower case 230 may provide therein an accommodation space 2310. The lower case 230 may accommodate at least a portion of the frame 240 in the accommodation space 2310. The lower case 230 may support the frame 240.

[188] The lower case 230 may include the accommodation portion 231. The accommodation portion 231 may provide therein an accommodation space 2310. The accommodation space 2310 may be formed at the accommodation portion 231 upwards. The accommodation portion 231 may surround the side portion and the lower portion of the accommodation space 2310. The side wall 2311 of the accommodation portion 231 may surround the side portion of the accommodation space 2310. The bottom 2312 of the accommodation portion 231 may cover the lower portion of the accommodation space 2310. The second chamber C2 may be formed at a position at which the accommodation space 2310 is formed. The accommodation portion 231 may surround a portion of the second chamber C2.

[189] The cartridge inlet 224 may be formed at one side of the accommodation portion 231. The cartridge inlet 224 may be formed at the outer wall of the accommodation portion 231. The cartridge inlet 224 may be formed in one side wall 2311 of the accommodation portion 231. The cartridge inlet 224 may be adjacent to the lower side of the extension portion 232. The cartridge inlet 224 may be formed at a position higher than the bottom 2312 of the accommodation portion 231.

[190] The accommodation portion 231 may provide therein a connection passage 2314. The connection passage 2314 may communicate with the cartridge inlet 224. The connection passage 2314 may be formed between the accommodation portion 231 and the frame 240. The connection passage 2314 may be surrounded by the accommodation portion 231 and the frame 240. The connection passage 2314 may be located between the cartridge inlet 224 and the chamber inlet 2424. The connection passage

2314 may interconnect the cartridge inlet 224 and the chamber inlet 2424.

[191] The blocking wall 2317 may be formed in the connection passage 2314. The blocking wall 2317 may be formed so as to protrude upwards from the bottom of the connection passage 2314. The blocking wall 2317 may be formed so as to protrude upwards from the bottom 2312 of the accommodation portion 231 or the bottom of the frame 240. The connection passage 2314 may surround the blocking wall 2317. The blocking wall 2317 may be disposed between the cartridge inlet 224 and the chamber inlet 2424. The blocking wall 2317 may be disposed between the side wall 2311 of the accommodation portion 231 and the side wall 2421 of the second frame portion 242. The blocking wall 2317 may be formed parallel to the side wall 2311 of the accommodation portion 231. The blocking wall 2317 may face the side wall 2311 of the accommodation portion 231. The blocking wall 2317 may be formed parallel to the side wall 2421 of the second frame portion 242. The blocking wall 2317 may face the side wall 2421 of the second frame portion 242. The blocking wall 2317 may extend to a position higher than the cartridge inlet 224 and/or the chamber inlet 2424. The blocking wall 2317 may extend to a position lower than the extension portion 232 and/or a bottom portion 2411. The blocking wall 2317 may be elongated in a direction intersecting the direction in which the cartridge inlet 224 and/or the chamber inlet 2424 are open. The cartridge inlet 224 may face the blocking wall 2317. The chamber inlet 2424 may face the blocking wall 2317.

[192] Accordingly, it is possible to prevent droplets generated in the second chamber C2 from leaking out of the cartridge 200 through the cartridge inlet 224.

[193] The lower case 230 may include the extension portion 232 extending outwards from the accommodation portion 231. The extension portion 232 may extend outwards from the upper end of one side of the accommodation portion 231. The extension portion 232 may extend outwards from the side wall 2311 of the accommodation portion 231 in which the cartridge inlet 224 is formed. The extension portion 232 may be located below the first chamber C1. The extension portion 232 may support the first frame portion 241.

[194] The lower case 230 may include a peripheral portion 2322, which is coupled to the circumference of the first container 210. The peripheral portion 2322 may extend from the upper end of the lower case 230 along the circumference of the lower case 230. The peripheral portion 2322 may extend along the circumference of each of the receiving portion 231 and the extension portion 232. The peripheral portion 2322 may have the shape of a continuous band. The peripheral portion 2322 may have a shape that protrudes upwards from the circumference of the lower case 230. The peripheral portion 2322 may be coupled to the lower end of the outer wall 211 of the first container 210. The lower end of the outer wall 211 of the first container 210 may be

recessed upwards so that the peripheral portion 2322 is inserted thereinto. The peripheral portion 2322 and the outer wall 211 of the first container 210 may be attached to each other using an adhesive member. The adhesive member may be, for example, a sheet of tape or glue. The adhesive member is not limited thereto.

[195] The frame 240 may be disposed between the lower case 230 and the first container 210. At least a portion of the frame 240 may be accommodated in the accommodation space 2310. The frame 240 may be coupled to the lower case 230 in the accommodation space 2310. The frame 240 may block the open side or the lower side of the first chamber C1. The frame 240 may form the bottom of the first chamber C1. The frame 240 may partition the inside of the lower case 230 to provide the second chamber C2. The frame 240 may surround at least a portion of the second chamber C2. The second chamber C2 may be surrounded by the frame 240 and the outer wall of the accommodation portion 231. The second chamber C2 may be formed below the insertion space 214. The second chamber C2 may communicate with the lower end of the insertion space 214. The chamber inlet 2424 may be formed at one side of the frame 240. The chamber inlet 2424 may communicate with the second chamber C2.

[196] The frame 240 may include the first frame portion 241, which forms the bottom of the first chamber C1. The first frame portion 241 may block the open side of the first chamber C1. The frame 240 may include the second frame portion 242, which partitions the inside of the lower case 230 to provide the second chamber C2. The second frame portion 242 may be accommodated in the lower case 230. The second frame portion 242 may be connected to the first frame portion 241. The second frame portion 242 may surround at least a portion of the second chamber C2.

[197] The second frame portion 242 may be accommodated in the accommodation space 2310. The side wall 2421 of the second frame portion 242 may surround at least a portion of the side portion of the second chamber C2. The bottom 2422 of the second frame portion 242 may form the bottom of the second chamber C2. The accommodation portion 231 may support the second frame portion 242. The bottom 2312 of the accommodation portion 231 may support the bottom 2422 of the second frame portion 242. The chamber inlet 2424 may be formed at the side wall 2421 of the second frame portion 242. The chamber inlet 2424 may be open in the lateral direction. The chamber inlet 2424 may be formed at a position higher than the bottom of the second chamber C2 or the bottom 2422 of the second frame portion 242.

[198] Accordingly, it is possible to prevent droplets generated in the second chamber C2 from leaking out of the second chamber C2 through the chamber inlet 2424.

[199] The first frame portion 241 may have a shape that extends outwards from one side of the second frame portion 242. The first frame portion 241 may extend in the direction in which the extension portion 232 extends from the upper portion of the accom-

modation space 2310. The first frame portion 241 may cover a portion of the upper side of the lower case 230. The lower case 230 may support a surface of the first frame portion 241.

- [200] The bottom portion 2411 of the first frame portion 241 may form the bottom of the first chamber C1. The bottom portion 2411 of the first frame portion 241 may extend outwards from the upper end of the side wall 2421 of the second frame portion 242. The bottom portion 2411 of the first frame portion 241 may extend in the direction in which the extension portion 232 is formed. The bottom portion 2411 of the first frame portion 241 may cover the extension portion 232 and the upper side of the connection passage 2314. The bottom portion 2411 of the first frame portion 241 may be supported by the extension portion 232.
- [201] The side wall 2412 of the first frame portion 241 may extend from one side of the circumference of the bottom 2422 of the second frame portion 242 along the circumference of the bottom portion 2411 of the first frame portion 241. The side wall 2412 of the first frame portion 241 may have the shape of a band that extends along the edge of the bottom portion 2411 of the first frame portion 241. The side wall 2412 of the first frame portion 241 may protrude upwards from the edge of the bottom portion 2411. The portion of the side wall 2412 of the first frame portion 241 that is adjacent to the second frame portion 242 may be accommodated in the accommodation space 2310. The side wall 2311 of the accommodation portion 231 may support the portion of the side wall 2412 of the first frame portion 241 that is adjacent to the second frame portion 242.
- [202] The side wall 2311 and the bottom 2312 of the accommodation portion 231 may surround one side of the connection passage 2314. The bottom portion 2411 of the first frame portion 241 and the side wall 2421 of the second frame portion 242 may surround the opposite side of the connection passage 2314. A round surface 2418 may extend to form a round shape between the first frame portion 241 and the second frame portion 242. The round surface 2418 may face one side of the connection passage 2314. The round surface 2418 may extend to form a round shape from the first frame portion 241 toward the chamber inlet 2424. The round surface 2418 may extend to form a round shape from the bottom portion 2411 of the first frame portion 241 toward the side wall 2421 of the second frame portion 242. The round surface 2418 may be located above the connection passage 2314. The round surface 2418 may be spaced upwards apart from the blocking wall 2317. A portion of the connection passage 2314 may be located between the round surface 2418 and the blocking wall 2317.
- [203] A hook 2415 may be formed at the first frame portion 241. The hook 2415 may be formed adjacent to the circumference of the first frame portion 241. The hook 2415 may protrude upwards from the bottom portion 2411 of the first frame portion 241, and

may be bent outwards. The hook 2415 may be located adjacent to or in contact with the side wall 2412 of the first frame portion 241. The end of the hook 2415 may be bent outwards, and may be disposed above the side wall 2412 of the first frame portion 241. The hook 2415 may be provided in a plural number. The plurality of hooks 2415 may be arranged along the circumference of the first frame portion 241. Three hooks 2415 may be provided. The sealing member 250 may be engaged with the hook 2415.

[204] The wick 261 may be disposed in the second chamber C2. The wick 261 may be connected to the first chamber C1. The wick 261 may receive the liquid stored in the first chamber C1 from the first chamber C1. The heater 262 may be disposed in the second chamber C2. The heater 262 may heat the wick 261. The heater 262 may be wound around the wick 261. The heater 262 may generate an aerosol in the second chamber C2 by heating the wick 261 containing the liquid. The wick 261 may be fixed to the second frame portion 242. A wick insertion recess 2426 may be formed in a manner such that the side wall 2421 of the second frame portion 242 is recessed downwards. A pair of wick insertion recesses 2426 may be formed in two opposite side portions of the side wall. Each of the two ends of the wick 261 may be inserted into and fixed to a respective one of the pair of wick insertion recesses 2426.

[205] Air may be introduced into the cartridge 200 through the cartridge inlet 224. The air introduced through the cartridge inlet 224 may sequentially pass through the connection passage 2314, the chamber inlet 2424, the second chamber C2, and the insertion space 214. The air passing through the connection passage 2314 may flow along the round surface 2418 between the blocking wall 2317 and the round surface 2418, and may flow into the chamber inlet 2424. The air passing through the second chamber C2 may flow together with the aerosol generated in the second chamber C2.

[206] Accordingly, it is possible to reduce air flow loss in the connection passage 2314.

[207] In addition, the aerosol may be provided to the insertion space 214 and/or the stick 400 inserted into the insertion space 214.

[208] The sealing member 250 may be disposed between the first container 210 and the second container 220. The sealing member 250 may be disposed between the first chamber C1, having an open side, and the second container 220, blocking the open side of the first chamber C1. The sealing member 250 may be disposed between or inserted into the gap between the first chamber C1 and the frame 240. The sealing member 250 may surround the lower edge of the first chamber C1. The sealing member 250 may be in close contact with the first container 210 and the frame 240. A portion of the sealing member 250 may be in close contact with the second container 220. The sealing member 250 may have the shape of a continuous band.

[209] Accordingly, it is possible to prevent the liquid stored in the first chamber C1 from leaking into the gap formed in the coupling portion between the members defining the

first chamber C1.

[210] The sealing member 250 may include at least one of the first sealing portion 251 or the second sealing portion 252. The first sealing portion 251 may be disposed between or inserted into the gap between the outer wall 211 of the first container 210 and the first frame portion 241. The first sealing portion 251 may extend along the outer wall 211 of the first container 210. The first sealing portion 251 may be in close contact with the outer wall 211 of the first container 210 and the side wall 2411 of the first frame portion 241. The first sealing portion 251 may be engaged with the hooks 2415 formed at the first frame portion 241. The plurality of hooks 2415 may be arranged along the circumference of the first sealing portion 251. At least part of the first sealing portion 251 may be inserted into the gap between and be in close contact with the ends of the hooks 2415 and the side wall 2412 of the first frame portion 241.

[211] The second sealing portion 252 may be connected to the first sealing portion 251. The second sealing portion 252 may be disposed between the inner wall 212 of the first container 210 and the second frame portion 242. The second sealing portion 252 may be disposed between the first chamber C1 and the second chamber C2. The second sealing portion 252 may extend from the first sealing portion 251 along the inner wall 212 of the first container 210. The second sealing portion 252 may be in close contact with the inner wall 212 of the first container 210 and the upper end of the second frame portion 242. The inner wall 212 of the first container 210 may press the upper portion of the second sealing portion 252 toward the second frame portion 242. A part of the second sealing portion 252 may be inserted into the second frame portion 242.

[212] Referring to FIG. 25, the side wall 2421 of the second frame portion 242 may surround the side portion of the second chamber C2. The side wall 2421 of the second frame portion 242 may be adjacent to the lower end of the inner wall 212 of the first container 210.

[213] The lower support surface 2522 and the side support surface 2523 may surround and be in close contact with the lower edge of the inner wall 212 of the first container 210. The lower support surface 2522 may support the lower end surface of the inner wall 212 of the first container 210. The lower support surface 2522 may extend along the circumference of the inner wall 212 of the first container 210.

[214] The side support surface 2523 may extend along the circumference of the inner wall 212 of the first container 210. The side support surface 2523 may support the side surface that is adjacent to the lower end surface of the inner wall 212 of the first container 210.

[215] The support portion 2428 may be disposed below the inner wall 212 of the first container 210. The support portion 2428 may be located along a line extrapolated from the inner wall 212 of the first container 210.

- [216] The first container 210 may be coupled to the second container 220. The outer wall 211 of the first container 210 may be coupled to the circumference of the lower case 230. The lower end of the outer wall 211 of the first container 210 may be recessed upwards so that the peripheral portion 2322 is inserted therewith. The outer wall 211 of the first container 210 may be attached to the peripheral portion 2322.
- [217] When the first container 210 is coupled to the lower case 230, the first sealing portion 251 may be in close contact with the first frame portion 241 and the outer wall 211 of the first container 210.
- [218] When the first container 210 is coupled to the lower case 230, the inner wall 212 of the first container 210 may press the second sealing portion 252 toward the second frame portion 242. When the inner wall 212 of the first container 210 presses the second sealing portion 252, the second sealing portion 252 may come into close contact with the inner wall 212 of the first container 210 and the second frame portion 242. The second sealing portion 252 may transmit the force received from the inner wall 212 of the first container 210 to the first sealing portion 251 and the second frame portion 242.
- [219] Accordingly, the number of parts that are coupled using adhesive members may be reduced, and the number of parts for coupling components may be reduced. As a result, the structure for coupling components in the cartridge 200 may be simplified, and manufacturing efficiency may be improved.
- [220] In addition, the sealing member 250 may be stably coupled or fixed without using a separate adhesive member, and may be in close contact with neighboring components, thereby hermetically sealing the same.
- [221] Referring to FIG. 26, the aforementioned stick 400 may include a medium portion 410. The stick 400 may include a cooling portion 420. The stick 400 may include a filter portion 430. The cooling portion 420 may be disposed between the medium portion 410 and the filter portion 430. The stick 400 may include a wrapper 440. The wrapper 440 may wrap the medium portion 410. The wrapper 440 may wrap the cooling portion 420. The wrapper 440 may wrap the filter portion 430. The stick 400 may have a cylindrical shape.
- [222] The medium portion 410 may include a medium 411. The medium portion 410 may include a first medium cover 413. The medium portion 410 may include a second medium cover 415. The medium 411 may be disposed between the first medium cover 413 and the second medium cover 415. The first medium cover 413 may be disposed at one end of the stick 400. The medium portion 410 may have a length of 24 mm.
- [223] The medium 411 may contain a multicomponent substance. The substance contained in the medium may be a multicomponent flavoring substance. The medium 411 may be composed of a plurality of granules. Each of the plurality of granules may have a size

of 0.4 mm to 1.12 mm. The granules may account for approximately 70% of the volume of the medium 411. The length L2 of the medium 411 may be 10 mm. The first medium cover 413 may be made of an acetate material. The second medium cover 415 may be made of an acetate material. The first medium cover 413 may be made of a paper material. The second medium cover 415 may be made of a paper material. At least one of the first medium cover 413 or the second medium cover 415 may be made of a paper material, and may be crumpled so as to be wrinkled, and a plurality of gaps may be formed between the wrinkles so that air flows therethrough. Each of the gaps may be smaller than each of the granules of the medium 411. The length L1 of the first medium cover 413 may be shorter than the length L2 of the medium 411. The length L3 of the second medium cover 415 may be shorter than the length L2 of the medium 411. The length L1 of the first medium cover 413 may be 7 mm. The length L2 of the second medium cover 415 may be 7 mm.

- [224] Accordingly, each of the granules of the medium 411 may be prevented from being separated from the medium portion 410 and the stick 400.
- [225] The cooling portion 420 may have a cylindrical shape. The cooling portion 420 may have a hollow shape. The cooling portion 420 may be disposed between the medium portion 410 and the filter portion 430. The cooling portion 420 may be disposed between the second medium cover 415 and the filter portion 430. The cooling portion 420 may be formed in the shape of a tube that surrounds a cooling path 424 formed therein. The cooling portion 420 may be thicker than the wrapper 440. The cooling portion 420 may be made of a paper material thicker than that of the wrapper 440. The length L4 of the cooling portion 420 may be equal or similar to the length L2 of the medium 411. The length L4 of each of the cooling portion 420 and the cooling path 424 may be 10 mm. When the stick 400 is inserted into the aerosol-generating device (refer to FIG. 3), at least part of the cooling portion 420 may be exposed to the outside of the aerosol-generating device.
- [226] Accordingly, the cooling portion 420 may support the medium portion 410 and the filter portion 430, and may secure the rigidity of the stick 400. In addition, the cooling portion 420 may support the wrapper 440 between the medium portion 410 and the filter portion 430, and may provide a portion to which the wrapper 440 is adhered. In addition, the heated air and aerosol may be cooled while passing through the cooling path 424 in the cooling portion 420.
- [227] The filter portion 430 may be composed of a filter made of an acetate material. The filter portion 430 may be disposed at the other end of the stick 400. When the stick 400 is inserted into the aerosol-generating device (refer to FIG. 3), the filter portion 430 may be exposed to the outside of the aerosol-generating device. The user may inhale air in the state of holding the filter portion 430 in the mouth. The length L5 of the filter

portion 430 may be 14 mm.

- [228] The wrapper 440 may wrap or surround the medium portion 410, the cooling portion 420, and the filter portion 430. The wrapper 440 may form the external appearance of the stick 400. The wrapper 440 may be made of a paper material. An adhesive portion 441 may be formed along one edge of the wrapper 440. The wrapper 440 may surround the medium portion 410, the cooling portion 420, and the filter portion 430, and the adhesive portion 441 formed along one edge of the wrapper 440 and the other edge thereof may be adhered to each other. The wrapper 440 may surround the medium portion 410, the cooling portion 420, and the filter portion 430, but may not cover one end or the other end of the stick 400.
- [229] Accordingly, the wrapper 440 may fix the medium portion 410, the cooling portion 420, and the filter portion 430, and may prevent these components from being separated from the stick 400.
- [230] A first thin film 443 may be disposed at a position corresponding to the first medium cover 413. The first thin film 443 may be disposed between the wrapper 440 and the first medium cover 413, or may be disposed outside the wrapper 440. The first thin film 443 may surround the first medium cover 413. The first thin film 443 may be made of a metal material. The first thin film 443 may be made of an aluminum material. The first thin film 443 may be in close contact with the wrapper 440, or may be coated thereon.
- [231] A second thin film 445 may be disposed at a position corresponding to the second medium cover 415. The second thin film 445 may be disposed between the wrapper 440 and the second medium cover 415, or may be disposed outside the wrapper 440. The second thin film 445 may be made of a metal material. The second thin film 445 may be made of an aluminum material. The second thin film 445 may be in close contact with the wrapper 440, or may be coated thereon.
- [232] When a capacitance sensor for recognizing the stick is inserted in the aerosol-generating device, the capacitance sensor may sense whether the stick 400 is inserted into the aerosol-generating device.
- [233] FIG. 27 is a block diagram of an aerosol-generating device according to an embodiment of the present disclosure.
- [234] Referring to FIG. 27, an aerosol-generating device 1000 may include a communication interface 1100, an input/output interface 1200, an aerosol-generating module 1300, a memory 1400, a sensor module 1500, a battery 1600, and/or a controller 1700.
- [235] In one embodiment, the aerosol-generating device 1000 may be composed only of a body 100. In this case, components included in the aerosol-generating device 1000 may be located in the body 100. In another embodiment, the aerosol-generating device 1000 may be composed of a cartridge 200, which contains an aerosol-generating

substance, and a body 100. In this case, the components included in the aerosol-generating device 1000 may be located in at least one of the body 100 or the cartridge 200.

[236] The communication interface 1100 may include at least one communication module for communication with an external device and/or a network. For example, the communication interface 1100 may include a communication module for wired communication, such as a Universal Serial Bus (USB). For example, the communication interface 1100 may include a communication module for wireless communication, such as Wireless Fidelity (Wi-Fi), Bluetooth, Bluetooth Low Energy (BLE), ZigBee, or Near-Field Communication (NFC).

[237] The input/output interface 1200 may include an input device for receiving a command from a user and/or an output device for outputting information to the user. For example, the input device may include a touch panel, a physical button, a microphone, or the like. For example, the output device may include a display device for outputting visual information, such as a display or a light-emitting diode (LED), an audio device for outputting auditory information, such as a speaker or a buzzer, a motor for outputting tactile information such as haptic effect, or the like.

[238] The input device may include at least one button. Here, the button may be implemented by a push button or the like. For example, the input device may include a button related to power On/Off of the aerosol generating device 1000, a button related to adjusting the amount of aerosol generated, and the like.

[239] The input/output interface 1200 may transmit data corresponding to a command input by the user through the input device to another component (or other components) of the aerosol-generating device 1000. The input/output interface 1200 may output information corresponding to data received from another component (or other components) of the aerosol-generating device 1000 through the output device.

[240] The aerosol-generating module 1300 may generate an aerosol from an aerosol-generating substance. Here, the aerosol-generating substance may be a substance in a liquid state, a solid state, or a gel state, which is capable of generating an aerosol, or a combination of two or more aerosol-generating substances.

[241] According to an embodiment, the liquid aerosol-generating substance may be a liquid including a tobacco-containing material having a volatile tobacco flavor component. According to another embodiment, the liquid aerosol-generating substance may be a liquid including a non-tobacco material. For example, the liquid aerosol-generating substance may include water, solvents, nicotine, plant extracts, flavorings, flavoring agents, vitamin mixtures, etc.

[242] The solid aerosol-generating substance may include a solid material based on a tobacco raw material such as a reconstituted tobacco sheet, shredded tobacco, or

granulated tobacco. In addition, the solid aerosol-generating substance may include a solid material having a taste control agent and a flavoring material. For example, the taste control agent may include calcium carbonate, sodium bicarbonate, calcium oxide, etc. For example, the flavoring material may include a natural material such as herbal granules, or may include a material such as silica, zeolite, or dextrin, which includes an aroma ingredient.

[243] In addition, the aerosol-generating substance may further include an aerosol-forming agent such as glycerin or propylene glycol.

[244] The aerosol-generating module 1300 may include at least one heater.

[245] The aerosol-generating module 1300 may include an electro-resistive heater (for example, the heater 262, refer to FIG. 2). For example, the electro-resistive heater may include at least one electrically conductive track. The electro-resistive heater may be heated by current flowing through the electrically conductive track. In this case, the aerosol-generating substance may be heated by the heated electro-resistive heater.

[246] The electrically conductive track may include an electro-resistive material. In one example, the electrically conductive track may be formed of a metal material. In another example, the electrically conductive track may be formed of a ceramic material, carbon, a metal alloy, or a composite of a ceramic material and metal.

[247] The electro-resistive heater may include an electrically conductive track that is formed in any of various shapes. For example, the electrically conductive track may be formed in any one of a tubular shape, a plate shape, a needle shape, a rod shape, and a coil shape.

[248] The aerosol-generating module 1300 may include a heater that uses an induction-heating method. For example, the induction heater may include an electrically conductive coil. The induction heater may generate an alternating magnetic field, which periodically changes in direction, by adjusting the current flowing through the electrically conductive coil. In this case, when the alternating magnetic field is applied to a magnetic body, energy loss may occur in the magnetic body due to eddy current loss and hysteresis loss, and the lost energy may be released as thermal energy. Accordingly, the aerosol-generating substance located adjacent to the magnetic body may be heated. Here, an object that generates heat due to the magnetic field may be referred to as a susceptor.

[249] Meanwhile, the aerosol-generating module 1300 may generate ultrasonic vibrations to thereby generate an aerosol from the aerosol-generating substance.

[250] The aerosol-generating module 1300 may be referred to as a cartomizer, an atomizer, or a vaporizer.

[251] The memory 1400 may store therein a program for processing and controlling each signal in the controller 1700. The memory 1400 may store therein processed data and

data to be processed.

- [252] For example, the memory 1400 may store therein applications designed for the purpose of performing various tasks that can be processed by the controller 1700. For example, the memory 1400 may selectively provide some of the stored applications in response to the request from the controller 1700.
- [253] For example, the memory 1400 may store therein data on the operation time of the aerosol-generating device 1000, the maximum number of puffs, the current number of puffs, at least one temperature profile, and the user's inhalation pattern. Here, "puff" means inhalation by the user, and "inhalation" means the user's act of taking air or other substances into the user's oral cavity, nasal cavity, or lungs through the user's mouth or nose.
- [254] The memory 1400 may include at least one of volatile memory (e.g. dynamic random access memory (DRAM), static random access memory (SRAM), or synchronous dynamic random access memory (SDRAM)), nonvolatile memory (e.g. flash memory), a hard disk drive (HDD), or a solid-state drive (SSD).
- [255] The memory 1400 may be disposed in at least one of the body 100, the cartridge 200, or the cap 300. The memory 1400 may be disposed in each of the body 100 and the cartridge 200. For example, the memory of the body 100 may store information about components disposed in the body 100, for example, information about the full charge capacity of the battery 190, and the memory of the cartridge 200 may store information about components disposed in the cartridge 200, for example, information about the resistance value of the heater 262.
- [256] The sensor module 1500 may include at least one sensor.
- [257] For example, the sensor module 1500 may include a sensor for sensing a puff (hereinafter referred to as a "puff sensor"), for example, the second sensor 180 (refer to FIG. 2). In this case, the puff sensor may be implemented as a proximity sensor such as an IR sensor, a pressure sensor, a gyro sensor, an acceleration sensor, a magnetic field sensor, or the like.
- [258] For example, the sensor module 1500 may include a sensor for sensing the temperature of the heater 262 included in the aerosol-generating module 1300 and the temperature of the aerosol-generating substance (hereinafter referred to as a "temperature sensor").
- [259] In this case, the heater 262 included in the aerosol-generating module 1300 may also serve as the temperature sensor. For example, the electro-resistive material of the heater 262 may be a material having a temperature coefficient of resistance (TCR). The sensor module 1500 may measure the resistance of the heater 262, which varies according to the temperature, to thereby sense the temperature of the heater 262.
- [260] For example, when a stick is capable of being inserted into the body 100 of the

aerosol-generating device 1000 and/or the cartridge 200, the sensor module 1500 may include a sensor for sensing insertion of the stick (hereinafter referred to as a "stick detection sensor").

[261] For example, when the aerosol-generating device 1000 includes a cartridge 200, the sensor module 1500 may include a sensor for sensing mounting/demounting of the cartridge 200 to/from the body 100 and the position of the cartridge 200 (hereinafter referred to as a "cartridge detection sensor").

[262] In this case, the stick detection sensor and/or the cartridge detection sensor may be implemented as an inductance-based sensor, a capacitance sensor, a resistance sensor, or a Hall sensor using a Hall effect. According to an embodiment of the present disclosure, the first sensor 154 (refer to FIG. 17) may be implemented as a stick detection sensor. In addition, according to an embodiment of the present disclosure, the cartridge detection sensor may include the first connection terminal 191 (refer to FIG. 21).

[263] For example, the sensor module 1500 may include a voltage sensor for sensing a voltage applied to a component (e.g. the battery 1600) provided in the aerosol-generating device 1000 and/or a current sensor for sensing a current.

[264] For example, the sensor module 1500 may include at least one sensor (hereinafter referred to as a "contact sensor") configured to detect contact of an object. The contact sensor may be implemented by at least one of a force sensor that outputs a signal corresponding to the magnitude of force applied by contact and a touch sensor that outputs a signal corresponding to a change in state due to contact. For example, the touch sensor may be configured as a capacitive touch sensor, a resistive touch sensor, a surface acoustic wave touch sensor, an infrared touch sensor, or the like, but is not limited thereto.

[265] The battery 1600 may supply power used for the operation of the aerosol-generating device 1000 under the control of the controller 1700. The battery 1600 may supply power to other components provided in the aerosol-generating device 1000, for example, the communication module included in the communication interface 1100, the output device included in the input/output interface 1200, and the heater included in the aerosol-generating module 1300. For example, the battery 1600 may be the battery 190 accommodated in the lower body 110.

[266] The battery 1600 may be a rechargeable battery or a disposable battery. For example, the battery 1600 may be implemented as a lithium-ion battery, a lithium polymer (Li-polymer) battery, a lithium-ion phosphate battery, or the like. However, the present disclosure is not limited thereto. For example, the battery 1600 may be implemented as a lithium cobalt oxide (LiCoO₂) battery, a lithium titanate battery, or the like.

[267] The aerosol-generating device 1000 may further include a battery protection circuit

module (PCM), which is a circuit for protecting the battery 1600. The battery protection circuit module (PCM) may be disposed adjacent to the upper surface of the battery 1600. For example, in order to prevent overcharging and overdischarging of the battery 1600, the battery protection circuit module (PCM) may cut off the electrical path to the battery 1600 when a short circuit occurs in a circuit connected to the battery 1600, when overvoltage is applied to the battery 1600, or when excessive current flows through the battery 1600.

[268] The aerosol-generating device 1000 may further include a charging terminal to which power supplied from the outside is input. For example, a charging terminal (e.g. the charging port 119, refer to FIG. 2) may be formed at one side of the body 100 of the aerosol-generating device 1000, and the aerosol-generating device 1000 may charge the battery 1600 using the power supplied through the charging terminal. In this case, the charging terminal may be implemented as a wired terminal for USB communication, a pogo pin, or the like.

[269] The aerosol-generating device 1000 may wirelessly receive power supplied from the outside through the communication interface 1100. For example, the aerosol-generating device 1000 may wirelessly receive power using an antenna included in the communication module for wireless communication. For example, the aerosol-generating device 1000 may charge the battery 1600 using the wirelessly supplied power.

[270] The controller 1700 may control the overall operation of the aerosol-generating device 1000. For example, the controller 1700 may include the control device 193 accommodated in the lower body 110.

[271] The controller 1700 may be connected to each of the components provided in the aerosol-generating device 1000. The controller 1700 may transmit and/or receive a signal to and/or from each of the components, thereby controlling the overall operation of each of the components.

[272] The controller 1700 may include at least one processor. The controller 1700 may control the overall operation of the aerosol-generating device 1000 using the processor included therein. Here, the processor may be a general processor such as a central processing unit (CPU). Of course, the processor may be a dedicated device such as an application-specific integrated circuit (ASIC), or may be any of other hardware-based processors.

[273] The controller 1700 may perform any one of a plurality of functions of the aerosol-generating device 1000. For example, the controller 1700 may perform any one of a plurality of functions of the aerosol-generating device 1000 (e.g. a preheating function, a heating function, a charging function, and a cleaning function) according to the state of each of the components provided in the aerosol-generating device 1000 and the

user's command received through the input/output interface 1200.

- [274] The controller 1700 may control the operation of each of the components provided in the aerosol-generating device 1000 based on data stored in the memory 1400. For example, the controller 1700 may perform control such that a predetermined amount of power is supplied from the battery 1600 to the aerosol-generating module 1300 for a predetermined time based on data stored in the memory 1400, such as the temperature profile and the user's inhalation pattern.
- [275] The controller 1700 may determine the occurrence or non-occurrence of a puff using the puff sensor included in the sensor module 1500. For example, the controller 1700 may check a temperature change, a flow change, a pressure change, and a voltage change in the aerosol-generating device 1000 based on the values sensed by the puff sensor. For example, the controller 1700 may determine the occurrence or non-occurrence of a puff based on the result of the checking.
- [276] The controller 1700 may control the operation of each of the components provided in the aerosol-generating device 1000 according to the occurrence or non-occurrence of a puff and/or the number of puffs. For example, the controller 1700 may perform control such that the temperature of the heater is changed or maintained based on the temperature profile stored in the memory 1400.
- [277] The controller 1700 may perform control such that the supply of power to the heater is interrupted according to a predetermined condition. For example, the controller 1700 may perform control such that the supply of power to the heater is interrupted when the stick 400 is removed from the insertion space 214, when the cartridge 200 is separated from the body 100, when the number of puffs reaches the predetermined maximum number of puffs, when a puff is not sensed for a predetermined period of time or longer, or when the remaining capacity of the battery 1600 is less than a predetermined value.
- [278] The controller 1700 may calculate the remaining capacity with respect to the full charge capacity of the battery 1600. For example, the controller 1700 may calculate the remaining capacity of the battery 1600 based on the values sensed by the voltage sensor and/or the current sensor included in the sensor module 1500.
- [279] The controller 1700 may perform control such that power is supplied to the heater using at least one of a pulse width modulation (PWM) method or a proportional-integral-differential (PID) method.
- [280] For example, the controller 1700 may perform control such that a current pulse having a predetermined frequency and a predetermined duty ratio is supplied to the heater using the PWM method. In this case, the controller 1700 may control the amount of power supplied to the heater by adjusting the frequency and the duty ratio of the current pulse.

- [281] For example, the controller 1700 may determine a target temperature to be controlled based on the temperature profile. In this case, the controller 1700 may control the amount of power supplied to the heater using the PID method, which is a feedback control method using a difference value between the temperature of the heater and the target temperature, a value obtained by integrating the difference value with respect to time, and a value obtained by differentiating the difference value with respect to time.
- [282] Although the PWM method and the PID method are described as examples of methods of controlling the supply of power to the heater, the present disclosure is not limited thereto, and may employ any of various control methods, such as a proportional-integral (PI) method or a proportional-differential (PD) method.
- [283] FIG. 28 is a flowchart showing an operation method of the aerosol-generating device according to an embodiment of the present disclosure. Hereinafter, the directions of the aerosol-generating device 1000 may be defined based on the orthogonal coordinate system shown in FIGs. 29 to 36. In the orthogonal coordinate system, the x-axis direction may be defined as the leftward-rightward direction of the aerosol-generating device. Here, based on the origin, the +x-axis direction may be the rightward direction, and the -x-axis direction may be the leftward direction. The y-axis direction may be defined as the forward-backward direction of the aerosol-generating device 1000. Here, based on the origin, the +y-axis direction may be the forward direction, and the -y-axis direction may be the backward direction. The z-axis direction may be defined as the upward-downward direction of the aerosol-generating device 1000. Here, based on the origin, the +z-axis direction may be the upward direction, and the -z-axis direction may be the downward direction.
- [284] Referring to FIG. 28, in operation S2801, the aerosol generating device 1000 may check whether predetermined data for user authentication (hereinafter referred to as "authentication data") is stored in the memory 1400. Here, the authentication data may include a pattern of a signal of the contact sensor (hereinafter referred to as a "first authentication pattern") included in the sensor module 1500 and/or a pattern of a signal of the button (hereinafter referred to as a "second authentication pattern") included in the Input-Output Interface 1200, which correspond to a user having access to the aerosol generating device 1000.
- [285] In operation S2802, the aerosol generating device 1000 may monitor a signal of the input device when the authentication data is stored in the memory 1400.
- [286] For example, the aerosol generating device 1000 may determine whether there is contact of a predetermined object based on a signal of the force sensor and/or the touch sensor. Here, the predetermined object may be an object corresponding to the body of a user. The contact of the predetermined object may be referred to as a user touch input.
- [287] For example, the aerosol generating device 1000 may determine whether a button

press input is received based on a signal of the button. The button press input may be referred to as a user push input.

[288] In operation S2803, the aerosol generating device 1000 may determine whether the signal of the input device corresponds to the authentication data.

[289] For example, the first authentication pattern included in the authentication data may consist of at least one of the number of object contacts, an object contact time, a time interval between object contacts, and a change in location of object contact. Here, the aerosol generating device 1000 may determine whether a pattern of touch input, which is detected according to a signal of the contact sensor, corresponds to the first authentication pattern.

[290] For example, the second authentication pattern included in the authentication data may consist of at least one of a button type, the number of button presses, a duration of button press, and a time interval between button presses. Here, the aerosol generating device 1000 may determine whether a pattern of push input, which is detected according to a signal of the button, corresponds to the second authentication pattern. Meanwhile, based on a user input for initiating user authentication, the aerosol generating device 1000 may determine whether a predetermined input is received.

[291] According to one embodiment of the present disclosure, when a touch input greater than or equal to a predetermined time (e.g., 3 seconds) is detected through the contact sensor, the aerosol generating device 1000 may determine that a predetermined input as the user input for initiating user authentication is received. In this case, in response to receiving a predetermined touch input as the user input for initiating user authentication, the aerosol generating device 1000 may determine whether a signal of the contact sensor received after the predetermined touch input corresponds to the authentication data. Herein, a touch input greater than or equal to a predetermined time (e.g., 3 seconds) is used as an example of the user input for initiating user authentication, but the present disclosure is not limited thereto.

[292] Referring to FIG. 29, a contact sensor 1510 may be disposed in one region or area of the sidewall 111 of the lower body 110. For example, when the body 100 is held or gripped by a user, the contact sensor 1510 may be disposed in one region of the sidewall 111 where a specific part (e.g., a thumb) of the body of the user is located.

[293] Based on a signal of the contact sensor 1510, the aerosol generating device 1000 may determine whether a touch input is a valid input satisfying a predetermined reference or criterion. For example, the aerosol generating device 1000 may determine whether the touch input is a valid input satisfying the predetermined reference by taking into consideration a level of a signal of the contact sensor 1510, a degree of change in level of a signal of the contact sensor 1510, and the like.

[294] Meanwhile, the aerosol generating device 1000 may determine a type of touch input

based on a duration for which a level of a signal of the contact sensor 1510 is maintained. For example, when the level of the signal of the contact sensor 1510 is maintained for less than a predetermined minimum time (e.g., 1 second), the aerosol generating device 1000 may determine that a short touch input is received. For instance, when the level of the signal of the contact sensor 1510 is maintained for greater than or equal to a predetermined minimum time (e.g., 1 second), the aerosol generating device 1000 may determine that a long touch input is received.

[295] Meanwhile, the aerosol generating device 1000 may determine a type of touch input based on a change in location of object contact on the contact sensor 1510. For example, when a touch input on one region of the contact sensor 1510 is detected, and a detected location of the touch input is continuously changed toward a specific direction, the aerosol generating device 1000 may determine that a sweeping touch input in a specific direction is received.

[296] Referring to FIGS. 30 and 31, the first authentication pattern may consist of a combination of the number of object contacts, an object contact time, and a time interval between object contacts.

[297] In one embodiment, a user may apply three consecutive short touch inputs from a time t_1 after the user authentication is started. Also, the user may apply one short touch input at a time t_4 when a time exceeding a predetermined time has elapsed from a time t_3 . Then, the user may apply two consecutive short touch inputs from a time t_5 when a time exceeding a predetermined time has elapsed from the time t_4 .

[298] The aerosol generating device 1000 may confirm or recognize that a touch input is received at the time t_1 , then a touch input (another touch input) is received again at a time t_2 which is within a predetermined time from the time t_1 , and then a touch input (another touch input) is received again at the time t_3 which is within a predetermined time from the time t_2 . Here, since there has been no valid touch input for a predetermined time after receiving the touch input at the time t_3 , the aerosol generating device 1000 may determine that three short touch inputs are applied in a first section 3010.

[299] Since there has been no valid touch input for a predetermined time after receiving a touch input at the time t_4 , the aerosol generating device 1000 may determine that one short touch input is applied in a second section 3020.

[300] Meanwhile, the aerosol generating device 1000 may confirm that a touch input is received at the time t_5 and then a touch input (another touch input) is received again at a time t_6 which is within a predetermined time from the time t_5 . Here, since there has been no valid touch input for a predetermined time after receiving the touch input at the time t_6 , the aerosol generating device 1000 may determine that two short touch inputs are applied in a third section 3030.

- [301] The aerosol generating device 1000 may determine whether a signal of a pattern of the three, one, and two short touch inputs, which are respectively applied in the plurality of sections 3010, 3020, and 3030 divided by a time interval, corresponds to the authentication data. Here, when any one of the number of touch input sections and the number of short touch inputs applied in each section is different from the first authentication pattern, the aerosol generating device 1000 may determine that the signal of the contact sensor does not correspond to the authentication data.
- [302] In another embodiment, a user may apply one short touch input and one long touch input from a time t_1 after the user authentication is started. Also, the user may apply one long touch input at a time t_4 when a time exceeding a predetermined time has elapsed from a time t_3 . Then, the user may apply two consecutive short touch inputs from a time t_6 when a time exceeding a predetermined time has elapsed from a time t_5 .
- [303] The aerosol generating device 1000 may confirm that a touch input is received at a time t_2 which is within a predetermined time after receiving a short touch input at the time t_1 , and the touch input is maintained until the time t_3 . Here, when an interval from the time t_2 to the time t_3 is greater than or equal to a predetermined minimum time (e.g., 1 second), the aerosol generating device 1000 may determine the touch input received from the time t_2 to the time t_3 as a long touch input. Since there has been no valid touch input for a predetermined time after completing the reception of the touch input at the time t_3 , the aerosol generating device 1000 may determine that one short touch input and one long touch input are applied in a first section 3110.
- [304] Meanwhile, the aerosol generating device 1000 may confirm that a long touch input is received from the time t_4 to the time t_5 . Since there has been no valid touch input for a predetermined time after completing the reception of the touch input at the time t_5 , the aerosol generating device 1000 may determine that one long touch input is applied in a second section 3120.
- [305] Meanwhile, the aerosol generating device 1000 may confirm that a touch input is received at the time t_6 and then a touch input (another touch input) is received again at a time t_7 which is within a predetermined time from the time t_6 . Since there has been no valid touch input for a predetermined time after receiving the touch input at the time t_7 , the aerosol generating device 1000 may determine that two short touch inputs are applied in a third section 3130.
- [306] The aerosol generating device 1000 may determine whether a signal of a pattern consisting of the short touch input and the long touch input applied in the plurality of sections 3110, 3120, and 3130 divided by a time interval corresponds to the authentication data. Here, when any one of the number of touch input sections and a combination of a short touch input and a long touch input applied in each section is different from the first authentication pattern, the aerosol generating device 1000 may

determine that the signal of the contact sensor does not correspond to the authentication data.

[307] Referring to FIGS. 32A and 32B, the first authentication pattern may consist of a combination of the number of object contacts and a change in location of object contact.

[308] In one embodiment, a user may move his or her finger, namely, a finger 3200 in the up direction while the finger 3200 is in contact with a lower region of the contact sensor 1510. Based on a signal of the contact sensor 1510, the aerosol generating device 1000 may determine that a sweeping touch input in the up direction is received.

[309] In addition, the user may move the finger 3200 in the right direction while the finger 3200 is in contact with a left region of the contact sensor 1510. Based on a signal of the contact sensor 1510, the aerosol generating device 1000 may determine that a sweeping touch input in the right direction is received.

[310] The aerosol generating device 1000 may determine whether a signal of a pattern consisting of the number of sweeping touch inputs received consecutively (e.g., 2 times) and the order of sweeping touch input directions (e.g., up, left) corresponds to the authentication data. When any one of the number of sweeping touch inputs and the order of sweeping touch input directions is different from the first authentication pattern, the aerosol generating device 1000 may determine that the signal of the contact sensor does not correspond to the authentication data.

[311] Meanwhile, based on a user input for finishing user authentication, the aerosol generating device 1000 may determine whether a signal of the contact sensor corresponds to the authentication data. For example, when a touch input greater than or equal to a predetermined time (e.g., 3 seconds) is detected through the contact sensor, the aerosol generating device 1000 may determine that a predetermined input as the user input for finishing user authentication is received. Here, the aerosol generating device 1000 may determine whether a signal of the contact sensor received between the reception of the user input for initiating user authentication and the reception of the user input for finishing user authentication corresponds to the authentication data. Herein, a touch input greater than or equal to a predetermined time (e.g., 3 seconds) is used as an example of the user input for finishing user authentication, but the present disclosure is not limited thereto.

[312] According to one embodiment of the present disclosure, when a push input greater than or equal to a predetermined time (e.g., 3 seconds) is detected through the button, the aerosol generating device 1000 may determine that a predetermined input as a user input for initiating user authentication is received. In response to receiving a predetermined push input as the user input for initiating user authentication, the aerosol generating device 1000 may determine whether a signal of the button received after the

predetermined push input corresponds to the authentication data. Herein, a push input greater than or equal to a predetermined time (e.g., 3 seconds) is used as an example of the user input for initiating user authentication, but the present disclosure is not limited thereto.

- [313] Referring to FIG. 33, a button 1210 may be disposed in one region of the sidewall 111 of the lower body 110. For example, when the body 100 is gripped by a user, the button 1210 may be disposed in one region of the sidewall 111 where a specific part (e.g., a thumb) of the body of the user is located.
- [314] In one embodiment, a plurality of buttons 1211, 1212, and 1213 distinguished from one another may be disposed in one region of the sidewall 111 of the lower body 110. For example, a first button 1211 related to power On/Off of the aerosol generating device 1000, second and third buttons 1212 and 1213 related to Increase/Decrease of the generated amount of aerosol may be disposed in one region of the sidewall 111 of the lower body 110.
- [315] Meanwhile, the aerosol generating device 1000 may determine a type of push input based on a duration for which a level of a signal of the button 1210 is maintained. Here, the signal of the button 1210 may be maintained at a predetermined level while the button 1210 is pressed. For example, when the level of the signal of the button 1210 is maintained for less than a predetermined minimum time (e.g., 1 second), the aerosol generating device 1000 may determine that a short push input is received, and when the level of the signal of the button 1210 is maintained for greater than or equal to a predetermined minimum time (e.g., 1 second), the aerosol generating device 1000 may determine that a long push input is received.
- [316] Referring to FIGS. 34 to 36, the second authentication pattern may consist of at least one of a button type, the number of button presses, a duration of button press, and a time interval between button presses.
- [317] Referring to FIG. 34, in one embodiment, a user may apply one short push input at a time t_1 after the user authentication is started. Also, the user may apply three consecutive short push inputs from a time t_2 when a time exceeding a predetermined time has elapsed from the time t_1 . Then, the user may apply two consecutive short push inputs from a time t_5 when a time exceeding a predetermined time has elapsed from a time t_4 .
- [318] Since there has been no valid push input for a predetermined time after receiving a push input at the time t_1 , the aerosol generating device 1000 may determine that one short push input is applied in a first section 3410.
- [319] Meanwhile, the aerosol generating device 1000 may confirm that a push input is received at the time t_2 , then a push input (another push input) is received again at a time t_3 which is within a predetermined time from the time t_2 , and then a push input

(another push input) is received again at the time t_4 which is within a predetermined time from the time t_3 . Here, since there has been no valid push input for a predetermined time after receiving the push input at the time t_4 , the aerosol generating device 1000 may determine that three short push inputs are applied in a second section 3420.

[320] Meanwhile, the aerosol generating device 1000 may confirm that a push input is received at the time t_5 and then a push input (another push input) is received again at a time t_6 which is within a predetermined time from the time t_5 . Here, since there has been no valid push input for a predetermined time after receiving the push input at the time t_6 , the aerosol generating device 1000 may determine that two short push inputs are applied in a third section 3430.

[321] The aerosol generating device 1000 may determine whether a signal of a pattern of the one, three, and two short push inputs, which are respectively applied in the plurality of sections 3410, 3420, and 3430 divided by a time interval, corresponds to the authentication data. When any one of the number of push input sections and the number of short push inputs applied in each section is different from the second authentication pattern, the aerosol generating device 1000 may determine that the signal of the button does not correspond to the authentication data.

[322] Referring to FIG. 35, in one embodiment, a user may apply one short push input and one long push input from a time t_1 after the user authentication is started. Also, the user may apply one long push input at a time t_4 when a time exceeding a predetermined time has elapsed from a time t_3 . Then, the user may apply two consecutive short push inputs from a time t_6 when a time exceeding a predetermined time has elapsed at a time t_5 .

[323] The aerosol generating device 1000 may confirm that a push input is received at a time t_2 which is within a predetermined time after receiving a short push input at the time t_1 , and the push input is maintained until the time t_3 . Here, when an interval from the time t_2 to the time t_3 is greater than or equal to a predetermined minimum time (e.g., 1 second), the aerosol generating device 1000 may determine the push input received from the time t_2 to the time t_3 as a long push input. Since there has been no valid push input for a predetermined time after completing the reception of the push input at the time t_3 , the aerosol generating device 1000 may determine that one short push input and one long push input are applied in a first section 3510.

[324] Meanwhile, the aerosol generating device 1000 may confirm that a long push input is received from the time t_4 to the time t_5 . Since there has been no valid push input for a predetermined time after completing the reception of the push input at the time t_5 , the aerosol generating device 1000 may determine that one long push input is applied in a second section 3520.

- [325] Meanwhile, the aerosol generating device 1000 may confirm that a push input is received at the time t_6 and then a push input (another push input) is received again at a time t_7 which is within a predetermined time from the time t_6 . Since there has been no valid push input for a predetermined time after receiving the push input at the time t_7 , the aerosol generating device 1000 may determine that two short push inputs are applied in a third section 3530.
- [326] The aerosol generating device 1000 may determine whether a signal of a pattern consisting of the short push input and the long push input applied in the plurality of sections 3510, 3520, and 3530 divided by a time interval corresponds to the authentication data. Here, when any one of the number of push input sections and a combination of a short push input and a long push input applied in each section is different from the second authentication pattern, the aerosol generating device 1000 may determine that the signal of the button does not correspond to the authentication data.
- [327] Referring to FIG. 36, in one embodiment, a user may press the first button 1211 to apply one short push input at a time t_1 after the user authentication is started. Also, the user may sequentially press the second button 1212 and the third button 1213 to apply two short push inputs from a time t_2 when a time exceeding a predetermined time has elapsed from the time t_1 . In addition, the user may sequentially press the second button 1212 and the first button 1211 to apply three short push inputs from a time t_4 when a time exceeding a predetermined time has elapsed at a time t_3 . Then, the user may press the third button 1213 to apply one short push input at a time t_7 when a time exceeding a predetermined time has elapsed at a time t_6 .
- [328] Since there has been no valid push input for a predetermined time after receiving a push input through the first button 1211 at the time t_1 , the aerosol generating device 1000 may determine that one short push input through the first button 1211 is applied in a first section 3610.
- [329] Meanwhile, the aerosol generating device 1000 may confirm that a push input through the second button 1212 is received at the time t_2 and then a push input through the third button 1213 is received again at the time t_3 which is within a predetermined time from the time t_2 . Since there has been no valid push input for a predetermined time after receiving the push input at the time t_3 , the aerosol generating device 1000 may determine that one short push input through the second button 1212 and one short push input through the third button 1213 are applied in a second section 3620.
- [330] Meanwhile, the aerosol generating device 1000 may confirm that a push input through the second button 1212 is received at the time t_4 , then a push input through the first button 1211 is received at a time t_5 which is within a predetermined time from the time t_4 , and then a push input through the first button 1211 is received at the time t_6 which is within a predetermined time from the time t_5 . Since there has been no valid

push input for a predetermined time after receiving the push input at the time t6, the aerosol generating device 1000 may determine that one short push input through the second button 1212 and two short push inputs through the first button 1211 are applied in a third section 3630.

[331] Since there has been no valid push input for a predetermined time after receiving a push input through the third button 1213 at the time t7, the aerosol generating device 1000 may determine that one short push input through the third button 1213 is applied in a fourth section 3640.

[332] The aerosol generating device 1000 may determine whether a signal of a pattern consisting of the short push input and the long push input applied in the plurality of sections 3610, 3620, 3630, and 3640 divided by a time interval corresponds to the authentication data. Here, when any one of the number of push input sections, a combination of a short push input and a long push input applied in each section, and a button type corresponding to a push input applied in each section is different from the second authentication pattern, the aerosol generating device 1000 may determine that the signal of the button does not correspond to the authentication data.

[333] Meanwhile, based on a user input for finishing user authentication, the aerosol generating device 1000 may determine whether a signal of the button corresponds to the authentication data. For example, when a push input through the button is detected for greater than or equal to a predetermined time (e.g., 3 seconds), the aerosol generating device 1000 may determine that a predetermined input as the user input for finishing user authentication is received. Here, the aerosol generating device 1000 may determine whether a signal of the button received between the reception of the user input for initiating user authentication and the reception of the user input for finishing user authentication corresponds to the authentication data. Herein, a push input greater than or equal to a predetermined time (e.g., 3 seconds) is used as an example of the user input for finishing user authentication, but the present disclosure is not limited thereto.

[334] Referring to FIG. 28, in operation S2804, the aerosol generating device 1000 may supply power to the heater 262 when the signal of the input device corresponds to the authentication data.

[335] By contrast, in operation S2805, the aerosol generating device 100 may cut off power supply to the heater 262 when the authentication data is not stored in the memory 1400, or when the signal of the input device does not correspond to the authentication data.

[336]

[337] FIGS. 37A and 37B are flowcharts illustrating a method for operating an aerosol generating device according to another embodiment of the present disclosure. A

detailed description overlapping the description given with reference to FIGS. 28 to 36 will be omitted.

- [338] Referring to FIG. 37A, in operation S3701, the aerosol generating device 1000 may check whether authentication data for user authentication is stored in the memory 1400.
- [339] In operation S3702, the aerosol generating device 1000 may determine whether the user authentication is started when the authentication data is stored in the memory 1400. For example, when a touch input greater than or equal to a predetermined time (e.g., 3 seconds) is received through the contact sensor, the user authentication may be started. For example, when a push input greater than or equal to a predetermined time (e.g., 3 seconds) is received through the button, the user authentication may be started.
- [340] When the user authentication is started, the aerosol generating device 1000 may output a message indicating the initiation of user authentication through the output device of the Input-Output Interface 1200. For example, the aerosol generating device 1000 may emit light through the light source 153 upon the initiation of the user authentication. Here, the light emitted from the light source 153 may be directed to the chamber C1 through the outside of the insertion space 214. For instance, the aerosol generating device 1000 may generate vibration through a motor providing a haptic effect upon the initiation of the user authentication.
- [341] In operation S3703, the aerosol generating device 1000 may monitor a signal of the input device in response to the initiation of the user authentication. For example, the aerosol generating device 1000 may determine whether there is contact of a predetermined object based on a signal of the force sensor and/or the touch sensor. For example, the aerosol generating device 1000 may determine whether a button press input is received based on a signal of the button.
- [342] In operation S3704, the aerosol generating device 1000 may determine whether the signal of the input device corresponds to the authentication data. For example, the aerosol generating device 1000 may determine whether a pattern of touch input consisting of at least one of the number of object contacts, an object contact time, a time interval between object contacts, and a change in location of object contact, which is detected according to a signal of the contact sensor, corresponds to first authentication pattern. For instance, the aerosol generating device 1000 may determine whether a pattern of a push input consisting of at least one of a button type, the number of button presses, a duration of button press, and a time interval between button presses, which is detected according to a signal of the button, corresponds to second authentication pattern.
- [343] In operation S3705, the aerosol generating device 1000 may supply power to the heater 262 when the signal of the input device corresponds to the authentication data.

Here, when the signal of the input device corresponds to the authentication data, the aerosol generating device 1000 may emit light of a predetermined color (e.g., white) through the light source 153.

[344] By contrast, in operation S3706, the aerosol generating device 1000 may cut off power supply to the heater 262 when the signal of the input device does not correspond to the authentication data. Here, when the signal of the input device does not correspond to the authentication data, the aerosol generating device 1000 may emit light of a predetermined color (e.g., red) through the light source 153.

[345] Meanwhile, in operation S3707 and operation S3708, the aerosol generating device 1000 may update the number of user authentication failures (or the number of unsuccessful user authentication attempts). The aerosol generating device 1000 may determine whether the updated number of times is greater than or equal to a predetermined number of times.

[346] When the number of user authentication failures is less than a predetermined number of times, the aerosol generating device 1000 may determine whether a signal of the input device corresponds to the authentication data each time when user authentication is started.

[347] By contrast, in operation S3709, when the number of user authentication failures is greater than or equal to the predetermined number of times, the aerosol generating device 1000 may block user authentication. For example, when the number of user authentication failures is greater than or equal to the predetermined number of times, the aerosol generating device 1000 may block the initiation of user authentication to stop determining whether the signal of the input device corresponds to the authentication data.

[348] When the user authentication is blocked, the aerosol generating device 1000 may restrict user access to authentication data stored in the memory 1400. For example, the aerosol generating device 1000 may restrict a change or deletion of the authentication data stored in the memory 1400.

[349] Meanwhile, when a user input for initiating user authentication is received while the user authentication is blocked, the aerosol generating device 1000 may output a message, through the output device of the Input-Output Interface 1200, indicating that user authentication is not permitted. For example, when the user input for initiating user authentication is received while the user authentication is blocked, the aerosol generating device 1000 may emit light of a predetermined color (e.g., red) through the light source 153.

[350] Referring to FIG. 38, the aerosol generating device 1000 may process the authentication data stored in the memory 1400 based on a control signal received from an external device 3800. Here, the external device 3800 may be a device having an

authority to process authentication data. For example, when a predetermined control signal for deleting authentication data is received from the external device 3800 through the communication interface 1100, the aerosol generating device 1000 may delete the authentication data stored in the memory 1400. In this drawing, it is illustrated that the external device 3800 transmits a control signal to the aerosol generating device 1000 via wired communication using a cable 3810, but the present disclosure is not limited thereto.

[351] The aerosol generating device 1000 may remove the restriction on user authentication when there is a change or deletion in authentication data stored in the memory 1400. When the authentication data stored in the memory 1400 is changed or deleted, the aerosol generating device 1000 may initialize the number of user authentication failures.

[352] Referring to FIG. 37B, in operation S3710, the aerosol generating device 1000 may cut off power supply to the heater 262 when the authentication data is not stored in the memory 1400. Here, the aerosol generating device 1000 may output, through the output device of the Input-Output Interface 1200, a message requesting the creation of authentication data.

[353] In operation S3711, the aerosol generating device 1000 may monitor whether a function of authentication data generation (or a function of generating authentication data) is activated. For example, based on a determination that a pattern of the signal received from the input device is a predetermined pattern of activating the function of authentication data generation when the authentication data is not stored in the memory 1400, the aerosol generating device 1000 may activate the function of authentication data generation. For example, based on a determination that a control signal for activating the function of authentication data generation is received from an external device through the communication interface 1100 when the authentication data is not stored in the memory 1400, the aerosol generating device 1000 may activate the function of authentication data generation.

[354] Here, the aerosol generating device 1000 may activate the function of authentication data generation for a predetermined time limit. For example, the aerosol generating device 1000 may activate the function of authentication data generation for a predetermined time limit of one minute from the moment of receiving, through the communication interface 1100, the control signal for activating the function of authentication data generation from the external device.

[355] In operation S3712 and operation S3713, the aerosol generating device 1000 may monitor a signal of the input device in response to activating the function of authentication data generation. The aerosol generating device 1000 may determine whether the signal of the input device satisfies a predetermined reference or criterion. For

example, when a signal of the force sensor and/or the touch sensor changes by more than a predetermined minimum level, the aerosol generating device 1000 may determine that a signal of the contact sensor satisfies a predetermined reference. For example, when at least one of a short touch input, a long touch input, and a sweeping touch input is received a predetermined number of times (e.g., 2 times) or more, the aerosol generating device 1000 may determine that the signal of the contact sensor satisfies the predetermined reference. For example, when at least one of a short push input and a long push input is received a predetermined number of times (e.g., 2 times) or more, the aerosol generating device 1000 may determine that a signal of the button satisfies a predetermined reference.

[356] In operation S3714, when the signal of the input device satisfies the predetermined reference, the aerosol generating device 1000 may generate authentication data in response to a pattern of the signal of the input device. The aerosol generating device 1000 may store the generated authentication data in the memory 1400.

[357] By contrast, in operation S3715, when the signal of the input device does not satisfy the predetermined reference, the aerosol generating device 1000 may deactivate the function of authentication data generation.

[358] As described above, according to at least one of the embodiments of the present disclosure, the efficiency of aerosol heat transfer to the stick 400 may be improved by increasing the efficiency of gas flow.

[359] According to at least one of the embodiments of the present disclosure, a third party who does not have access to the aerosol generating device 1000 may be prevented or restricted from using the aerosol generating device 1000.

[360] According to at least one of the embodiments of the present disclosure, user authentication may be performed in various ways by using various types of user touch inputs to the aerosol generating device 1000.

[361] According to at least one of the embodiments of the present disclosure, user authentication may be performed in various ways by using various types of inputs using the button 1210.

[362] Referring to FIGS. 1 to 38, according to one aspect of the present disclosure there is provided an aerosol generating device 1000 including: a heater 262 configured to heat an aerosol; an input device including at least one of a sensor 1510 and a button 1210, the sensor 1510 and the button 1210 being configured to output a signal corresponding to contact of an object; a memory 1400; and a controller 1700 configured to: based on a determination that authentication data for user authentication is not stored in the memory 1400, cut off power supply to the heater 262; based on a determination that the authentication data is stored in the memory 1400, determine whether a signal received from the input device corresponds to the authentication data; and based on a

determination that the signal corresponds to the authentication data, supply power to the heater 262.

[363] According to another aspect of the present disclosure, the aerosol generating device 1000 may further include: a cartridge 200 including a chamber C1 in which a liquid is stored; and a body 100 coupled to the cartridge 200. The cartridge 200 may include: a wick 261 connected to the chamber C1; and the heater 262 configured to heat the wick 261.

[364] According to another aspect of the present disclosure, the cartridge 200 may include: a first container 210 in which the chamber C1 is disposed; and a second container 220 coupled to the first container 210. The first container 210 may include an inner wall 212 that defines an insertion space 214 extending long and an outer wall 211 that surrounds the inner wall 212. The chamber C1 may be disposed between the inner wall 212 and the outer wall 211. The wick 261 may be installed in the second container 220.

[365] According to another aspect of the present disclosure, the body 100 may include: a lower body 100 facing a lower portion of the cartridge 200; and an upper body 120 disposed on the lower body 110 and facing a side portion of the cartridge 200. The input device may be disposed in one region of a sidewall 111 of the lower body 110.

[366] According to another aspect of the present disclosure, the aerosol generating device 1000 may further include an output device configured to output a message regarding at least one of visual, auditory, and tactile manners. In response to receiving an input from the input device, the controller 1700 may be configured to output, through the output device, a message corresponding to reception of the input.

[367] According to another aspect of the present disclosure, the controller 1700 may be configured to: based on a determination that the signal does not correspond to the authentication data, update number of user authentication failures; and based on a determination that the updated number of times is greater than or equal to a predetermined number of times, stop determining whether the signal corresponds to the authentication data.

[368] According to another aspect of the present disclosure, the controller 1700 may be configured to: based on a determination that a pattern of the signal is a predetermined pattern when the authentication data is not stored in the memory 1300, activate a function of generating the authentication data; and in response to the pattern of the signal while the function is activated, generate the authentication data.

[369] According to another aspect of the present disclosure, the aerosol generating device 1000 may further include a communication interface 1100 configured to receive a signal from an external device 3800. The controller 1700 may be configured to: in response to receiving a predetermined control signal through the communication interface 1100 when the authentication data is not stored in the memory, activate a

function of generating the authentication data; and in response to a pattern of the signal while the function is activated, generate the authentication data.

[370] According to another aspect of the present disclosure, the aerosol generating device 1000 may further include a communication interface 1100 configured to receive a signal from an external device 3800. In response to receiving a predetermined control signal through the communication interface 1100 when the authentication data is stored in the memory 1300, the controller 1700 may be configured to process the authentication data stored in the memory 1300.

[371] According to another aspect of the present disclosure, the input device may include at least one of a force sensor configured to output a signal corresponding to a magnitude of force applied by the contact and a touch sensor configured to output a signal corresponding to a change in state due to the contact.

[372] According to another aspect of the present disclosure, when the input device includes at least one sensor, the authentication data may include an authentication pattern consisting of at least one of number of object contacts, an object contact time, a time interval between object contacts, and a change in location of object contact.

[373] According to another aspect of the present disclosure, when the input device includes at least one button, the authentication data may include an authentication pattern consisting of at least one of a button type, number of button presses, a duration of button press, and a time interval between button presses.

[374] Certain embodiments or other embodiments of the disclosure described above are not mutually exclusive or distinct from each other. Any or all elements of the embodiments of the disclosure described above may be combined with another or combined with each other in configuration or function.

[375] For example, a configuration "A" described in one embodiment and/or drawings may be combined with a configuration "B" described in another embodiment and/or drawings. Namely, although the combination between the configurations is not directly described, the combination is possible except in the case where it is described that the combination is impossible.

[376] Although embodiments have been described with reference to a number of illustrative embodiments thereof, it should be understood that numerous other modifications and embodiments can be devised by those skilled in the art that will fall within the scope of the principles of this disclosure. More particularly, various variations and modifications are possible in the component parts and/or arrangements of the subject combination arrangement within the scope of the disclosure, the drawings and the appended claims. In addition to variations and modifications in the component parts and/or arrangements, alternative uses will also be apparent to those skilled in the art.

Claims

- [Claim 1] An aerosol generating device comprising:
a heater configured to heat an aerosol;
an input device comprising at least one of a sensor configured to detect contact from an object and a button;
a memory configured to store authentication data for user authentication; and
a controller configured to:
determine whether the authentication data is stored in the memory;
based on a determination that the authentication data is not stored in the memory, cut off supply of power to the heater;
based on a determination that the authentication data is stored in the memory, determine whether a signal received from the input device corresponds to the authentication data; and
based on a determination that the signal corresponds to the authentication data, supply the power to the heater.
- [Claim 2] The aerosol generating device of claim 1, further comprising:
a cartridge comprising: a chamber configured to store a liquid and a wick configured to be in communication with the chamber; and
a body coupled to the cartridge, wherein the heater is further configured to heat the wick.
- [Claim 3] The aerosol generating device of claim 2, wherein the cartridge further comprises:
a first container in which the chamber is disposed; and
a second container coupled to the first container, wherein the first container comprises an inner wall defining an elongated insertion space and an outer wall, wherein the chamber is formed between the inner wall and the outer wall, and wherein the wick is mounted in the second container.
- [Claim 4] The aerosol generating device of claim 2, wherein the body comprises:
a lower body facing a lower portion of the cartridge; and
an upper body disposed on the lower body and facing a side portion of the cartridge, and
wherein the input device is disposed in one region of a sidewall of the lower body.
- [Claim 5] The aerosol generating device of claim 1, further comprising an output device configured to output a message using at least one of a visual

manner, an auditory manner, or a tactile manner, wherein the controller is further configured to: in response to receiving an input from the input device, cause the output device to output a message corresponding to reception of the input.

[Claim 6] The aerosol generating device of claim 1, wherein the controller is further configured to:
based on a determination that the signal does not correspond to the authentication data, update a number of user authentication failures; and based on a determination that the updated number of user authentication failures is greater than or equal to a predetermined number, block user authentication by restricting access to the authentication data.

[Claim 7] The aerosol generating device of claim 1, wherein the controller is further configured to:
based on a determination that a pattern of the signal corresponds to a predetermined pattern when the authentication data is not stored in the memory, activate a function of generating the authentication data; and generate the authentication data based on the pattern of the signal while the function is activated.

[Claim 8] The aerosol generating device of claim 1, further comprising: a communication interface configured to receive a signal from an external device,
wherein the controller is further configured to:
in response to receiving a predetermined control signal through the communication interface based on the authentication data not being stored in the memory, activate a function of generating the authentication data; and
generate the authentication data based on a pattern of the signal while the function is activated.

[Claim 9] The aerosol generating device of claim 1, further comprising: a communication interface configured to receive a signal from an external device,
wherein the controller is further configured to: in response to receiving a predetermined control signal through the communication interface based on the authentication data not being stored in the memory, process the authentication data stored in the memory.

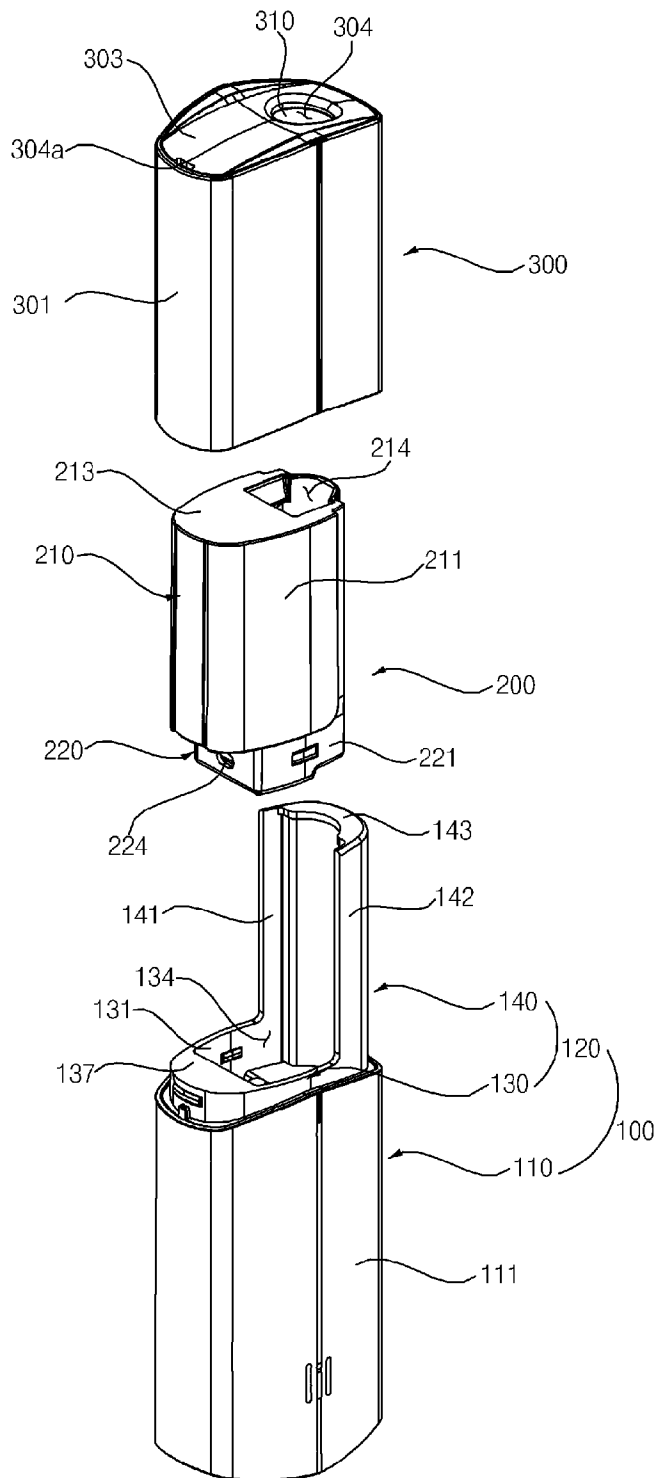
[Claim 10] The aerosol generating device of claim 1, wherein the input device comprises at least one of a force sensor configured to output a signal

corresponding to a magnitude of force applied by the contact or a touch sensor configured to output a signal corresponding to a change in state due to the contact.

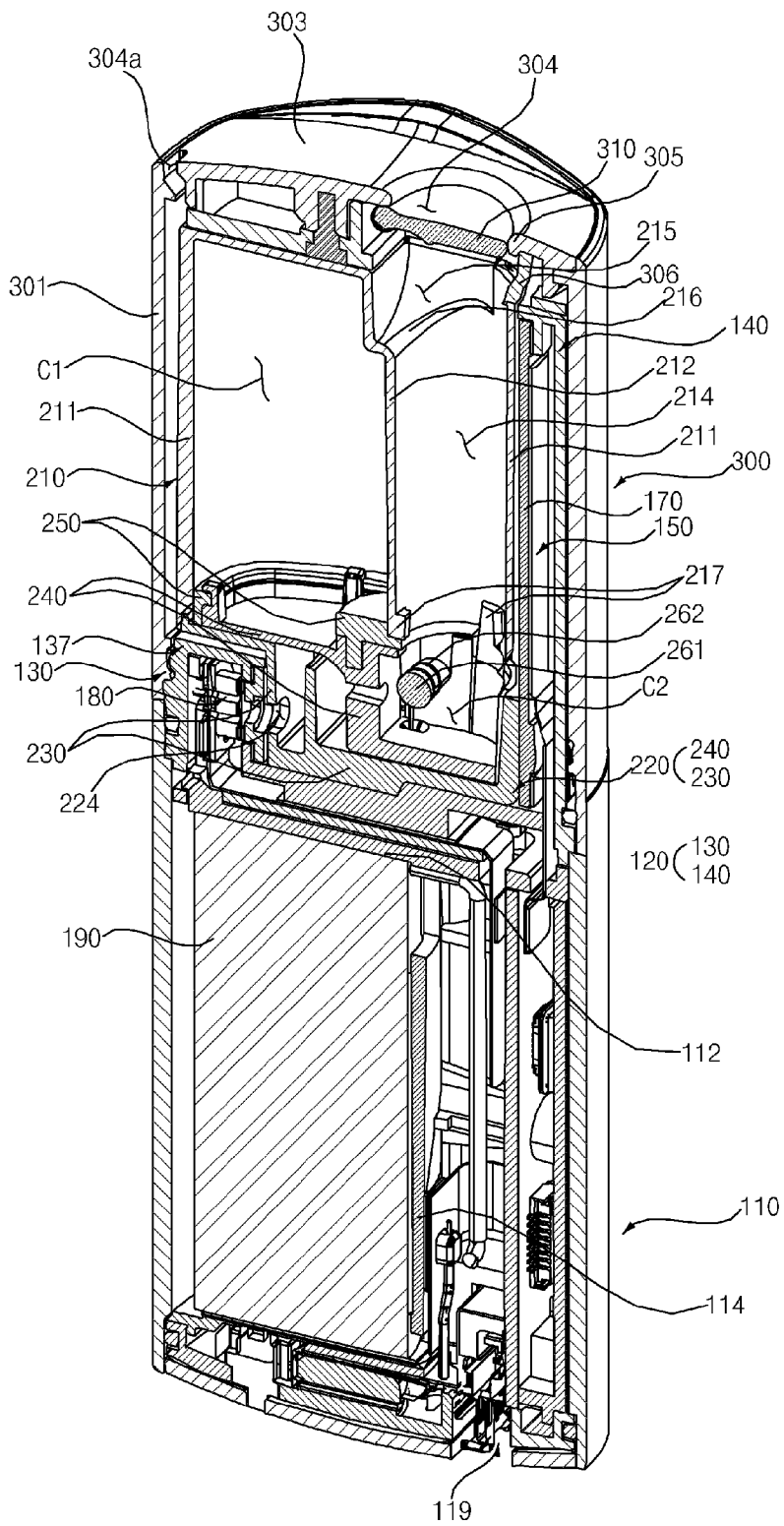
[Claim 11] The aerosol generating device of claim 1, wherein, when the input device comprises at least one sensor, the authentication data comprises an authentication pattern consisting of at least one of a number of object contacts, an object contact time, a time interval between object contacts, or a change in location of object contact.

[Claim 12] The aerosol generating device of claim 1, wherein, when on the input device comprises at least one button, the authentication data comprises an authentication pattern consisting of at least one of a button type, number of button presses, a duration of button press, or a time interval between button presses.

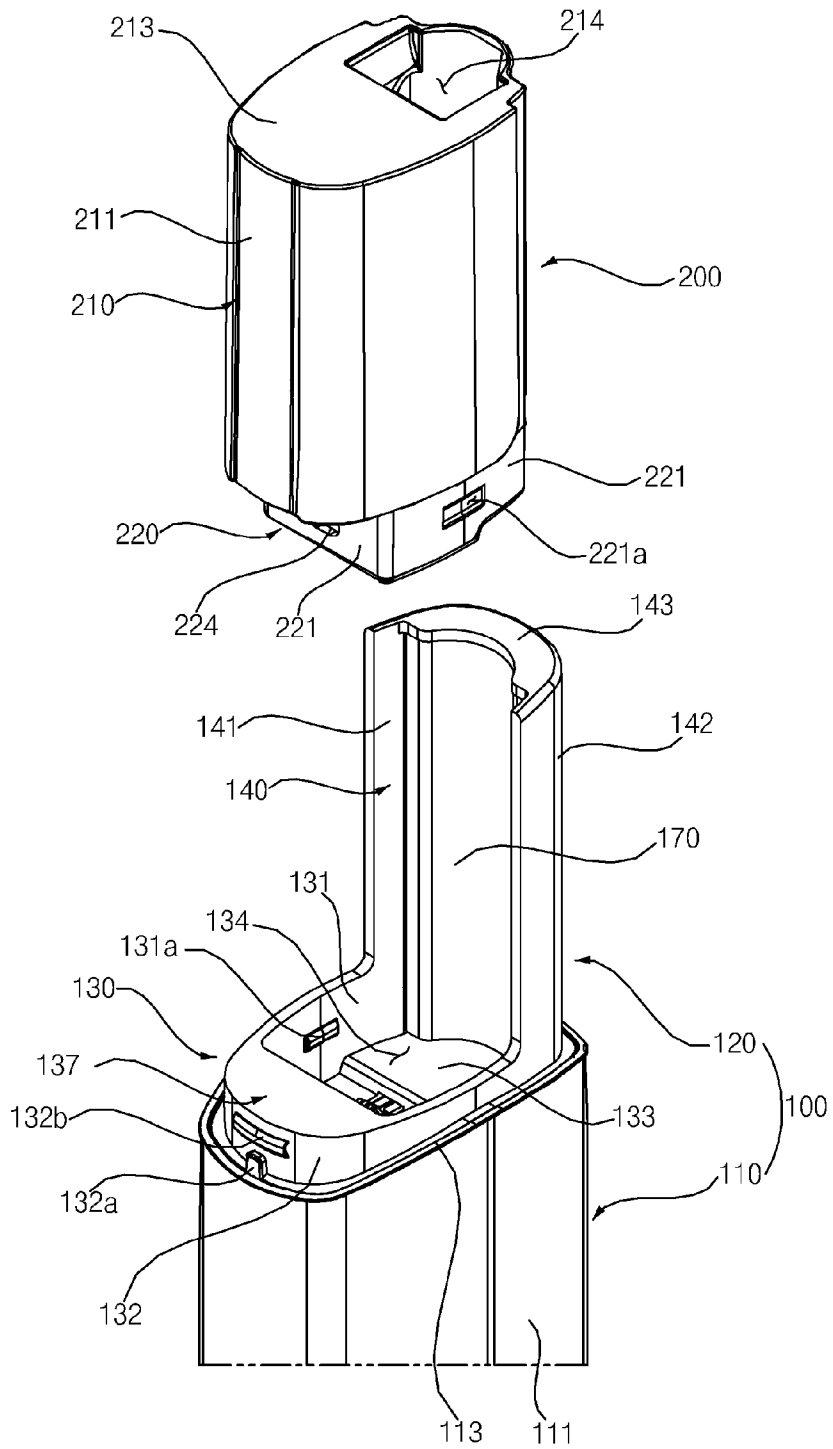
[Fig. 1]



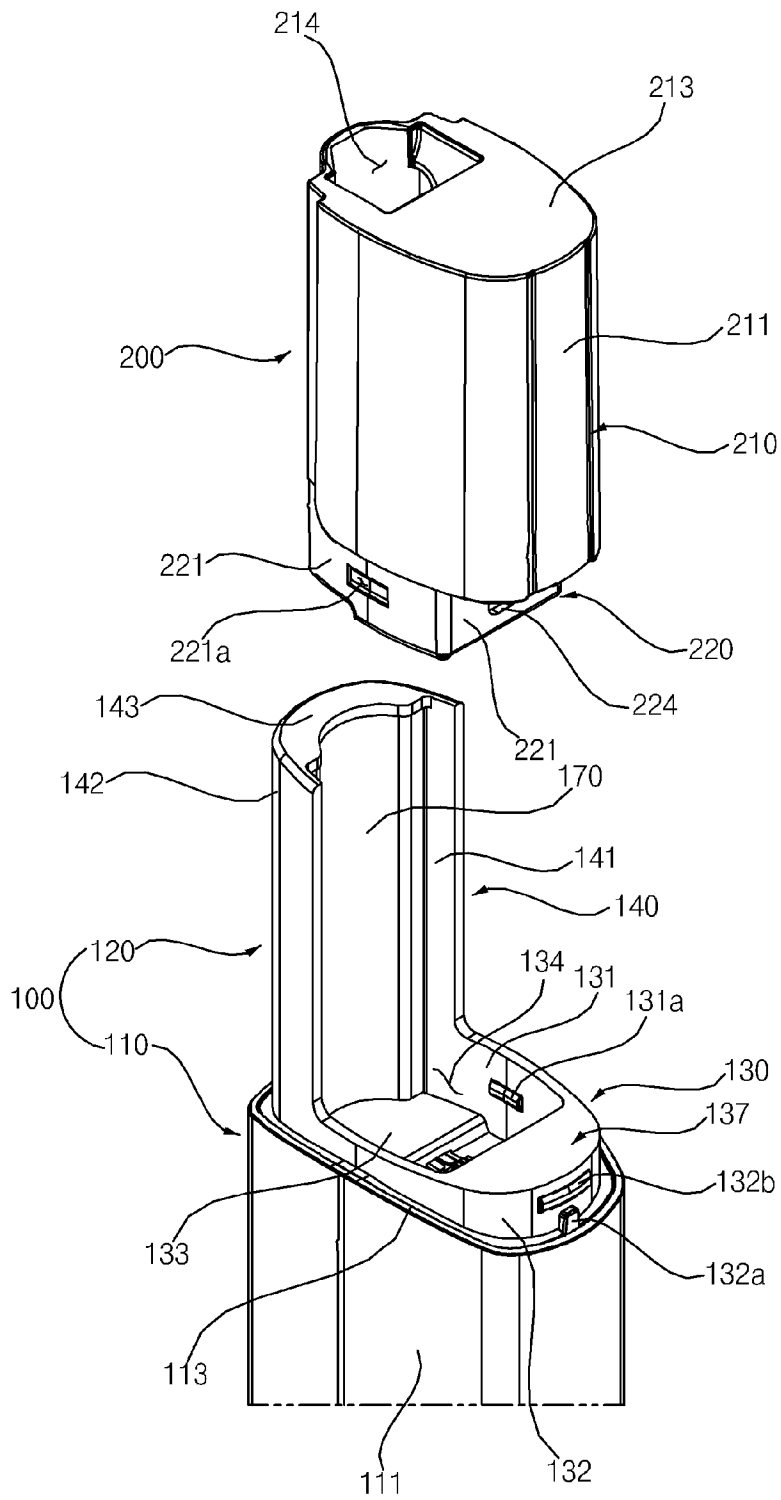
[Fig. 2]



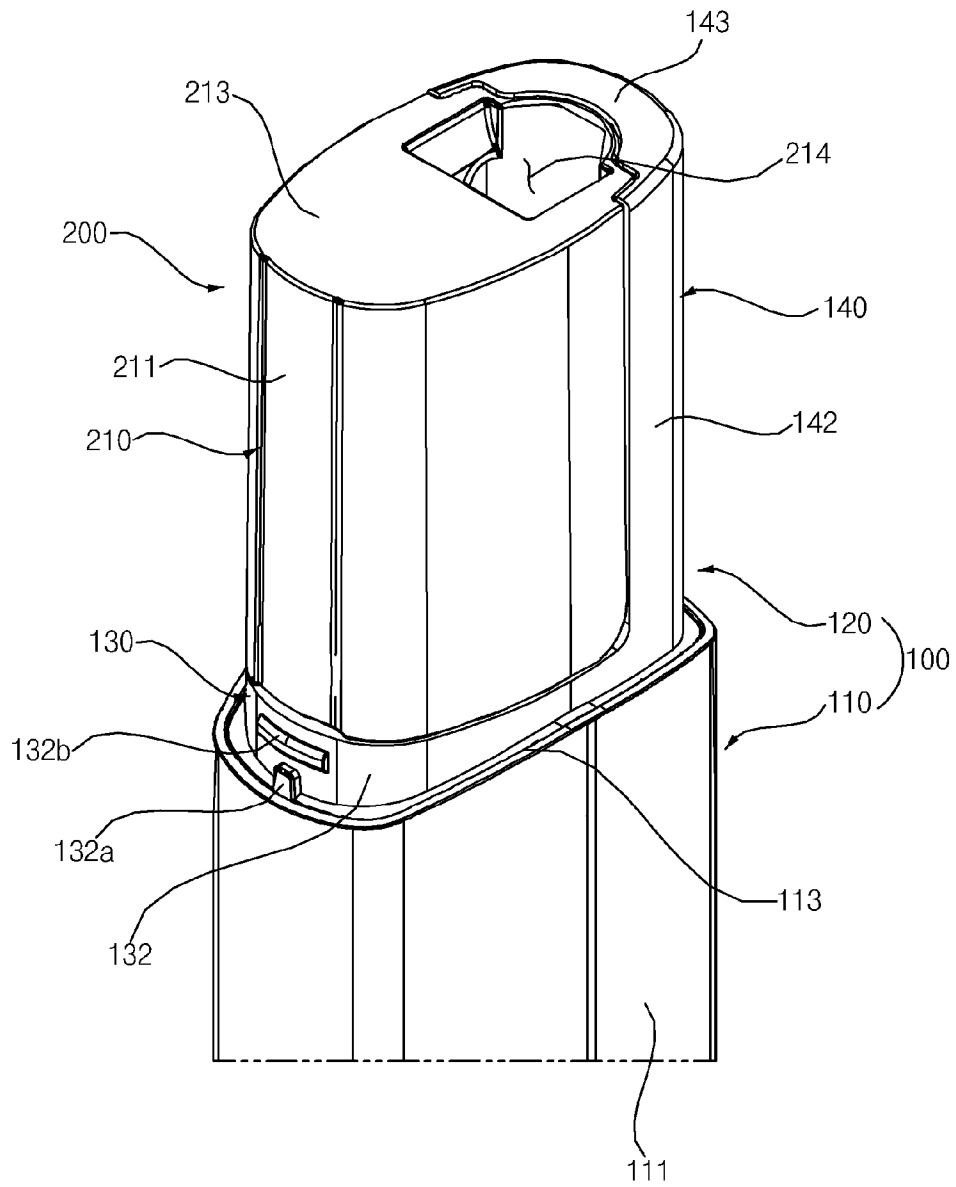
[Fig. 4]



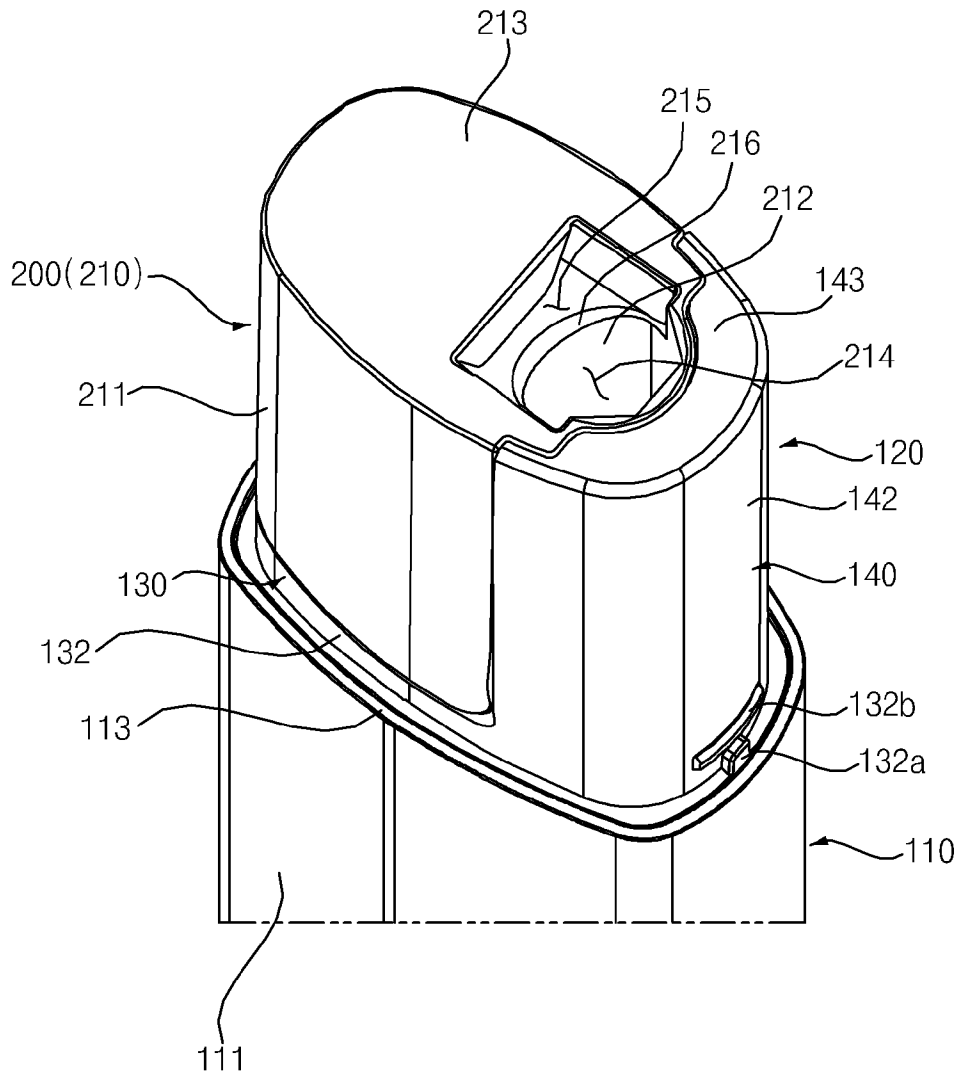
[Fig. 5]



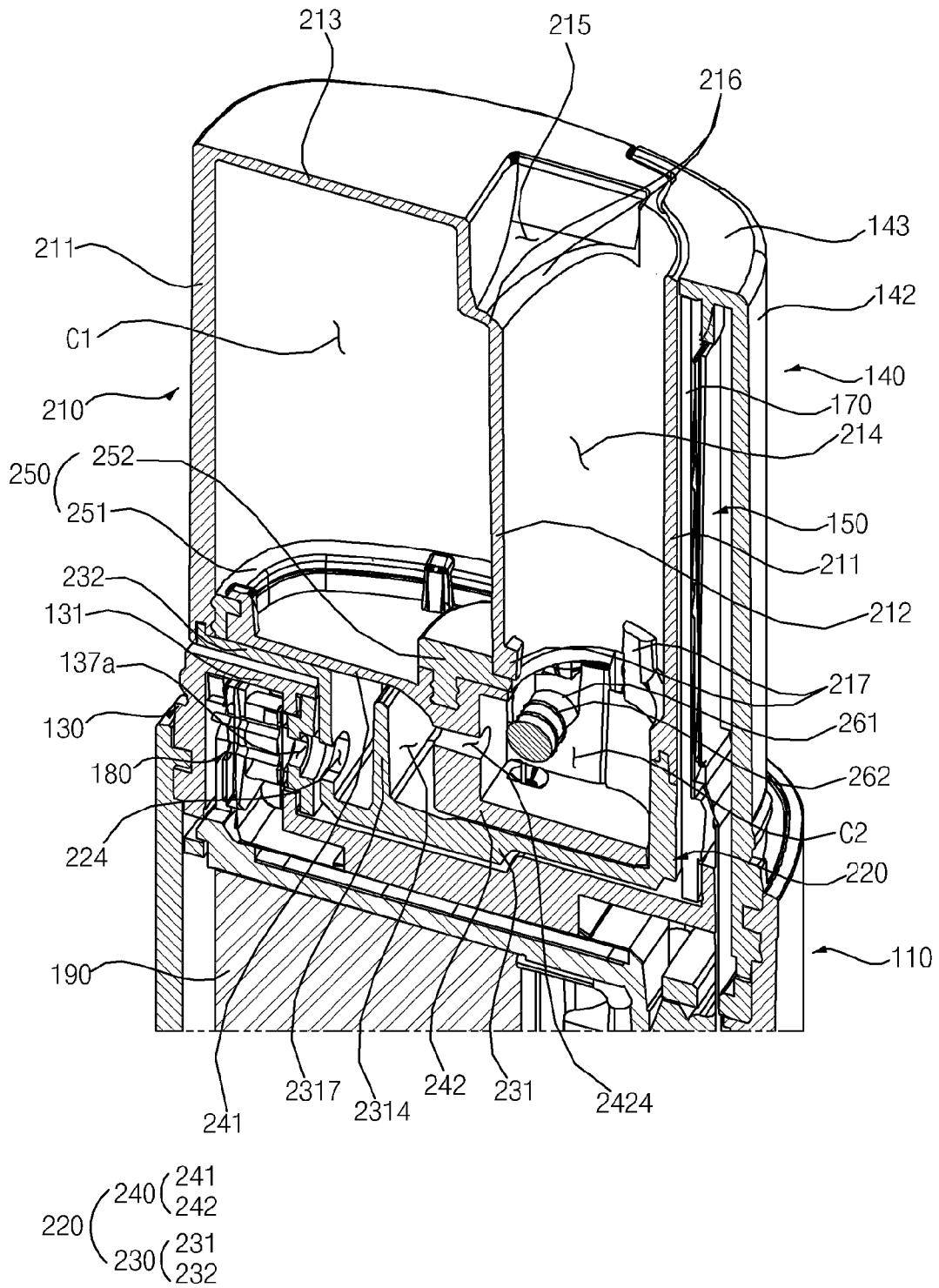
[Fig. 6]



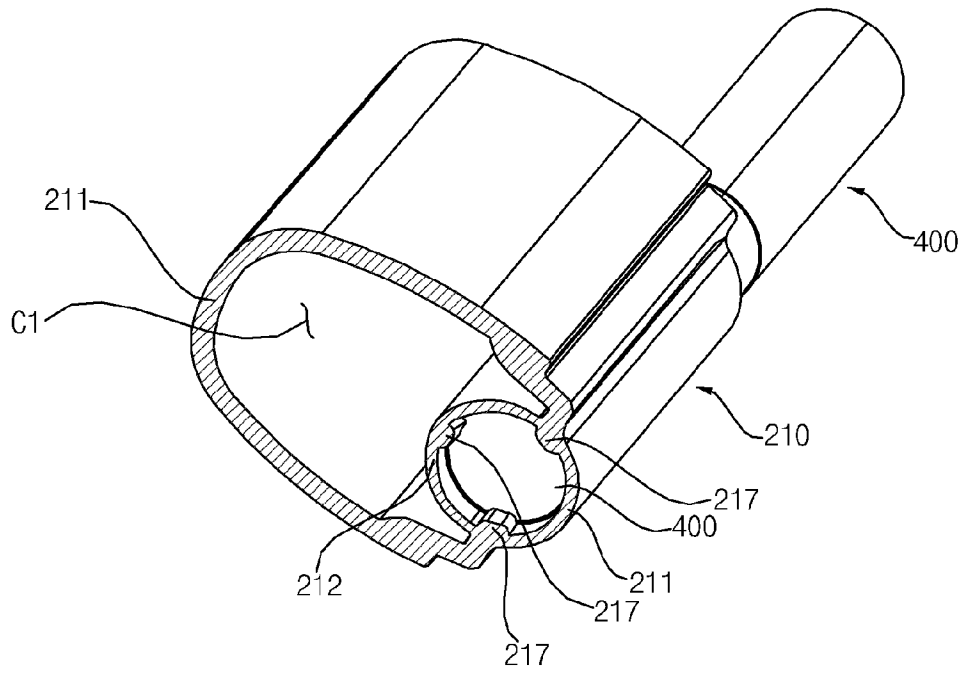
[Fig. 7]



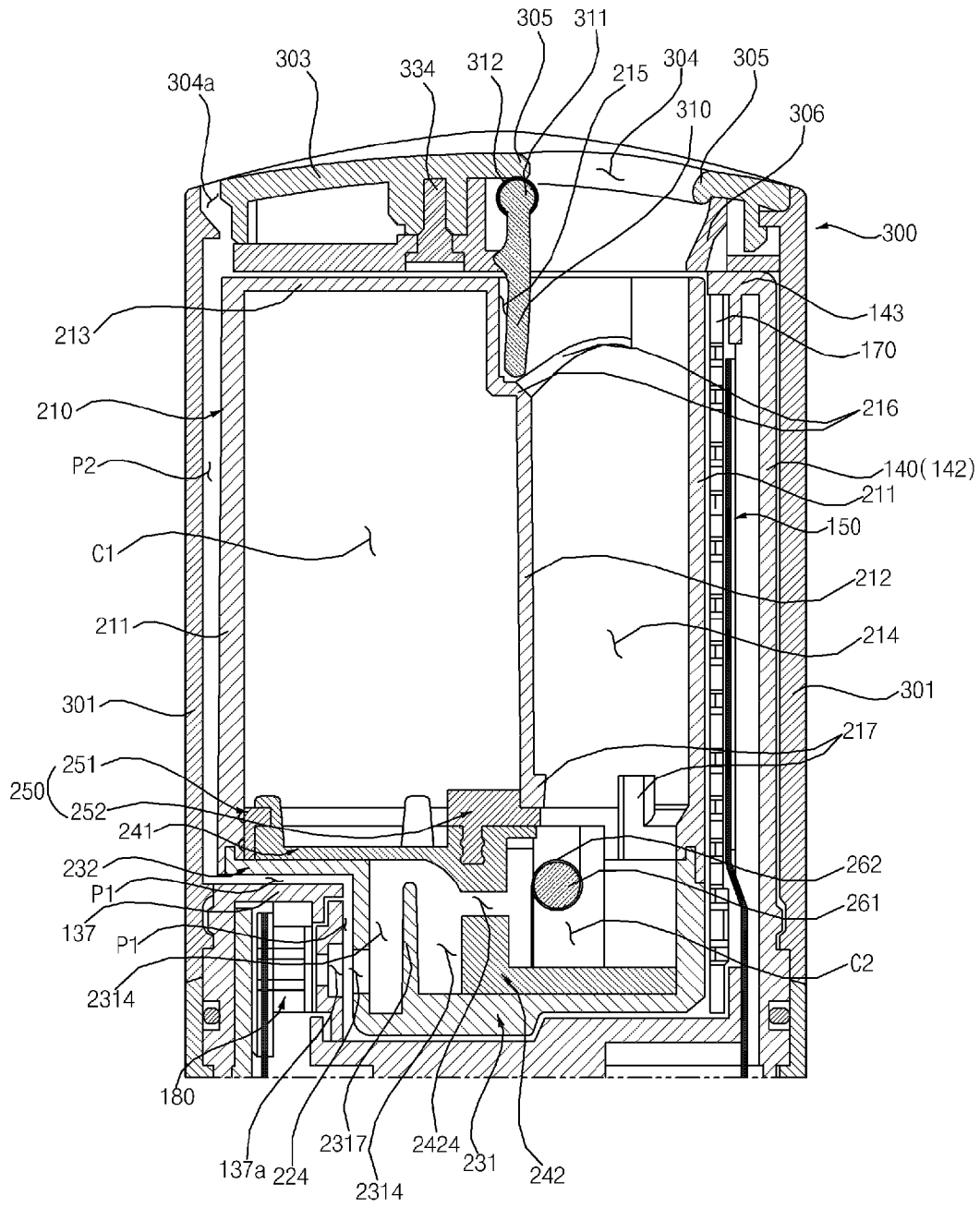
[Fig. 8]



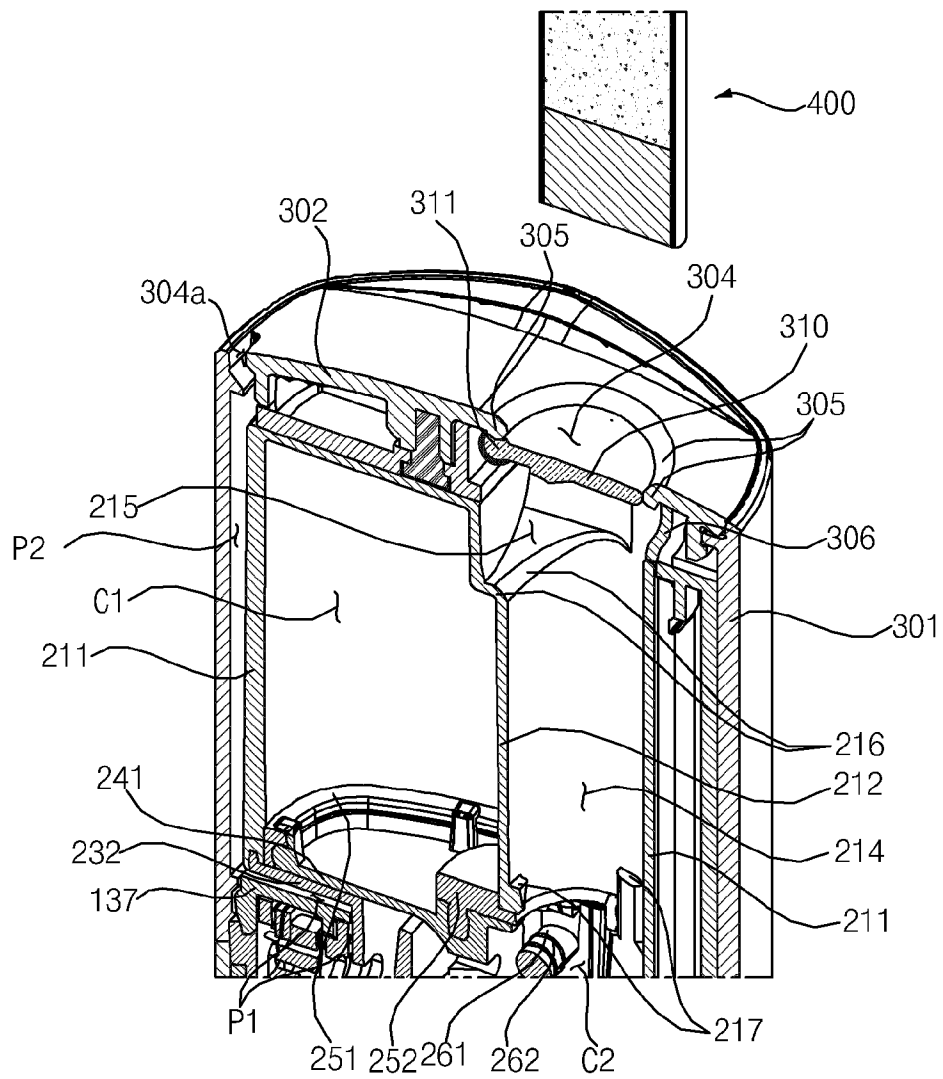
[Fig. 9]



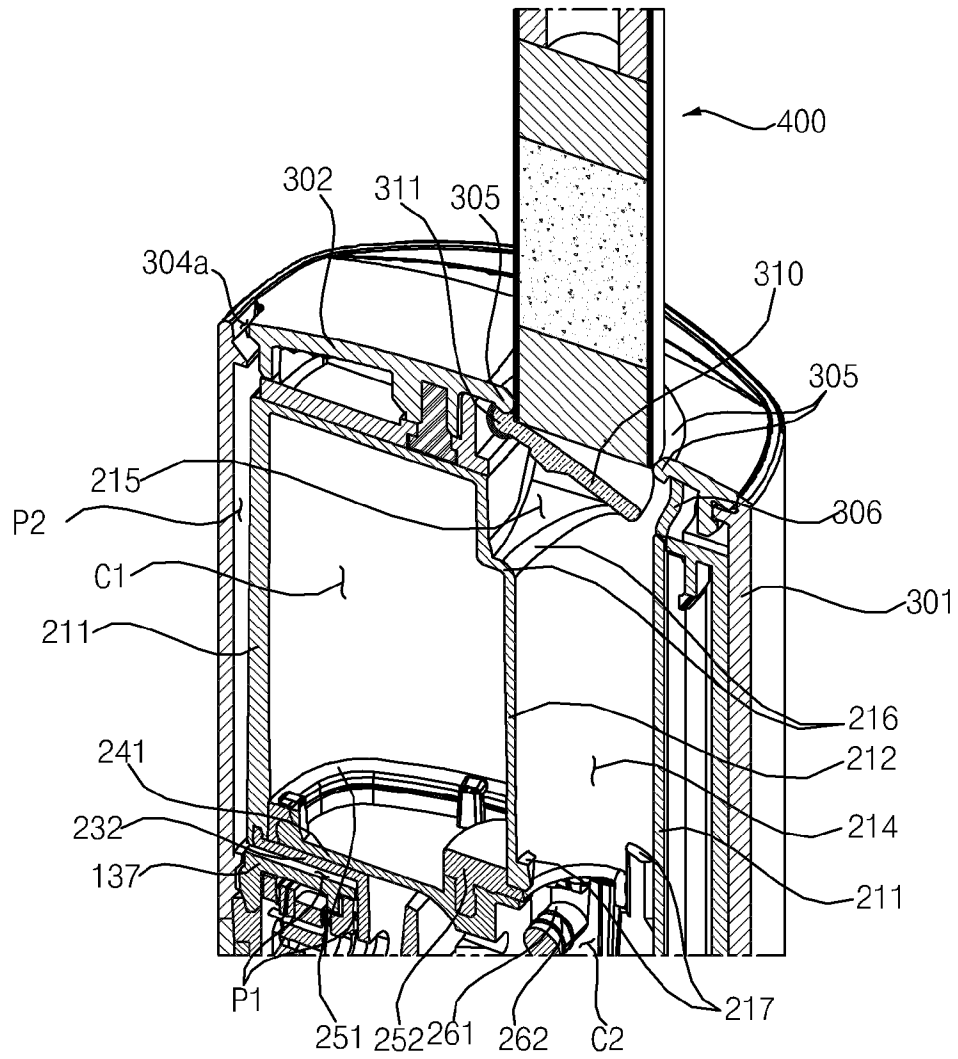
[Fig. 11]



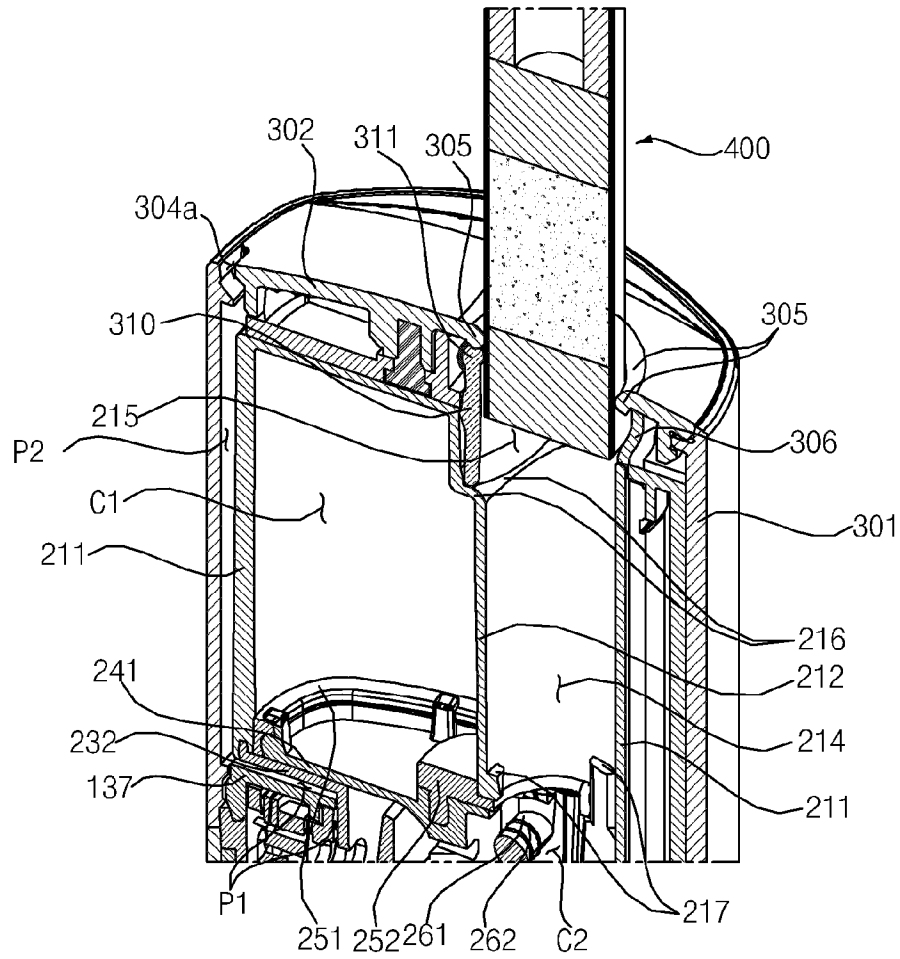
[Fig. 12]



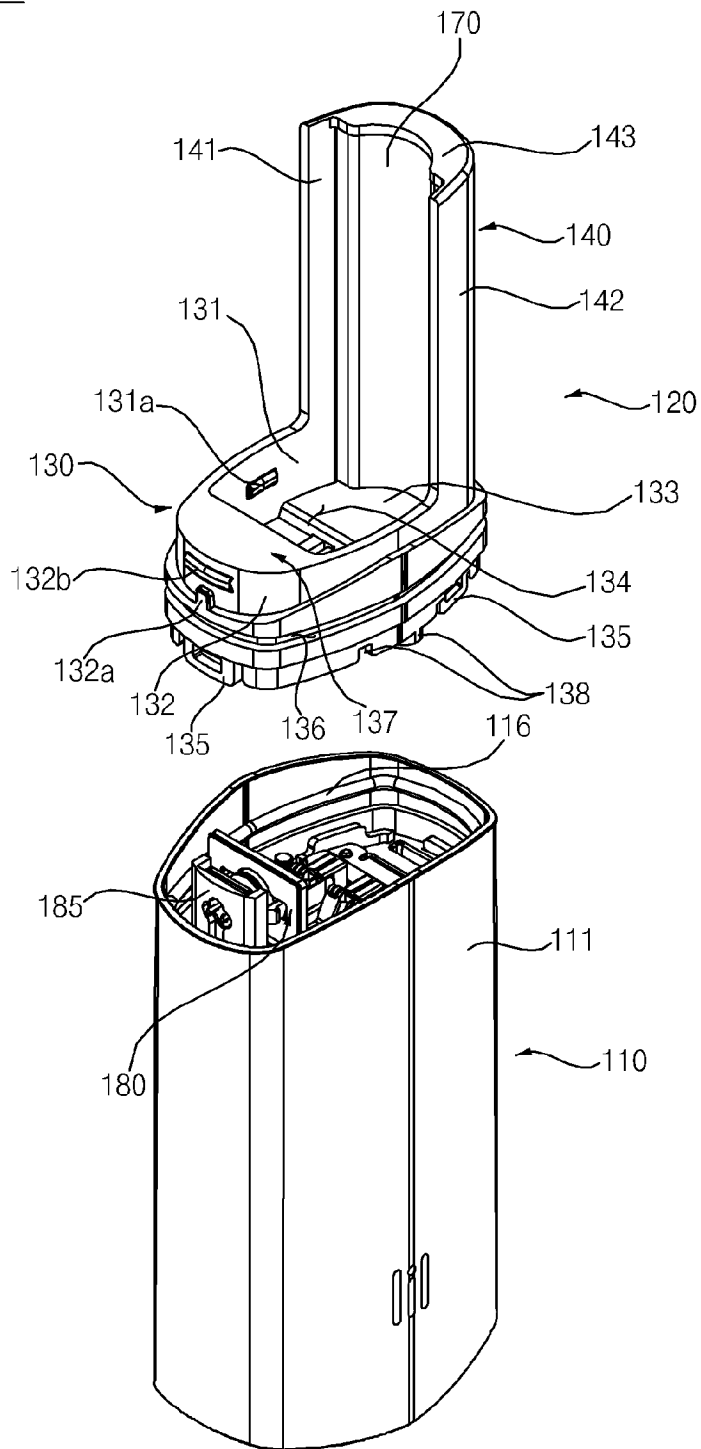
[Fig. 13]



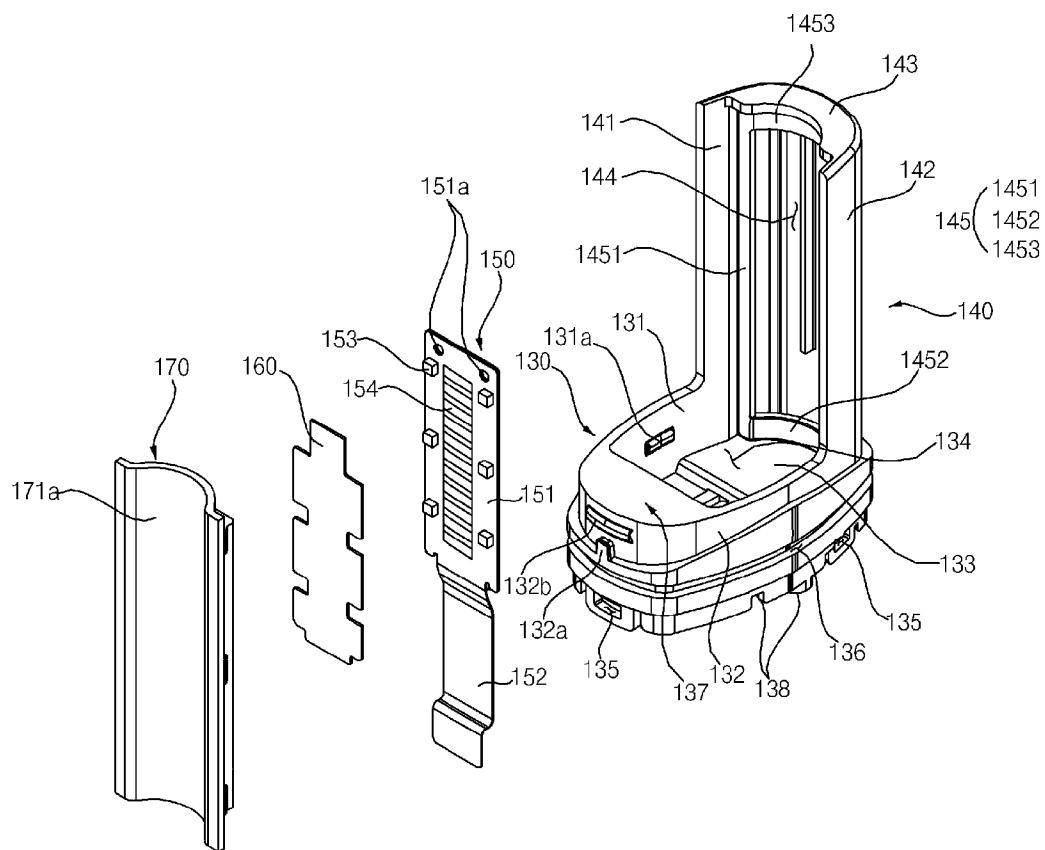
[Fig. 14]



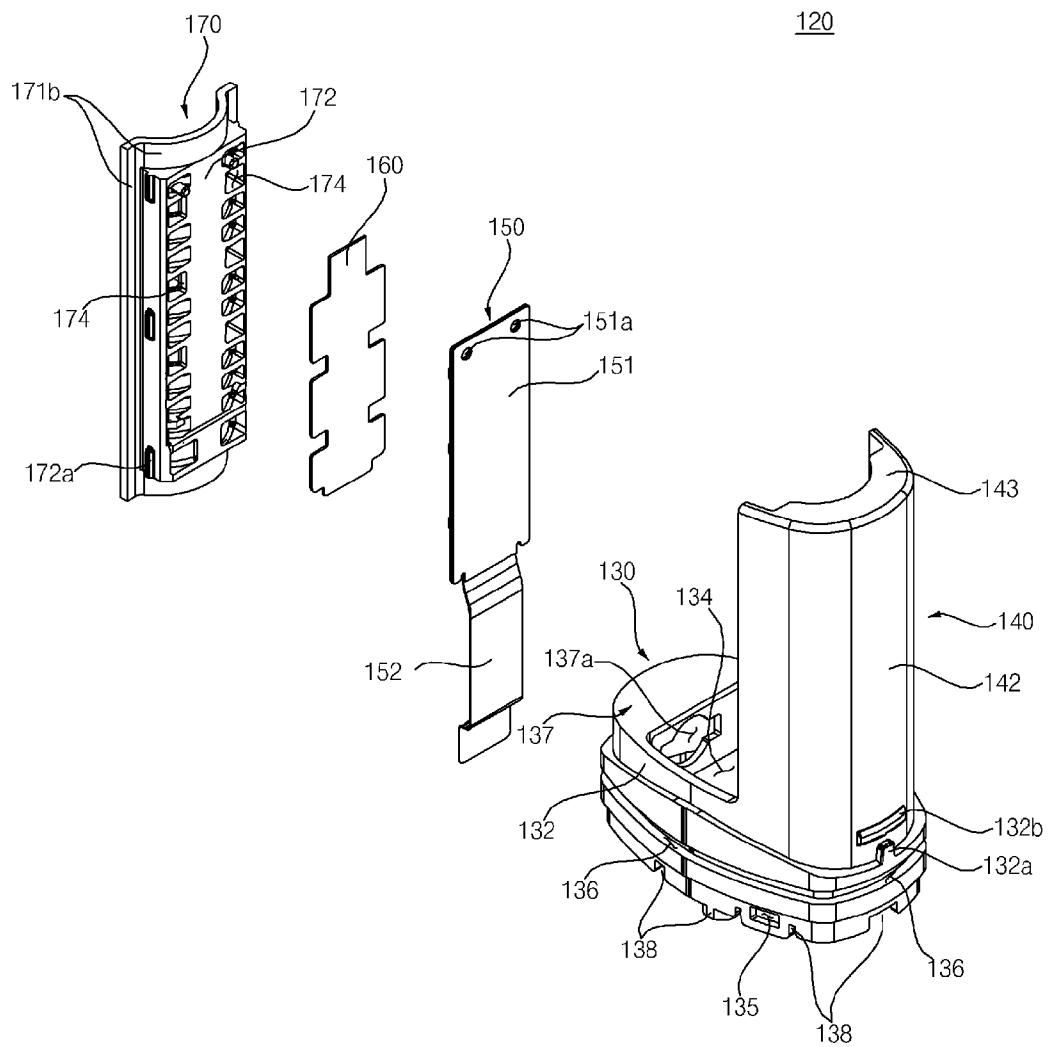
[Fig. 16]

100

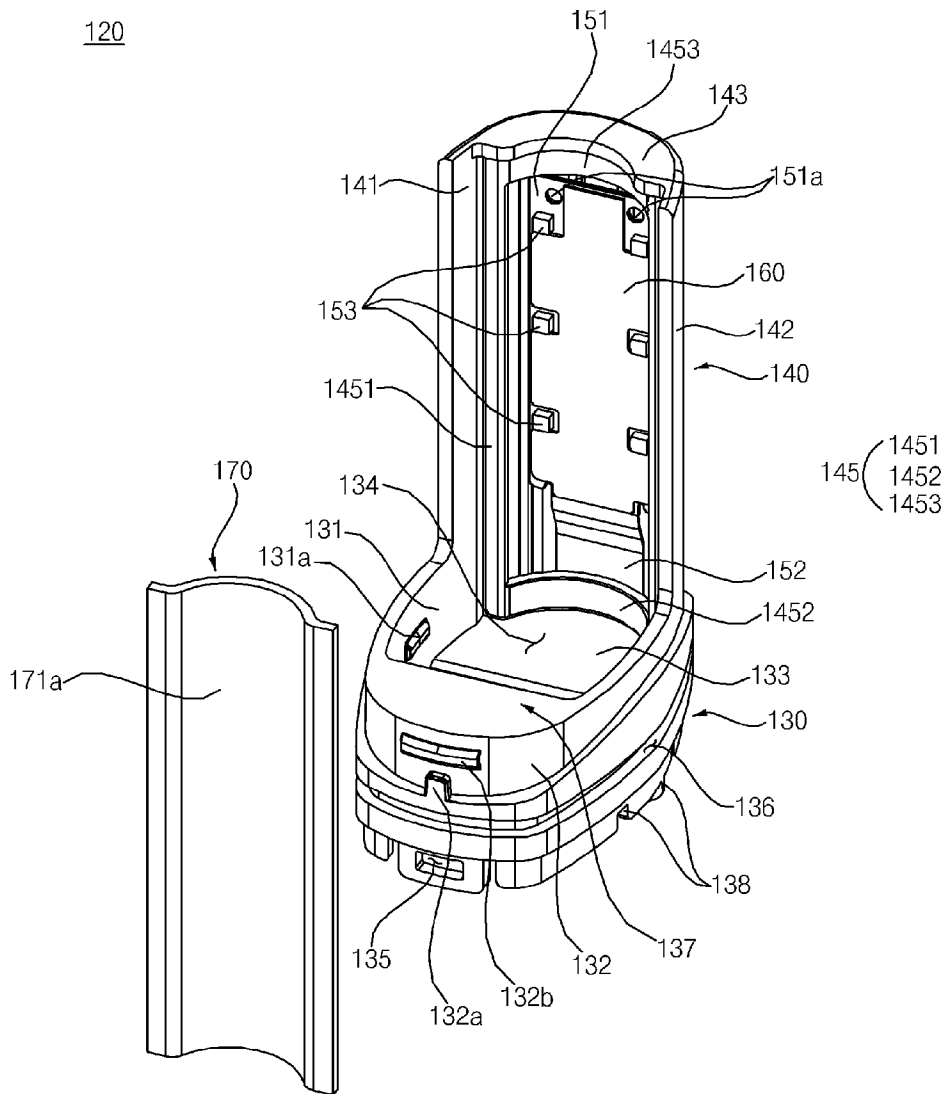
[Fig. 17]

120

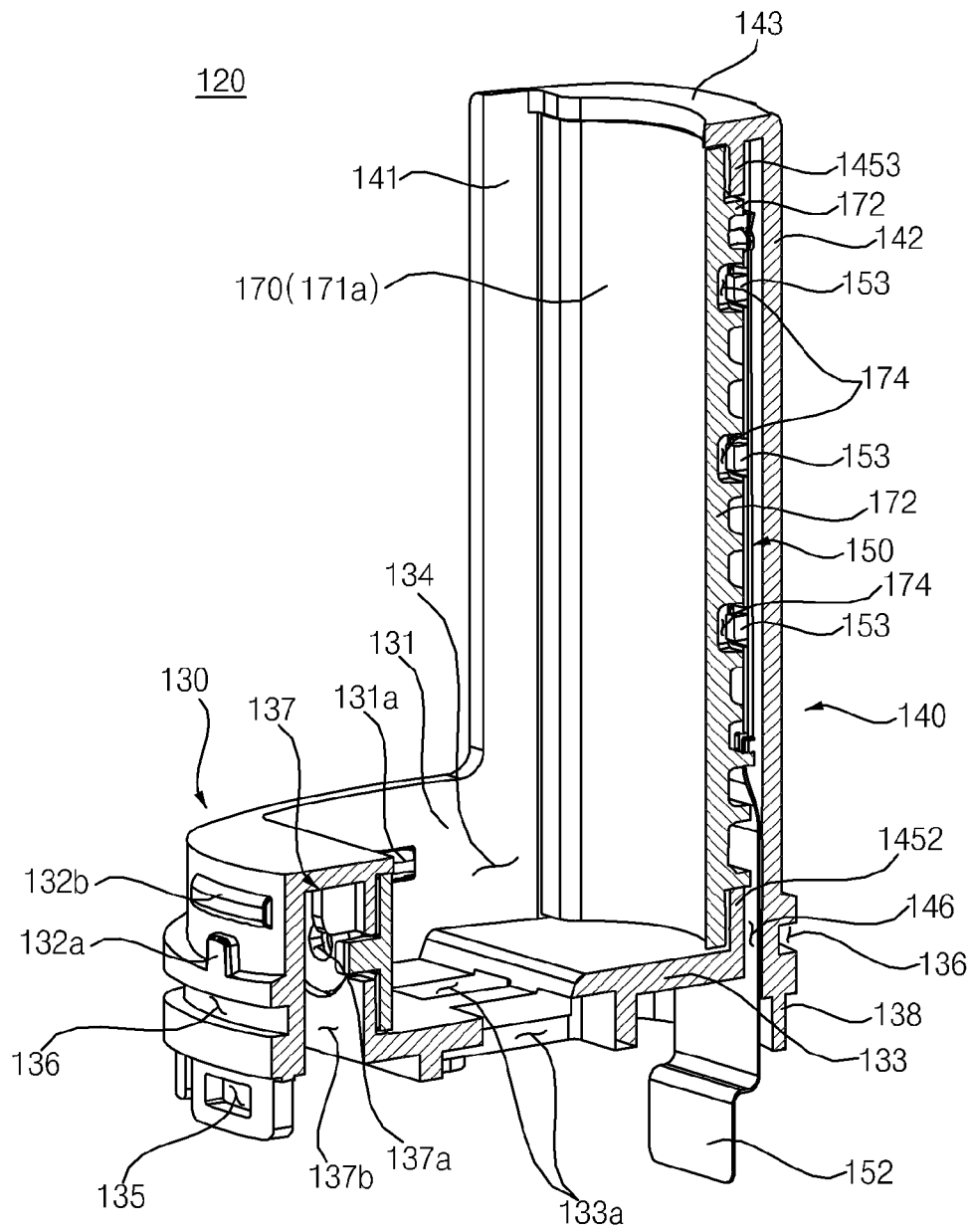
[Fig. 18]



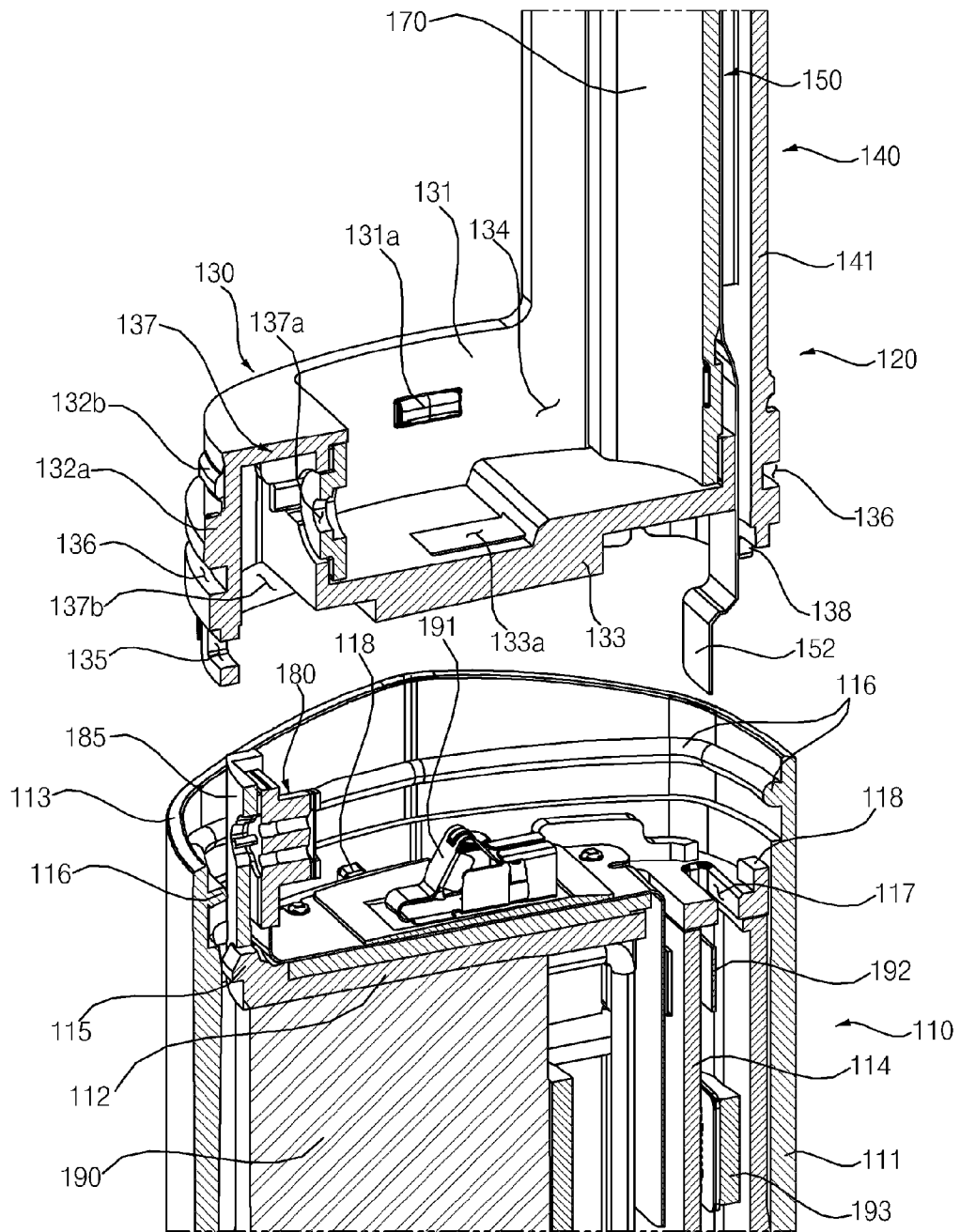
[Fig. 19]



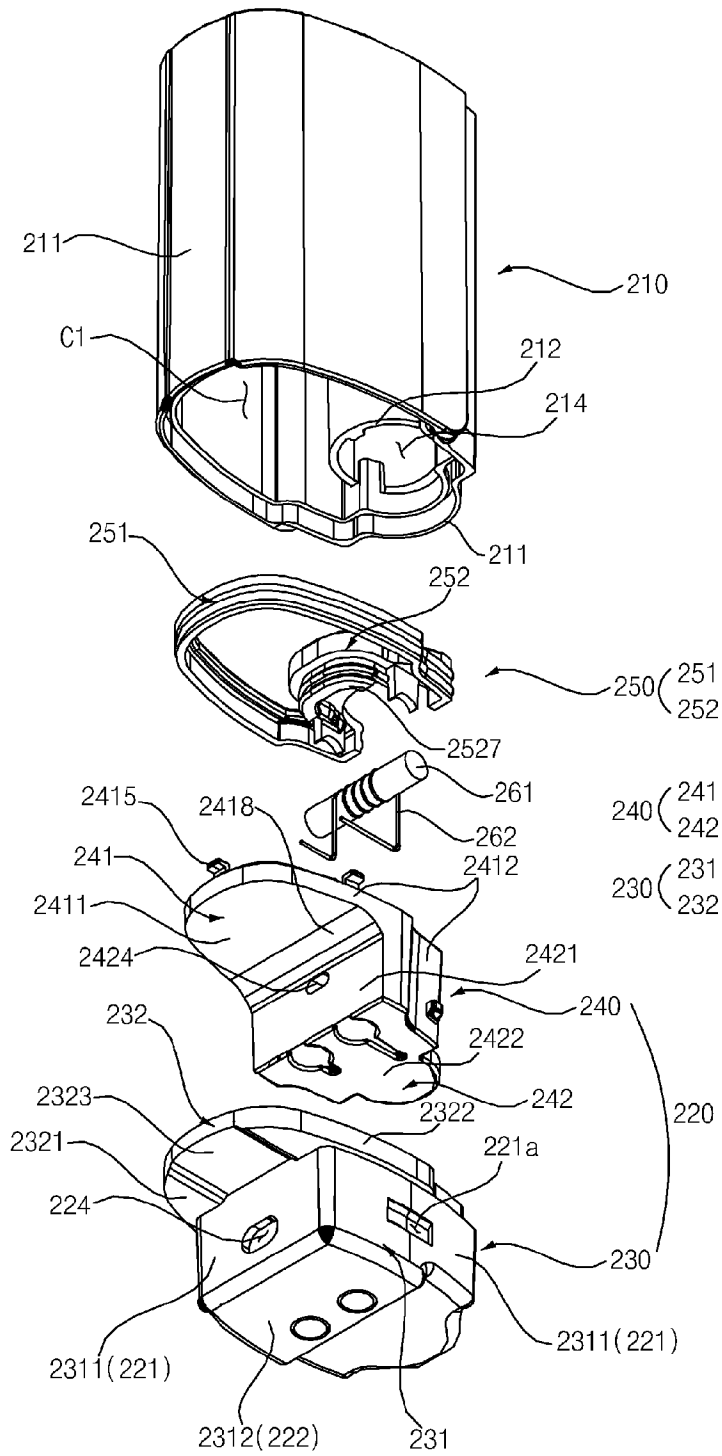
[Fig. 20]



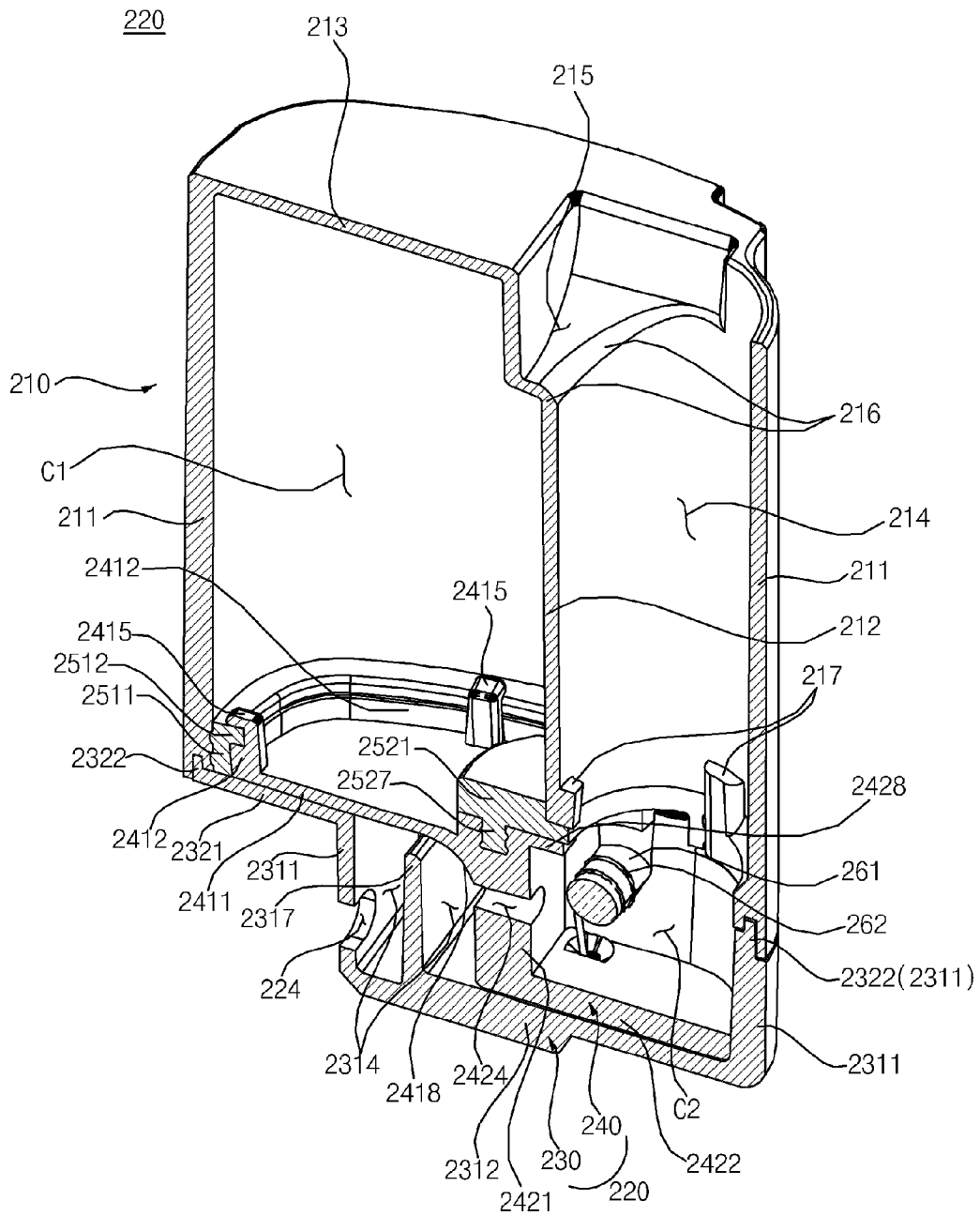
[Fig. 21]



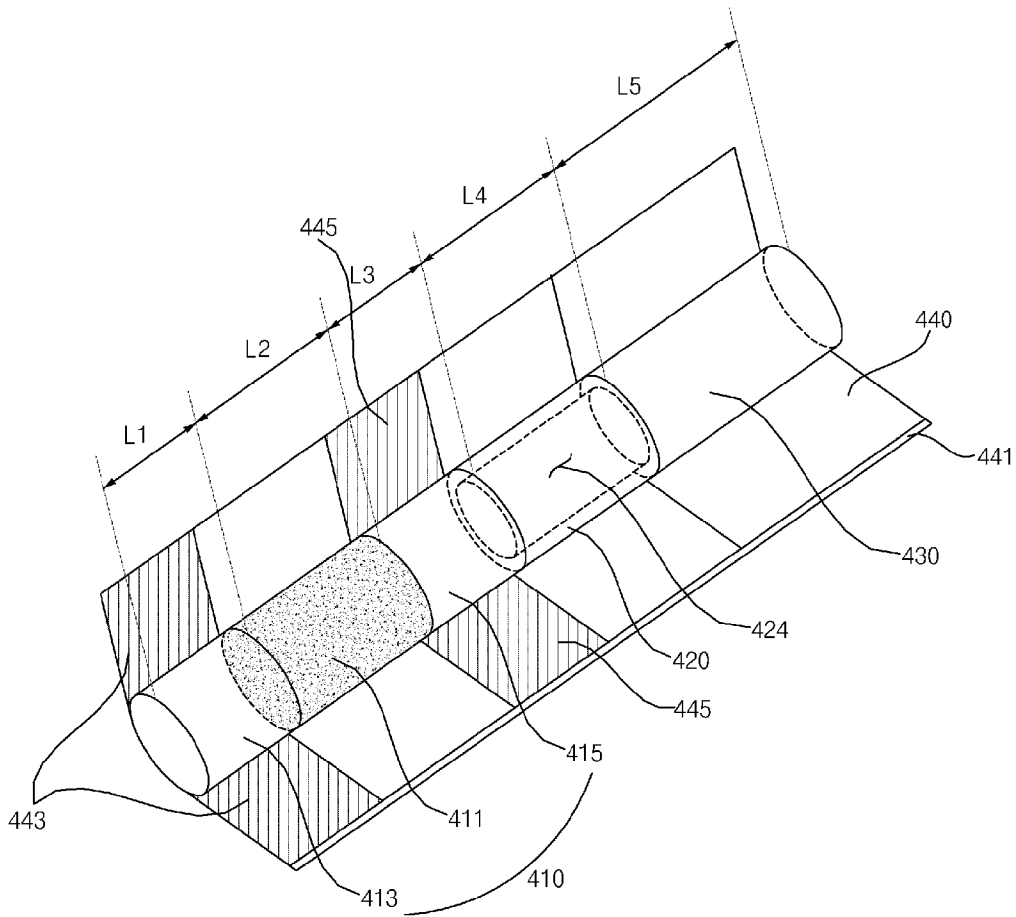
[Fig. 24]
200



[Fig. 25]

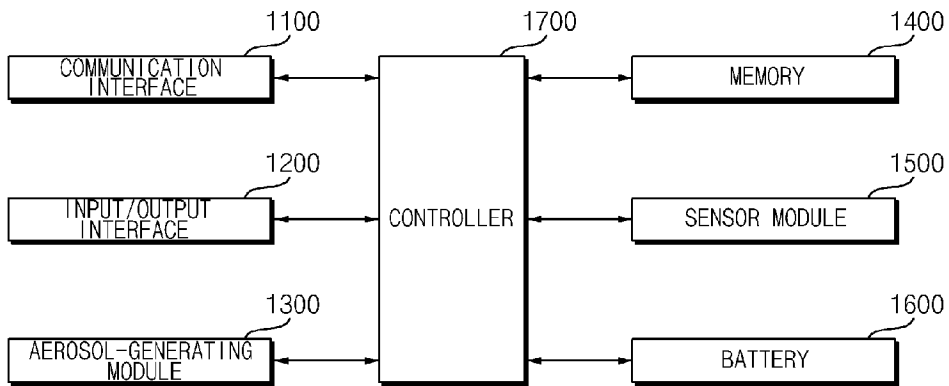


[Fig. 26]

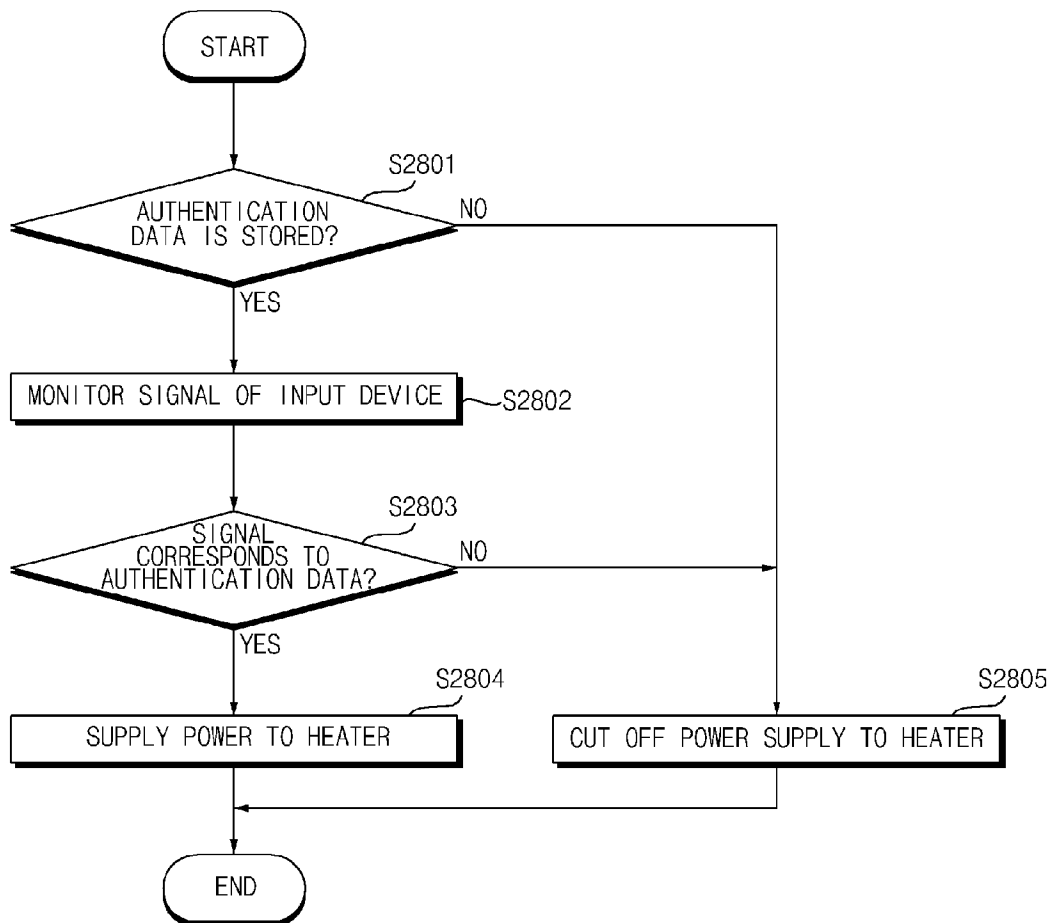


[Fig. 27]

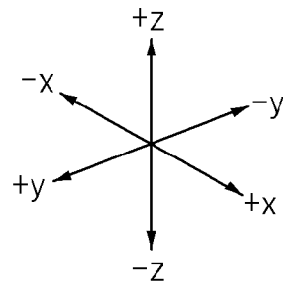
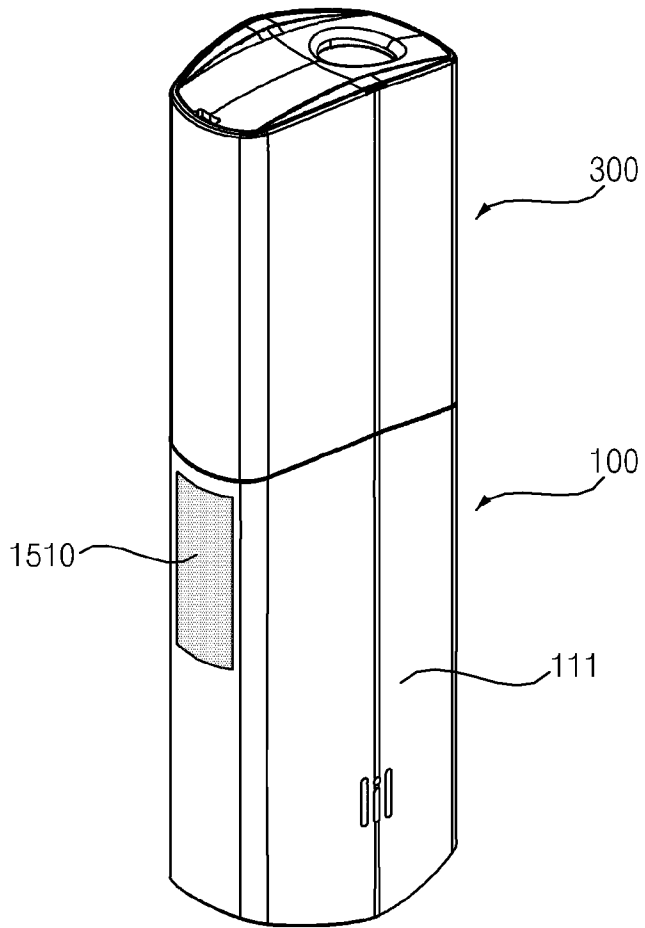
1000



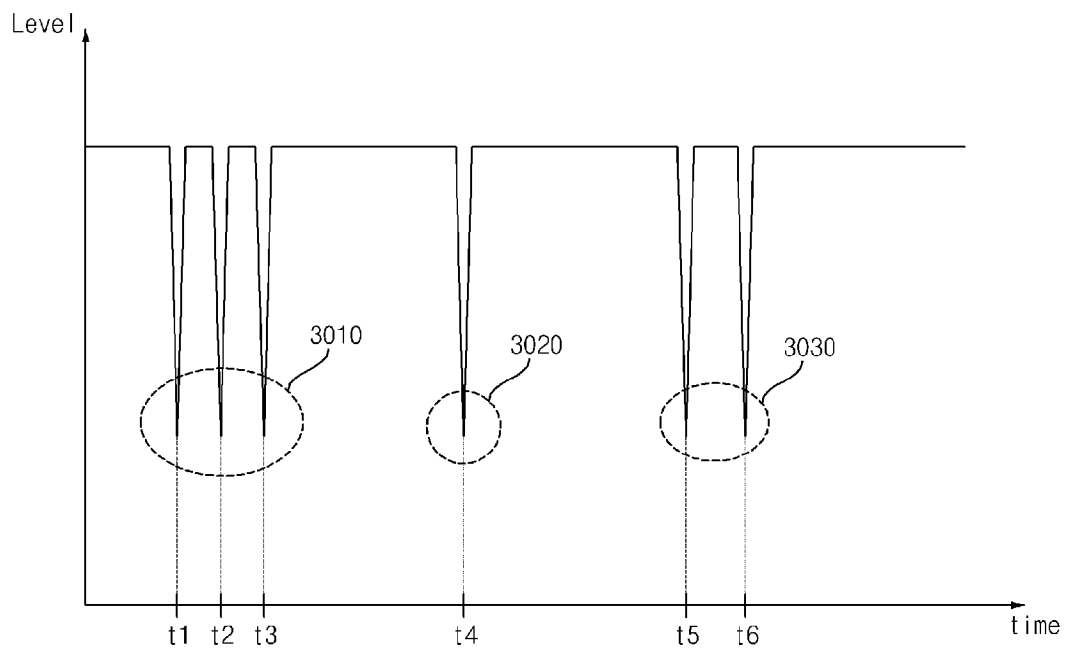
[Fig. 28]



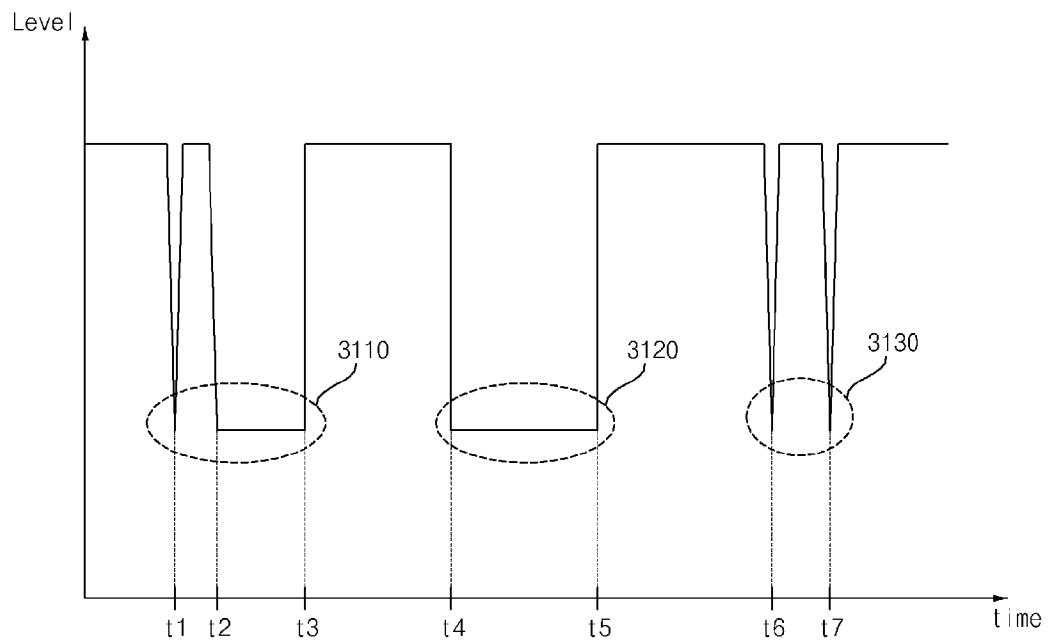
[Fig. 29]



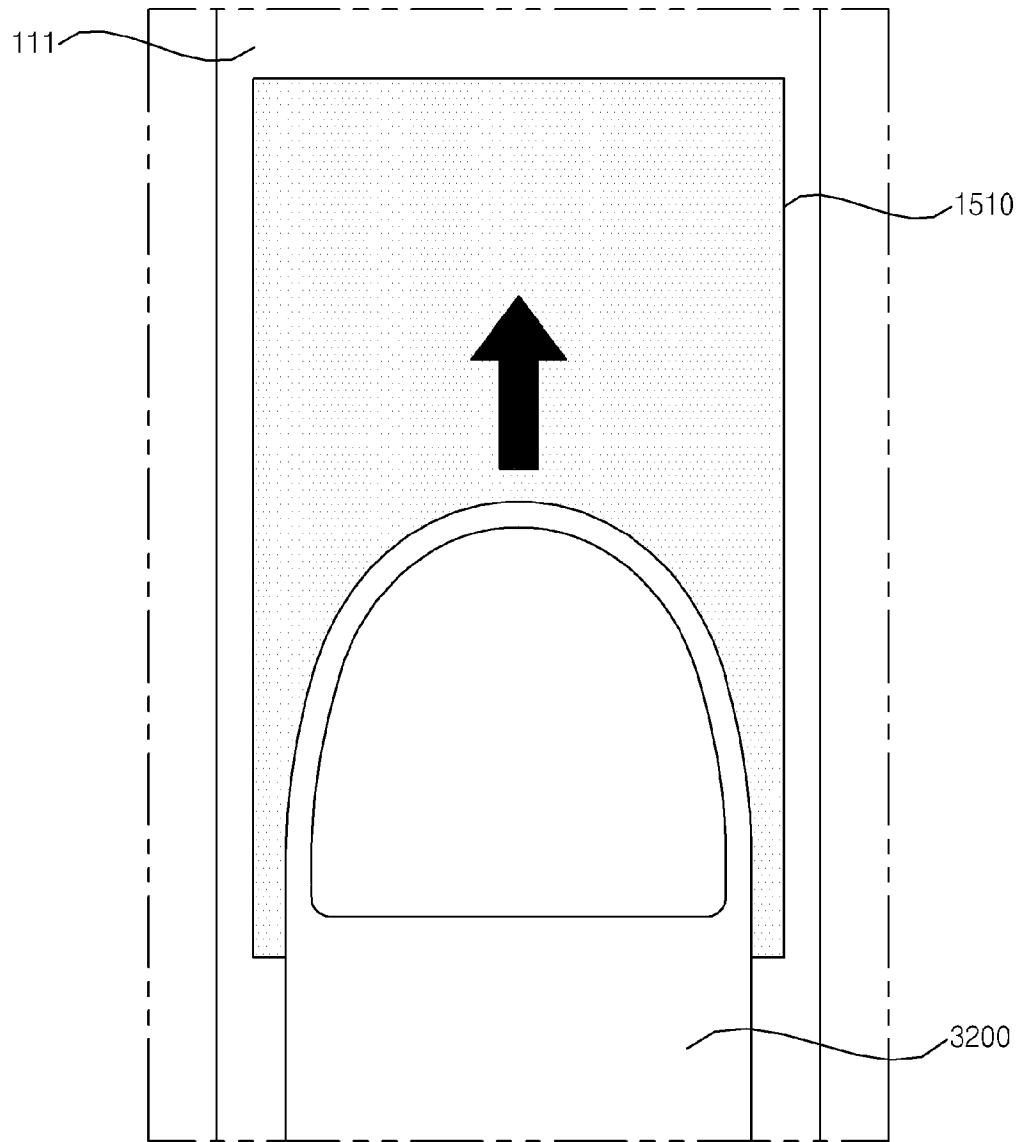
[Fig. 30]



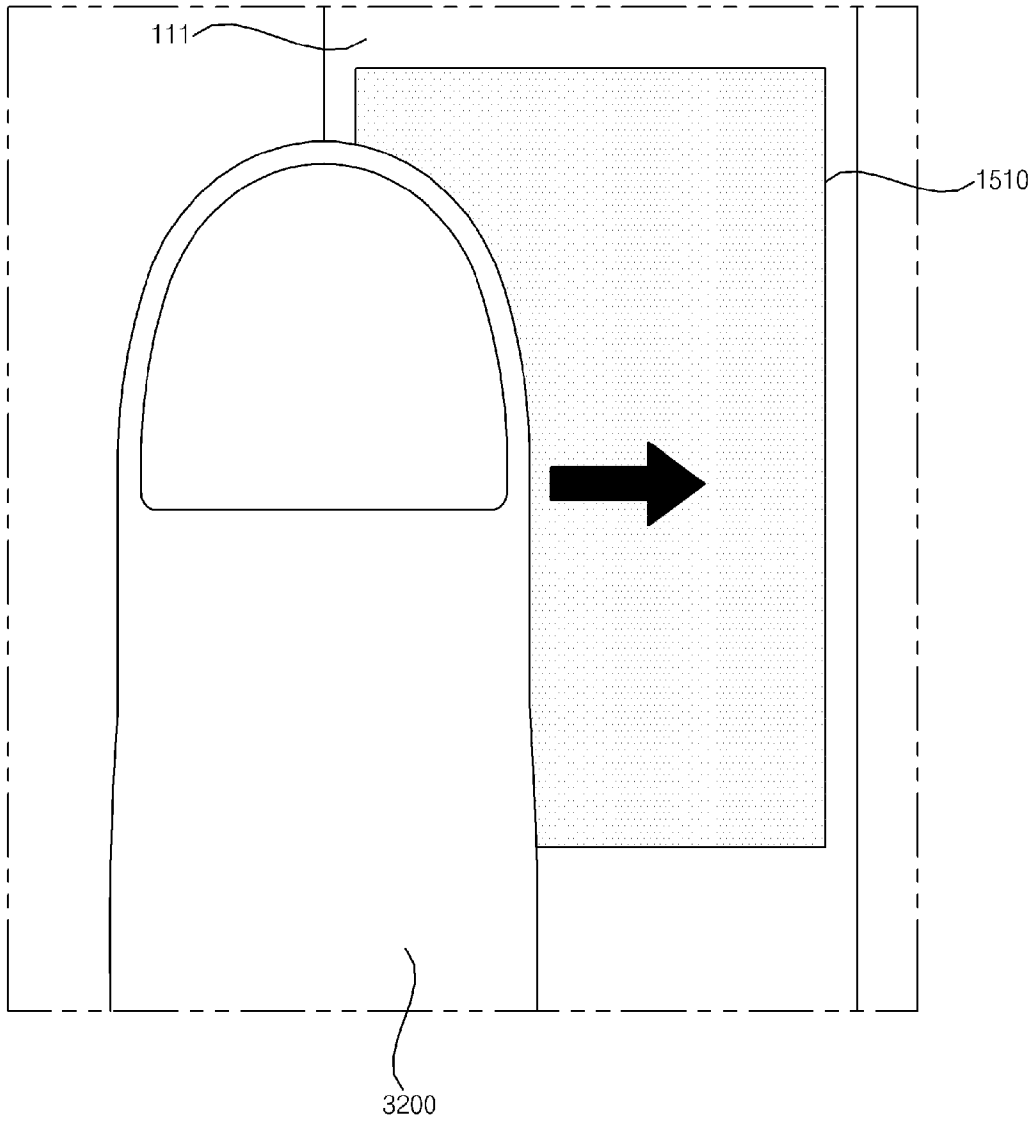
[Fig. 31]



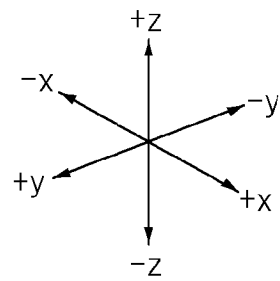
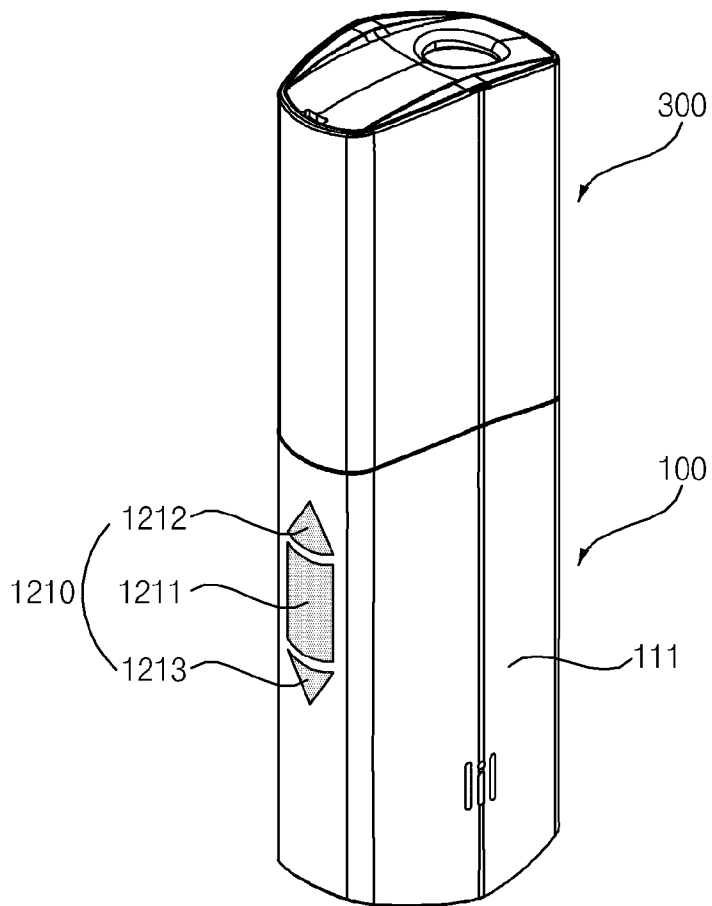
[Fig. 32A]



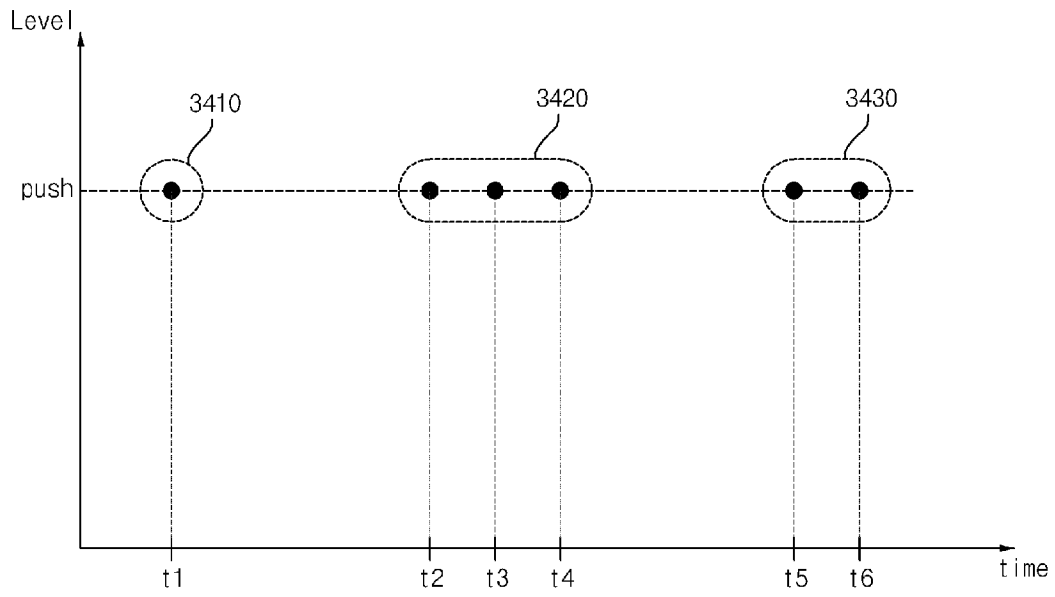
[Fig. 32B]



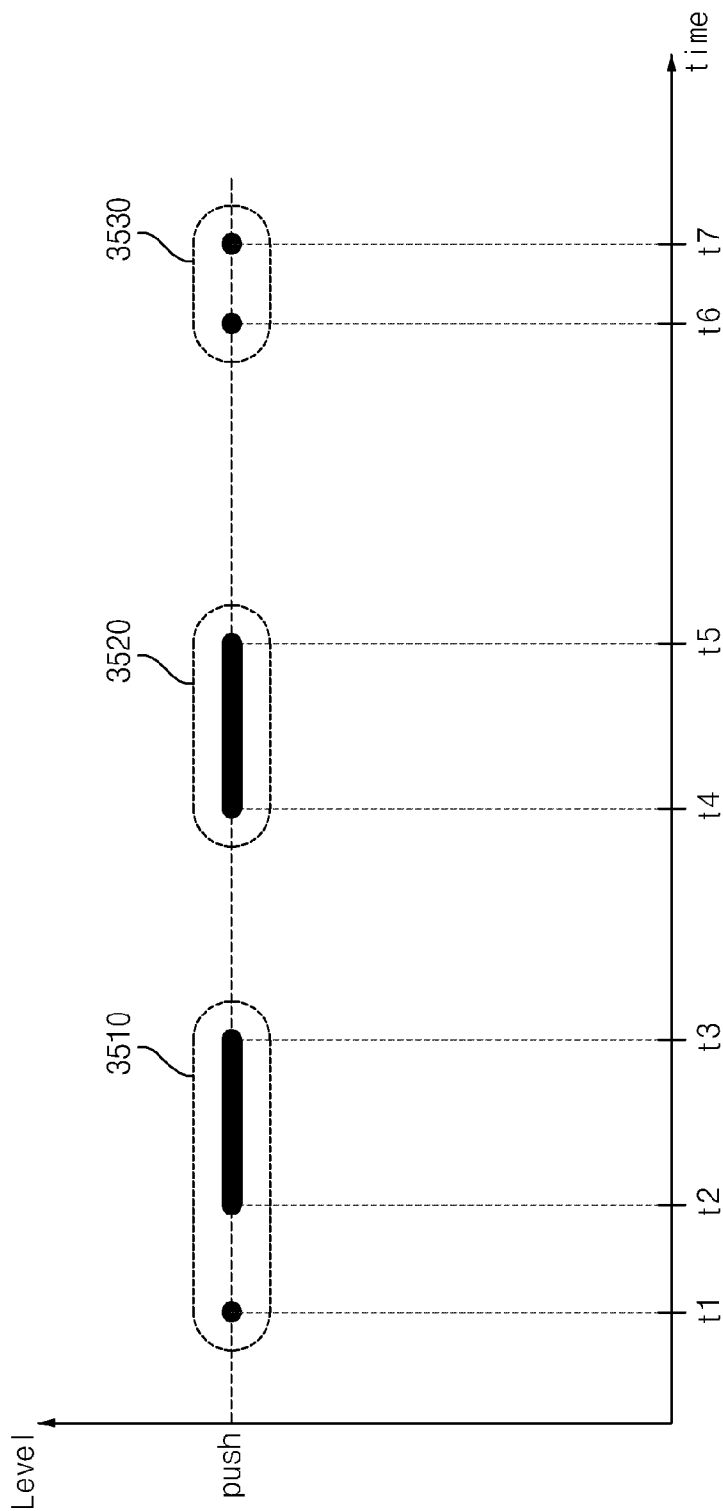
[Fig. 33]



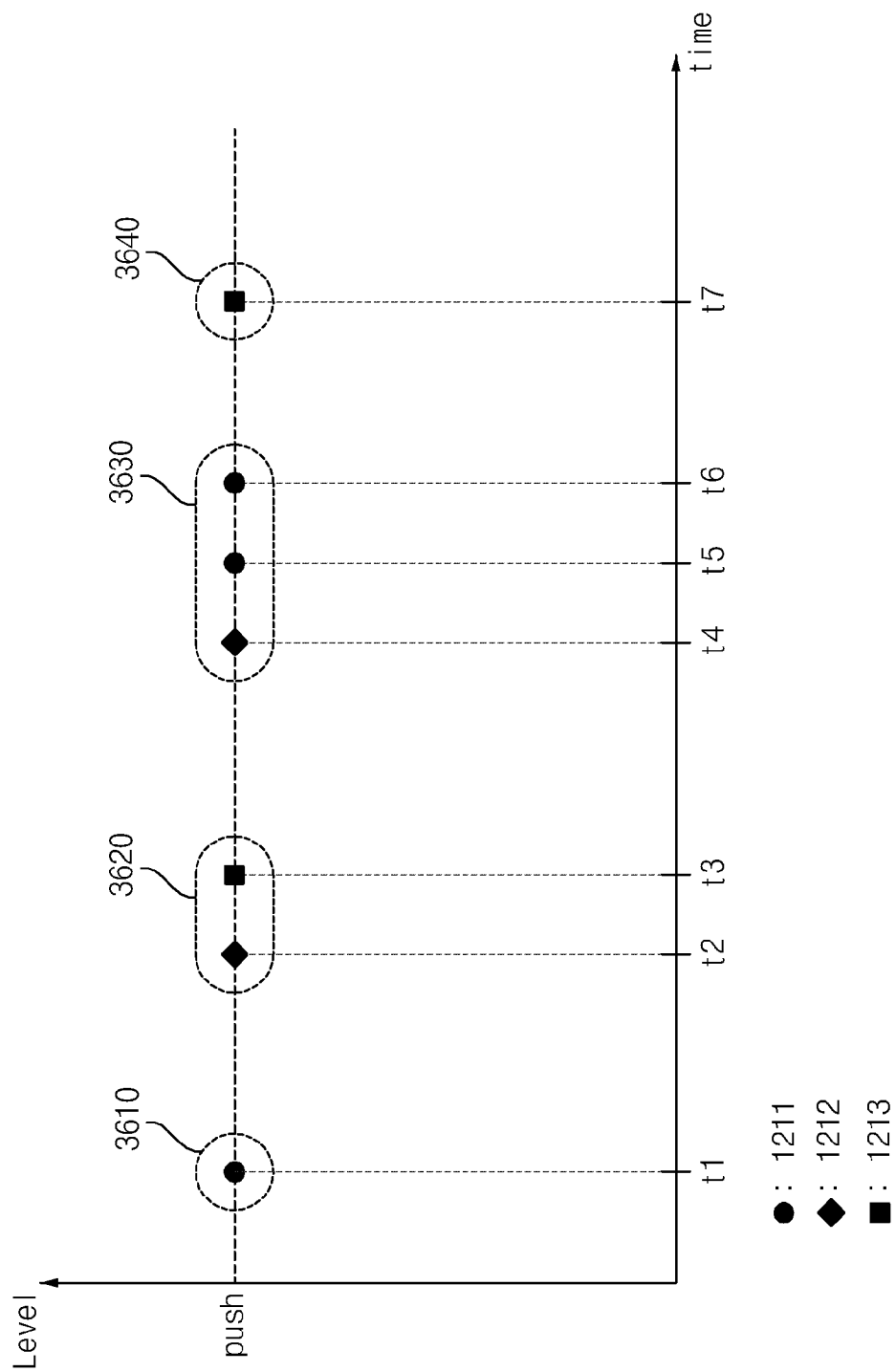
[Fig. 34]



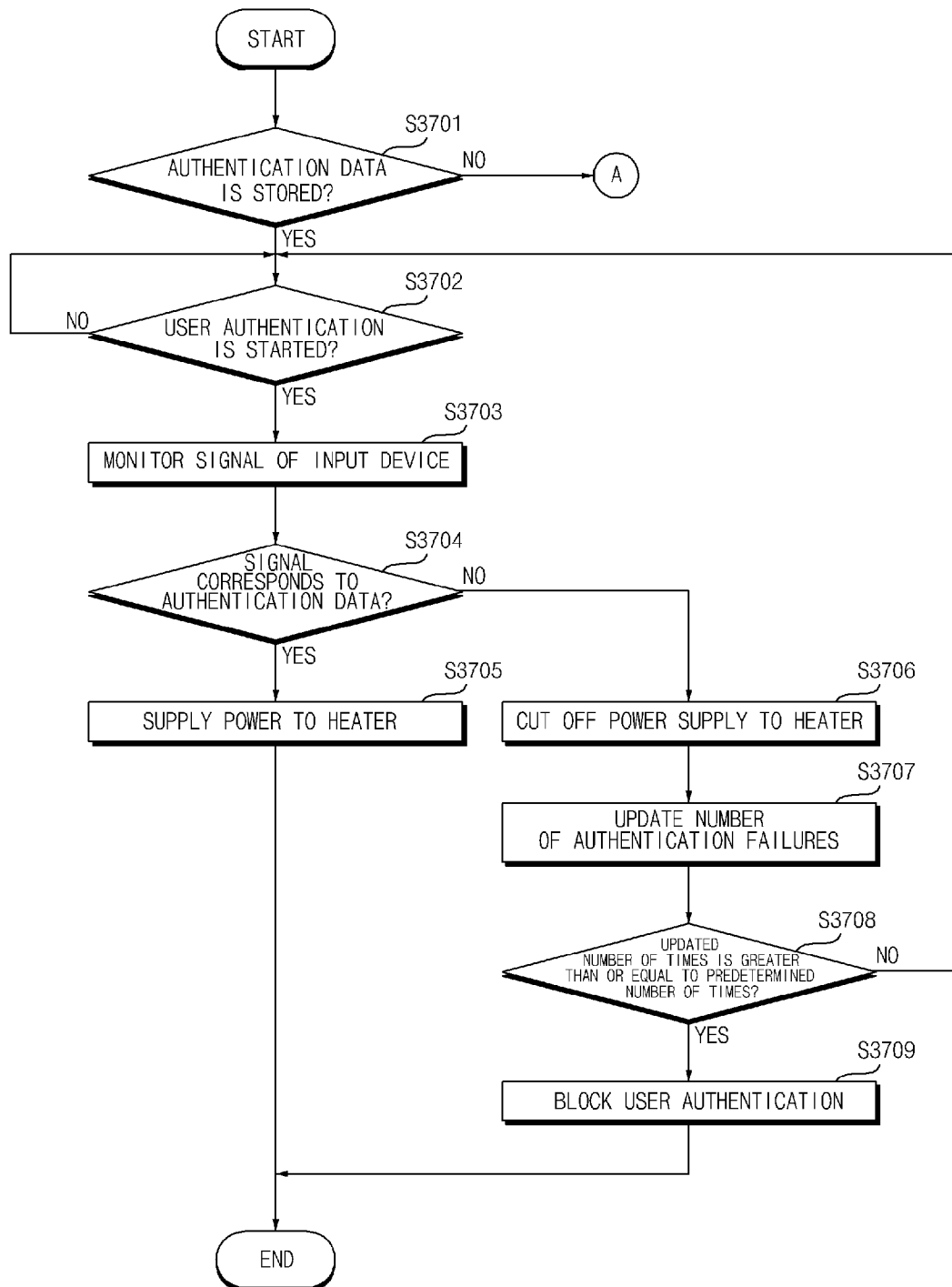
[Fig. 35]



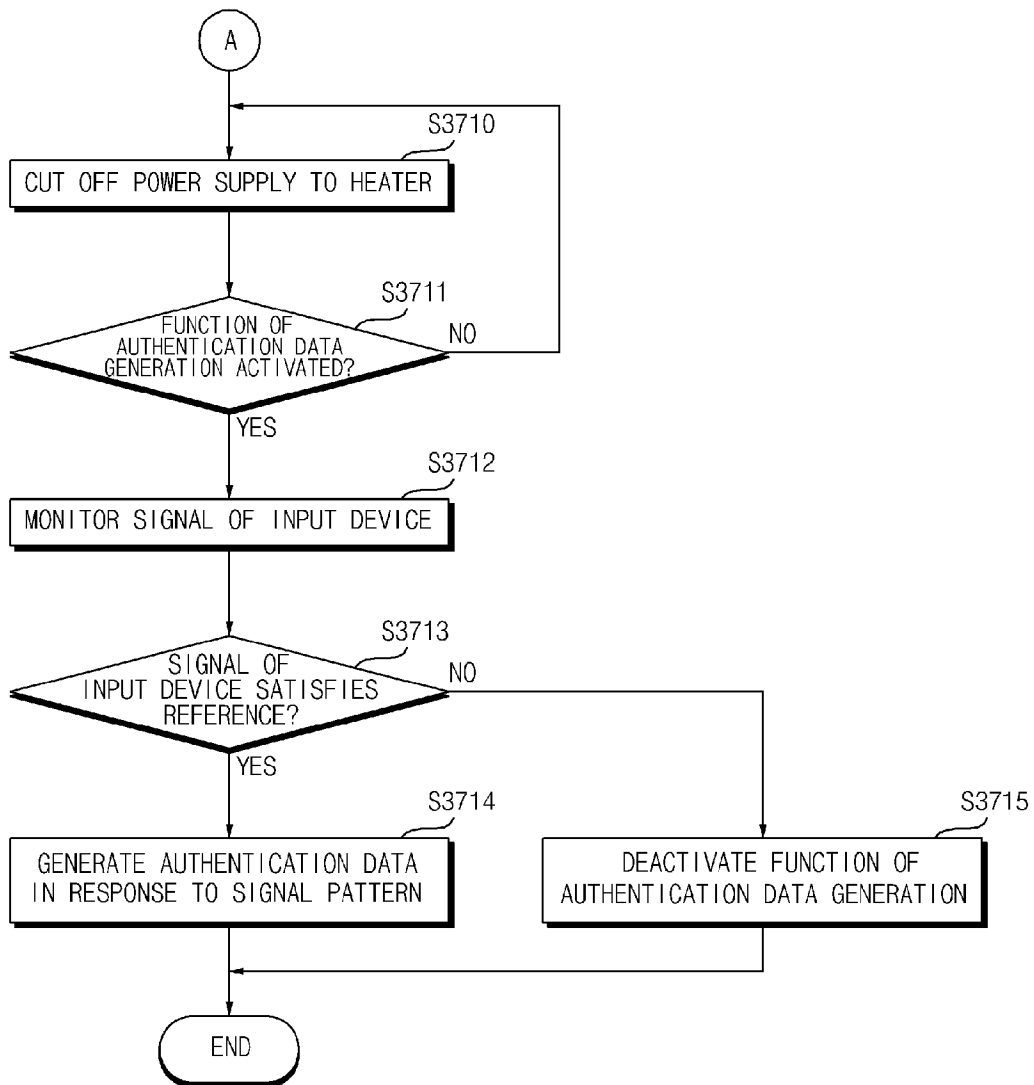
[Fig. 36]



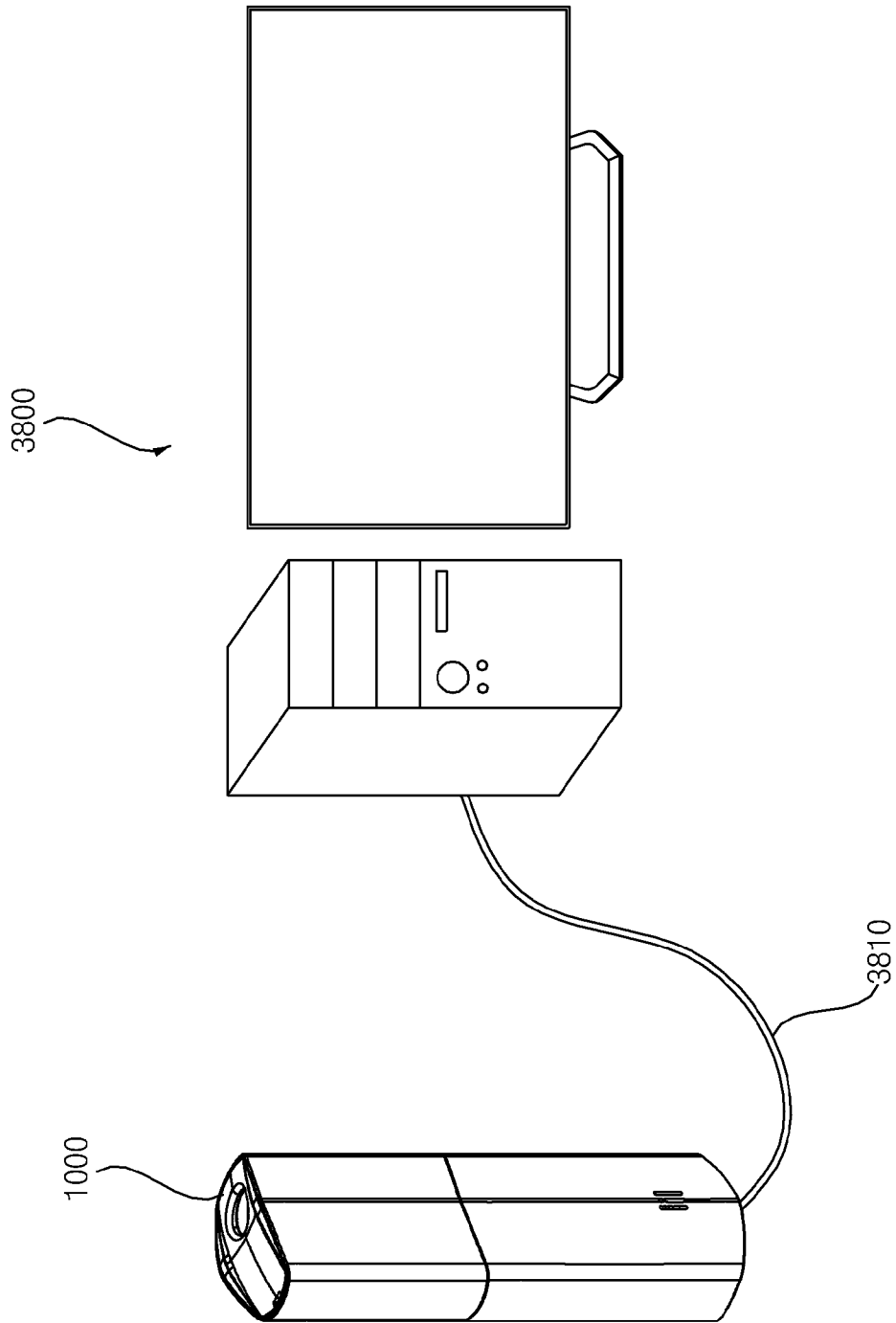
[Fig. 37A]



[Fig. 37B]



[Fig. 38]



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2022/010591

A. CLASSIFICATION OF SUBJECT MATTER		
A24F 40/50(2020.01)i; A24F 40/60(2020.01)i; A24F 40/42(2020.01)i; A24F 40/44(2020.01)i; H02M 1/00(2007.01)i; A24F 40/30(2020.01)i; A24F 40/65(2020.01)i; G06F 21/31(2013.01)i; A24F 40/51(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 40/50(2020.01); A24F 40/10(2020.01); A24F 40/60(2020.01); A24F 47/00(2006.01); G05B 11/01(2006.01); H04Q 9/00(2006.01); H05B 1/02(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 Japanese utility models and applications for utility models		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) eKOMPASS(KIPO internal) & Keywords: aerosol, user, authentication, memory, controller, data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 10-2021-0042743 A (KT&G CORPORATION) 20 April 2021 (2021-04-20) claim 1; paragraphs [0032]-[0048]; figures 1, 2	1-12
A	KR 10-2021-0080942 A (CRUCIALTEC CO., LTD.) 01 July 2021 (2021-07-01) the whole document	1-12
A	US 2018-0160734 A1 (PHILIP MORRIS PRODUCTS S.A.) 14 June 2018 (2018-06-14) the whole document	1-12
A	US 2019-0158938 A1 (JUUL LABS, INC.) 23 May 2019 (2019-05-23) the whole document	1-12
A	US 2019-0350257 A1 (RAI STRATEGIC HOLDINGS, INC.) 21 November 2019 (2019-11-21) the whole document	1-12
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> 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 "D" document cited by the applicant in the international application "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 10 November 2022		Date of mailing of the international search report 10 November 2022
Name and mailing address of the ISA/KR Korean Intellectual Property Office 189 Cheongsa-ro, Seo-gu, Daejeon 35208, Republic of Korea Facsimile No. +82-42-481-8578		Authorized officer MIN, In Gyou Telephone No. +82-42-481-3326

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/KR2022/010591

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
KR	10-2021-0042743	A	20 April 2021	None			
KR	10-2021-0080942	A	01 July 2021	None			
US	2018-0160734	A1	14 June 2018	CN	107666837	A	06 February 2018
				CN	107666837	B	25 June 2021
				EP	3307097	A1	18 April 2018
				JP	2018-520663	A	02 August 2018
				JP	6924154	B2	25 August 2021
				KR	10-2018-0015622	A	13 February 2018
				MX	2017015497	A	19 February 2018
				US	10925316	B2	23 February 2021
				WO	2016-198266	A1	15 December 2016
US	2019-0158938	A1	23 May 2019	CA	3083248	A1	31 May 2019
				CN	109965354	A	05 July 2019
				CN	209527874	U	25 October 2019
				CN	213307423	U	01 June 2021
				EP	3713432	A1	30 September 2020
				JP	2021-503901	A	15 February 2021
				TW	201924735	A	01 July 2019
				WO	2019-104223	A1	31 May 2019
US	2019-0350257	A1	21 November 2019	AU	2020-270613	A1	24 December 2020
				BR	112020023317	A2	02 February 2021
				CA	3100292	A1	21 November 2019
				CN	112423612	A	26 February 2021
				EP	3809892	A1	28 April 2021
				JP	2021-523721	A	09 September 2021
				KR	10-2021-0008870	A	25 January 2021
				US	10959459	B2	30 March 2021
				US	2021-0161215	A1	03 June 2021
				WO	2019-220343	A1	21 November 2019