



(11)

EP 4 520 202 A1

(12)

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

(43) Date of publication:
12.03.2025 Bulletin 2025/11

(51) International Patent Classification (IPC):
A24F 40/485 ^(2020.01) **A24F 40/51** ^(2020.01)
A24F 40/50 ^(2020.01) **A24F 40/20** ^(2020.01)

(21) Application number: **23850243.9**

(52) Cooperative Patent Classification (CPC):
A24F 40/20; A24F 40/485; A24F 40/50; A24F 40/51

(22) Date of filing: **16.06.2023**

(86) International application number:
PCT/KR2023/008363

(87) International publication number:
WO 2024/029733 (08.02.2024 Gazette 2024/06)

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

(71) Applicant: **KT&G Corporation**
Daedeok-gu
Daejeon 34337 (KR)

(72) Inventor: **KI, Sung Jong**
Daejeon 34128 (KR)

(74) Representative: **Ter Meer Steinmeister & Partner**
Patentanwälte mbB
Nymphenburger Straße 4
80335 München (DE)

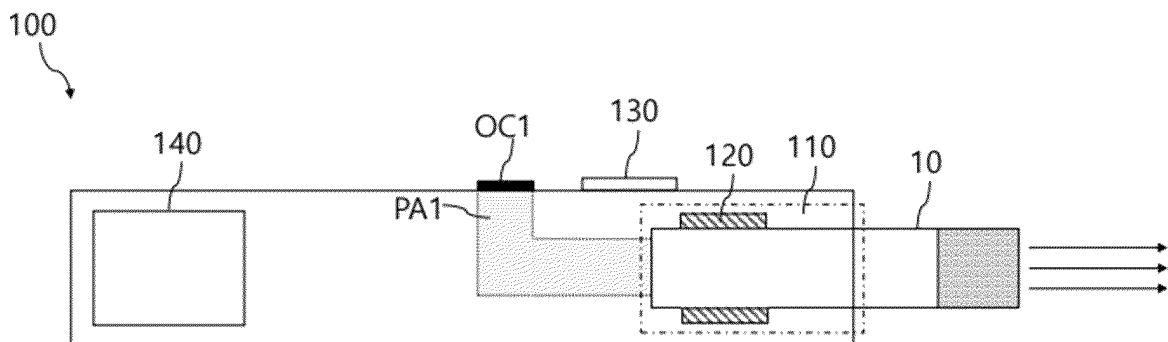
(30) Priority: **03.08.2022 KR 20220096631**

(54) **AEROSOL GENERATING APPARATUS CAPABLE OF CONTROLLING STREAM OF AIRFLOW**

(57) The present invention relates to an aerosol generation device including an aerosol generation article insertion part into which an aerosol generation article can be inserted, a sensor unit that detects stimulation, at least one airflow passage that is connected to the

aerosol generation article insertion part and can transmit external air to the aerosol generation article insertion part, and an opening and closing control member that controls opening and closing of the airflow passage based on the stimulation detected by the sensor unit.

Figure 1A



EP 4 520 202 A1

Description**Technical Field**

[0001] The present invention relates to an aerosol generation device. More particularly, the present invention relates to an aerosol generation device capable of controlling a flow of airflow.

[0002] The present application claims the benefit of priority based on Korean Patent Application No. 10-2022-0096631, filed on August 3, 2022, the entire disclosure of which is incorporated herein as part of this specification.

Background Art

[0003] In recent years, there has been a growing demand for alternative smoking articles that overcome the disadvantages of traditional aerosol generation articles. For example, demand for devices (e.g., an aerosol generation article type electronic cigarette) that generate aerosol by electrically heating an aerosol generation article stick is increasing. Accordingly, research on an electrically heated aerosol generation device and an aerosol generation article stick (or aerosol generation article) applied thereto is being actively conducted.

[0004] The aerosol generating device may include a passage through which airflow may flow within the device. In this case, it is necessary to control a flow of airflow through the airflow passage according to user's preference using the aerosol generation device.

[0005] For example, when the user wants to lower a suction resistance while smoking, the flow of airflow needs to be strengthened. Conversely, when the user wants to increase the suction resistance while smoking, the flow of airflow needs to be weakened.

[0006] In another example, the user needs to strengthen the flow of airflow to reduce heat sensation that occurs at the beginning of smoking. Conversely, the user needs to weaken the flow of airflow in the middle of smoking to increase suction resistance and increase smoking satisfaction. Research has already been conducted on technologies that control opening and closing of an aerosol passage connected to a vaporizer that generates an aerosol or control the flow of air through the airflow passage connected to the outside, but additional research and development is needed on specific methods to control the flow of airflow according to the user's preference.

[Prior Art Document]

[Patent Document]

[0007] (Patent Document 1) Korean Laid-open Patent Publication No. 10-2021-0127579

Disclosure**Technical Problem**

[0008] As a result of the above research and development, it is an object of the present invention to provide an aerosol generation device capable of controlling opening and closing of at least one airflow passage based on stimulation detected by a sensor unit.

Technical Solution

[0009] According to an embodiment of the present invention to resolve the above object, an aerosol generation device capable of controlling a flow of airflow may include: an aerosol generation article insertion part into which an aerosol generation article is inserted; a sensor unit that detects stimulation; at least one airflow passage that is connected to the aerosol generation article insertion part and transmits external air to the aerosol generation article insertion part; and an opening and closing control member that controls opening and closing of the airflow passage based on the stimulation detected by the sensor unit.

[0010] In embodiments, the number of airflow passages may be two or more.

[0011] In embodiments, a size of at least one of the airflow passages may be different from that of the others.

[0012] In embodiments, the opening and closing control member may be opened or closed based on the stimulation detected by the sensor unit.

[0013] In embodiments, the opening and closing control member may control the opening and closing of the airflow passages independently of each other.

[0014] In embodiments, the stimulation may be temperature, and when the temperature is a preset temperature or higher, the opening and closing control member may be opened, and when the temperature is less than the preset temperature, the opening and closing control member may be closed.

[0015] In embodiments, the stimulation may be a user's puff, and when the number of times of the puff is less than a first set number of times, the opening and closing control member may be opened, and when the number of times of the puff is greater than or equal to the first set number of times, the opening and closing control member may be closed.

[0016] In embodiments, when the number of times of the puff is greater than or equal to a second set number of times, the opening and closing control member may be opened, and the second set number of times may be greater than the first set number of times.

[0017] In embodiments, the sensor unit may include a touch sensor, and the opening and closing control member may be opened or closed based on the number of times of touch input to the touch sensor. In embodiments, the sensor unit may include a touch sensor, and the opening and closing control member may be opened

or closed based on duration of touch input to the touch sensor.

[0018] In embodiments, the sensor unit may include a touch sensor, and the opening and closing control member may be opened or closed based on an intensity of touch input to the touch sensor.

[0019] In embodiments, the aerosol generation device may further include a vaporizing unit that heats a composition to generate an aerosol and releases the generated aerosol to the aerosol generation article insertion part, wherein the generated aerosol may be transmitted to the aerosol generation article insertion part through an aerosol passage.

[0020] In embodiments, the stimulation may be a user's puff, and when the number of times of the puff is greater than or equal to a preset number of times for a preset time, the opening and closing control member may be opened.

[0021] In embodiments, the opening and closing control member may be partially opened or fully opened.

Advantageous Effects

[0022] The aerosol generation device according to the present invention may include a sensor unit and an opening and closing control member that may control opening and closing of an airflow passage based on stimulation detected by the sensor unit. Accordingly, an opening and closing control member may operate under control of a user using an aerosol generation device or according to external circumstances (e.g., temperature, etc.), and may allow airflow to flow inside the aerosol generation device, thereby increasing user's satisfaction with smoking.

Brief Description of the Drawings

[0023]

FIGS. 1A to 1C are diagrams illustrating an embodiment of an aerosol generation device according to the present invention.

FIG. 2 is a diagram illustrating another embodiment of the aerosol generation device according to the present invention.

FIGS. 3A to 3B are diagrams illustrating another embodiment of an aerosol generation device according to the present invention.

FIGS. 4A to 4C are diagrams illustrating another embodiment of an aerosol generation device according to the present invention.

FIG. 5 is a diagram illustrating another embodiment of the aerosol generation device according to the present invention.

FIG. 6 is a diagram illustrating another embodiment of the aerosol generation device according to the present invention.

Best Mode

[0024] Hereinafter, the present invention will be described in more detail.

[0025] General terms that are currently widely used are selected as terms used in embodiments in consideration of functions in the present invention but may be changed depending on the intention of those skilled in the art or a judicial precedent, the emergence of a new technique, and the like. In addition, in a specific case, the terms arbitrarily chosen by an applicant may exist. In this case, the meaning of such terms will be described in detail in a corresponding description portion of the present invention. Therefore, the terms used in exemplary embodiments of the present invention should be defined on the basis of the meaning of the terms and the contents throughout the present invention rather than simple names of the terms.

[0026] Throughout the present specification, unless explicitly described to the contrary, "comprising" any components will be understood to imply the inclusion of other elements rather than the exclusion of any other elements. In addition, the terms "...unit", "...module", and the like, described in the specification refer to a processing unit of at least one function or operation and may be implemented by hardware or software or a combination of hardware and software.

[0027] Throughout the specification, an "aerosol generating material" means a material capable of generating an aerosol, and may also refer to an aerosol forming substrate. The aerosol may include a volatile compound. The aerosol generating material may be solid or liquid.

[0028] For example, the solid aerosol generating material may include a solid material based on tobacco raw materials such as planar leaf tobacco, cut filler, and reconstituted tobacco, and the liquid aerosol generating material may include liquid materials based on nicotine, tobacco extracts, and various flavoring agents. Of course, it is not limited to the above example.

[0029] Throughout the specification, an aerosol generation device may be a device that generates an aerosol using an aerosol generating material to generate an aerosol that can be inhaled directly into a user's lung through a user's mouth. For example, the aerosol generation device may be a holder. Throughout the specification, "puff" refers to the user's inhalation, and the inhalation may refer to a situation where the puff is pulled into a user's oral cavity, nasal cavity, or lung through the user's mouth or nose.

[0030] Hereinafter, embodiments of the present invention will be described in detail with reference to the accompanying drawings so that those skilled in the art to which the present invention pertains may easily practice the present invention. However, the present invention may be implemented in various different forms, and is not limited to embodiment examples described herein. Hereinafter, embodiments of the present invention will be described in detail with reference to the drawings.

[0031] FIGS. 1A to 1C are diagrams illustrating an embodiment of an aerosol generation device according to the present invention, and FIG. 2 is a diagram illustrating another embodiment of an aerosol generation device according to the present invention.

[0032] Referring to FIG. 1A, the aerosol generation device 100 may include an aerosol generation article insertion part 110, a heating unit 120, a sensor unit 130, a control unit 140, a first airflow passage PA1, and a first opening and closing control member OC1. In the aerosol generation device 100, only components related to the present embodiment are illustrated. Accordingly, those skilled in the art can easily understand that other general-purpose components in addition to the components illustrated in FIG. 1A may be further included in the aerosol generation device 100. In addition, the aerosol generation device 100 may be in the form of a stick or a holder.

[0033] The aerosol generation article insertion part 110 corresponds to one area of the aerosol generation device 100 and may provide a space into which the aerosol generation article 10 is inserted. The aerosol generation article 10 may have a generally known form, and may have a form in which tobacco raw materials are deposited on a heat-conducting material. For example, the heat-conducting material may be a metal foil, such as aluminum foil.

[0034] In one embodiment, the heating unit 120 may heat the aerosol generation article 10 inserted into the aerosol generation article insertion part 110. The heating unit 120 may be, for example, a heater module. The heater module may include a tubular heating element, a plate-shaped heating element, and a needle-shaped or rod-shaped heating element, and may heat the inside and/or outside of the aerosol generation article 10 depending on the shape of the heating element. The heater module may generate an aerosol with tobacco flavor by heating the aerosol generation article 10. Accordingly, a user may inhale an aerosol with tobacco flavor by inhaling one end of the aerosol generation article 10 with his/her mouth. The suction power with which the user inhales one end of the aerosol generation article 10 may be maintained within a certain range. Therefore, the aerosol generation device 100 according to the present invention proposes a method of separately generating airflow and discharging the airflow toward the aerosol generation article insertion part 110 in order to reduce the suction resistance that occurs when the user inhales.

[0035] The sensor unit 130 may detect external stimulation. The control unit 140 may control the operation of the aerosol generation device 100 based on the stimulation detected by the sensor unit 130. In one embodiment, the stimulation may be external temperature, and the sensor unit 130 may include a temperature sensor to detect the temperature.

[0036] In another embodiment, the stimulation may be a user's puff, and the sensor unit 130 may include a puff detection sensor for detecting the user's puff. The puff

detection sensor may detect the number of times of user's puff.

[0037] In another embodiment, the stimulation may be a user's touch, and the sensor unit 130 may include a touch sensor capable of detecting the user's touch. The touch sensor may detect microcurrent generated from a user's hand and may also detect pressure applied by the user's hand. The touch sensor may be a capacitive touch sensor, a resistive touch sensor, or a button-type touch sensor. Referring to FIGS. 1A and 1B, the control unit 140 may open the first opening and closing control member OC1 when the temperature detected by the sensor unit 130 is a preset temperature or higher. In this case, the airflow flowing in from the outside through the first airflow passage PA1 may flow to the aerosol generation article insertion part 110, so the user's suction resistance may be reduced and the heat sensation felt by the user while smoking may be reduced. Conversely, the control unit 140 may close the first opening and closing control member OC1 when the temperature detected by the sensor unit 130 is less than the preset temperature. In this case, the airflow flowing in from the outside may be blocked, so the user's suction resistance may increase and the heat sensation felt by the user while smoking may increase. In one embodiment, the control unit 140 may control the opening and closing of the first opening and closing control member OC1 to fully close or open. In another embodiment, as illustrated in FIG. 1C, the control unit 140 may control the opening and closing of the first opening and closing control member OC1 to fully close or open or partially close or open.

[0038] The preset temperature may vary depending on the user's settings. For example, the preset temperature may be 30°C, and when the external temperature detected by the sensor unit 130 is 30°C or higher, the control unit 140 may open the first opening and closing control member OC1. The sensor unit 130 of the aerosol generation device 100 may also detect a temperature of a vaporizing unit 150 (see FIG. 2). The temperature of the vaporizing unit 150 may refer to the heating temperature for heating the aerosol generating material of the vaporizing unit 150, or refer to the temperature of the aerosol released from the vaporizing unit 150 toward the aerosol generation article insertion part 110.

[0039] In this way, the aerosol generation device 100 according to the present invention controls the opening and closing of the first opening and closing control member OC1 based on the external temperature and/or internal temperature detected by the sensor unit 130 to control the heat sensation felt by the user, thereby increasing the user's smoking satisfaction.

[0040] Alternatively, the control unit 140 may open the first opening and closing control member OC1 when the number of times of the puff detected by the sensor unit 130 is less than a first set number of times. In this case, the airflow flowing in from the outside through the first airflow passage PA1 may flow to the aerosol generation article insertion part 110, so the user's suction resistance

may be reduced and the discomfort felt by the user may be reduced by the heat sensation that occurs in the early stages of smoking. Since the heat generated when puffing decreases after the first set number of times, it is necessary to lower the suction resistance. Accordingly, the control unit 140 may close the first opening and closing control member OC1 when the number of times of the puff detected by the sensor unit 130 is greater than or equal to the first set number of times. When the number of times of the puff is greater than or equal to the second set number of times, which is greater than the first set number of times, the control unit 140 may reopen the first opening and closing control member OC1 to lower the suction resistance again in the latter half of smoking. In this way, the control unit 140 may open or close the first opening and closing control member OC1 according to the number of times of puff, thereby increasing the user's smoking satisfaction with respect to the suction resistance and heat sensation.

[0041] The number of times of settings may vary depending on the user's settings. For example, the first set number of times may be four times, and the control unit 140 may open the first opening and closing control member OC1 until the number of times of the puff detected by the sensor unit 130 is three times and may close the first opening and closing control member OC1 when the number of times of the puff is four times. Through this, it is possible to reduce the decrease in the user's smoking satisfaction due to the high heat sensation that occurs in the early stages of smoking. The second set number of times may be 10 times, and the control unit 140 may reopen the first opening and closing control member OC1 when the number of times of the puff detected by the sensor unit 130 is 10 times. Through this, the user's smoking satisfaction may increase by reducing the suction resistance in the latter stages of smoking.

[0042] The puff allows the user to inhale both aerosol and air. When the desired amount of aerosol and air is not inhaled by the puff, the user may perform the puff repeatedly to achieve the smoking satisfaction. Accordingly, when the continuous puff is detected, the sensor unit 130 may open the first opening and closing control member OC1 to increase the user's smoking satisfaction.

[0043] In embodiments, when the sensor unit 130 detects more than the preset number of times of the puff within a preset time, the first opening and closing control member OC1 may be partially opened or fully opened. For example, when three or more puffs are detected within 5 seconds after one puff, the sensor unit 130 may determine that the suction resistance is high to partially or fully open the first opening and closing control member OC1. When the first opening and closing control member OC1 is partially opened and the sensor unit 130 detects more than a preset number of times of puffs within a preset time again, the sensor unit 130 may determine that the suction resistance is still high to open the first opening and closing control member OC1 more. However, this is an example, and the constant time may be

determined in various ways other than 5 seconds, and the number of times of the puff detected within the certain time may be determined in various ways other than 3 times or more.

[0044] Alternatively, the control unit 140 may open or close the first opening and closing control member OC1 based on the number of times of the touch detected by the sensor unit 130. For example, the control unit 140 may open the first opening and closing control member OC1 when the number of times of the touch is once, and close the first opening and closing control member (OC1) when the number of times of the touch is twice.

[0045] The control unit 140 may open or close the first opening and closing control member OC1 based on the duration of the touch detected by the sensor unit 130. For example, the control unit 140 may open the first opening and closing control member OC1 when the duration of the touch is 1 to 3 seconds, and close the first opening and closing control member OC1 when the duration of the touch is 4 to 6 seconds.

[0046] The control unit 140 may open or close the first opening and closing control member OC1 based on the intensity of the touch detected by the sensor unit 130. For example, when the intensity of the touch reaches a first set intensity, the control unit 140 may open the first opening and closing control member OC1, and when the intensity of the touch reaches a second set intensity, the control unit 140 may close the first opening and closing control member OC1. The description of the first opening and closing control member OC1 described above may also be equally applied to the opening and closing control members described later.

[0047] In another embodiment, as illustrated in FIG. 2, the aerosol generation device 100 may further include the vaporizing unit 150. The vaporizing unit 150 may be coupled to the aerosol generation device 100 so that it can be replaced. The vaporizing unit 150 may generate an aerosol by heating a liquid composition, and the generated aerosol may be released toward the inserted aerosol generation article 10 so that the generated aerosol passes through the aerosol generation article 10 inserted into the aerosol generation article insertion part 110. The generated aerosol may move through the aerosol passage. The opening and closing of the aerosol generating passage may also be controlled by the same opening and closing control member as the above-described opening and closing control member. Therefore, tobacco flavor may be added to the aerosol that passes through the aerosol generation article 10, and the user may inhale an aerosol with tobacco flavor by inhaling one end of the aerosol generation article 10 with his/her mouth. Accordingly, the user may inhale the aerosol generated by the vaporizing unit 150 and the aerosol generated from heating the aerosol generation article 10 together. In this case, the heater module may heat the aerosol generation article 10 at a relatively low temperature. For example, the heater module may heat the aerosol generation article 10 to a temperature of about

40°C to 200°C.

[0048] In another embodiment, the aerosol generation article insertion part 110 may not include the heating unit 120 for heating the inserted aerosol generation article 10. In this case, the aerosol generated by the vaporizing unit 150 (see FIG. 2) may be added with the tobacco flavor even if the aerosol passes through the non-heated aerosol generation article 10. In particular, the aerosol generation article 10 with controlled flavor may release tobacco flavor components by contacting the surrounding air or aerosol. Accordingly, a user may inhale the aerosol with tobacco flavor from an unheated aerosol generation article 10.

[0049] Referring to FIGS. 1A, 1B, and 2 together, the control unit 140 may generally control the operation of the aerosol generation device 100. Specifically, the control unit 140 may control the operations of the heating unit 120, the sensor unit 130, the vaporizing unit 150, and the first opening and closing control member OC1, as well as other components included in the aerosol generation device 100. In addition, the control unit 140 may confirm the status of each component of the aerosol generation device 100 and determine whether the aerosol generation device 100 is in an operable state. For example, the aerosol generation device 100 may further include a battery, and the control unit 140 may check the charging state of the battery to determine whether the aerosol generation device 100 is in an operable state.

[0050] The control unit 140 may include at least one processor. The control unit may be implemented as an array of a plurality of logic gates or may be implemented as a combination of a general-purpose microprocessor and a memory in which a program executable in the microprocessor is stored. In addition, those skilled in the art may easily understand that the present embodiment may be implemented with other types of hardware.

[0051] FIGS. 3A and 3B are diagrams illustrating another embodiment of an aerosol generation device according to the present invention. FIGS. 3A and 3B may be substantially the same as FIGS. 1A and 1B except that a second airflow passage PA2 and a second opening and closing control member OC2 are added. Accordingly, description of overlapping configurations will be omitted. Referring to FIGS. 3A and 3B, the aerosol generation device 100 may include first and second airflow passages PA1 and PA2 and first and second opening and closing control members OC1 and OC2. The first opening and closing control member OC1 may control the opening and closing of the first airflow passage PA1, and the second opening and closing control member OC2 may control the opening and closing of the second airflow passage PA2. In this case, the first opening and closing control member OC1 and the second opening and closing control member OC2 may operate independently. For example, the first opening and closing control member OC1 and the second opening and closing control member OC2 are closed at ordinary times, and when the stimulation is detected, the first opening and closing

control member OC1 and the second opening and closing control member OC2 may open simultaneously or only one of them may be opened. The opening and closing of the second opening and closing control member OC2 may also be performed based on the stimulation detected by the sensor unit 130.

[0052] When the first and second opening and closing control members OC1 and OC2 are opened simultaneously, the external airflow may flow stronger than when only one of the first and second opening and closing control members OC1 and OC2 is opened, and the user's suction resistance may be effectively reduced.

[0053] In FIGS. 1A and 1B, the first opening and closing control member OC1 is illustrated as being opened by sliding to one side, but this is an example and may be opened by sliding to both sides as illustrated in FIGS. 3A and 3B.

[0054] In addition, in FIGS. 3A and 3B, the first airflow passage PA1 and the second airflow passage PA2 are illustrated as being combined with each other, but this is an example, and the first airflow passage PA1 and the second airflow passage PA2 may be separately connected to the aerosol generation article insertion part 110. Although the opening and closing control devices OC1 and OC2 are illustrated to be arranged only at an inlet portion of each airflow passage PA1 and PA2, this is an example and is not limited thereto. For example, the opening and closing control member (not illustrated) may be arranged where each airflow passage PA1 and PA2 is combined and connected to the aerosol generation article insertion part 110, and the flow of airflow may be controlled by the opening and closing control member (not illustrated). This may be equally applied to the embodiments described below.

[0055] The vaporizing unit 150 described in FIG. 2 may also be added to the aerosol generation device 100 illustrated in FIGS. 3A and 3B.

[0056] FIGS. 4A to 4B are diagrams illustrating another embodiment of an aerosol generation device according to the present invention. FIGS. 4A and 4B may be substantially the same as FIGS. 3A and 3B except that a third airflow passage PA3 and a third opening and closing control member OC3 are added. Accordingly, description of overlapping configurations will be omitted.

[0057] Referring to FIGS. 4A to 4C, the aerosol generation device 100 may include the first to third airflow passages PA1, PA2, and PA3 and the first to third opening and closing control members OC1, OC2, and OC3. The first opening and closing control member OC1 may control the opening and closing of the first airflow passage PA1, the second opening and closing control member OC2 may control the opening and closing of the second airflow passage PA2, and the third opening and closing control member OC3 may control the opening and closing of the third airflow passage PA3. In this case, the first to third opening and closing control members OC1, OC2, and OC3 may operate independently. For example, as illustrated in FIG. 4C, the first opening and closing mem-

ber OC1 and the second opening and closing member OC2 may be opened, and the third opening and closing member OC3 may be closed. That is, the first to third opening and closing control members OC1, OC2, and OC3 may be closed at ordinary times, and when the stimulation is detected, the first to third opening and closing control members OC1, OC2, and OC3 may be opened simultaneously, but at least one or more of the first to third opening and closing control members OC1, OC2, and OC3 may be opened.

[0058] The opening and closing of the third opening and closing control member OC3 may also be performed based on the stimulation detected by the sensor unit 130.

[0059] When the aerosol generation device 100 controls the opening and closing using the first and third opening and closing control members OC1 and OC2, the suction resistance during smoking may be lowered by using various strengths of airflow. For example, if necessary, only one of the first to third opening and closing control members OC1, OC2, and OC3 may be opened to form a weak airflow, and any two of the first to third opening and closing control members OC1, OC2, and OC3 may be opened to form a stronger intermediate airflow than the weak airflow, and all the first to third opening and closing control members OC1, OC2, and OC3 may be opened to form an airflow stronger than the intermediate airflow.

[0060] Unlike what was described above, the first to third opening and closing members OC1, OC2, and OC3 may be opened while rotating with one end fixed to a fixed axis. For example, referring to FIGS. 4A to 4C, the first to third opening and closing control members OC1, OC2, and OC3 may be opened by rotating 90° with one end fixed.

[0061] In addition, in FIGS. 4A to 4C, the first to third airflow passages PA1, PA2, and PA3 are illustrated as being combined with each other, but this is an example, and the first airflow passage PA1, the second airflow passage PA2, and the third airflow passage PA3 may be separately connected to the aerosol generation article insertion part 110.

[0062] The vaporizing unit 150 described in FIG. 2 may also be added to the aerosol generation device 100 illustrated in FIGS. 4A to 4C.

[0063] FIG. 5 is a diagram illustrating another embodiment of the aerosol generation device according to the present invention. FIG. 5 may be substantially the same as FIG. 4A except that the sizes of the first to third airflow passages PA1, PA2, and PA3 are different. Accordingly, description of overlapping configurations will be omitted.

[0064] Referring to FIG. 5, the first airflow passage PA1 may have a first size D1, the second airflow passage PA2 may have a second size D2, and the third airflow passage PA3 may have a third size D3. In this specification, the size of the airflow passage refers to a diameter of the airflow passage when the shape of the airflow passage is circular in plane, and when the shape of the airflow passage is square in plane, may be defined as a straight

distance between one cross section of a square and the other cross section facing the one cross-section. In addition, the shape of the airflow passage may vary, and the size of the airflow passage may be defined differently depending on the shape. For example, when the shape of the airflow passage is a triangle in plane, the size of the airflow passage may be defined as an area of the triangle.

[0065] The first size D1, the second size D2, and the third size D3 may be different from each other. Accordingly, the intensity of airflow may be adjusted in various ways when independently adjusting the opening and closing of the first to third opening and closing control members OC1, OC2, and OC3 based on the stimulation detected by the sensor unit 130. As the first to third sizes D1, D2, and D3 are different from each other, when the first to third opening and closing control members OC1, OC2, and OC3 are opened independently, the intensity of airflow transmitted to the aerosol generation article insertion part 10 may vary.

[0066] By designing the first size D1 to be half the second size D2, when the first opening and closing control member OC1 is opened, the same effect may be obtained when the second opening and closing control member OC2 is opened only halfway. Therefore, even in the case in which the aerosol generation device 100 simply controls the first to third opening and closing control members OC1, OC2, and OC3 to be fully opened and closed, it is possible to achieve the same effect as controlling any one or more of the first to third opening and closing control members OC1, OC2, and OC3 to be partially opened.

[0067] FIG. 6 is a diagram illustrating another embodiment of the aerosol generation device according to the present invention.

[0068] Referring to FIG. 6, only at least one size among the first to third sizes D1, D2, and D3 may be different. For example, the first size D1 and the second size D2 may be the same size, and the third size D3 may be different from the first size D1 and the second size D2. In addition, the first to third airflow passages PA1, PA2, and PA3 may be combined in the middle and then connected to the aerosol generation article insertion part 110, or only some of them may be combined in the middle and then connected to the aerosol generation article insertion part 110. For example, the first airflow passage PA1 and the second airflow passage PA2 are combined in the middle and then are connected to the aerosol generation article insertion part 110, and the third airflow passage PA3 may be separately connected to the aerosol generation article insertion part 110. However, this is an example, and the first to third airflow passages PA1, PA2, and PA3 may also be separately connected to the aerosol generation article insertion part 110.

[0069] Although the present invention has been described in relation to the above-described preferred embodiments, various modifications and alterations may be made without departing from the gist and scope of the present invention. Accordingly, these modifications and

alterations fall within the scope of the claims as long as they belong to the gist of the present invention.

Description of Reference Signs

[0070]

10: Aerosol generation article
 100: Aerosol generation device
 110: Aerosol generation article insertion part
 120: Heating unit
 130: Sensor unit
 140: Control unit
 150: Vaporizing unit
 PA1, PA2, PA3: First to third airflow passages
 OC1, OC2, OC3: First to third opening and closing control members

Claims

1. An aerosol generation device capable of controlling a flow of airflow, comprising:

an aerosol generation article insertion part into which an aerosol generation article is inserted;
 a sensor unit that detects stimulation;
 at least one airflow passage that is connected to the aerosol generation article insertion part and transmits external air to the aerosol generation article insertion part; and
 an opening and closing control member that controls opening and closing of the airflow passage based on the stimulation detected by the sensor unit.

2. The aerosol generation device of claim 1, wherein the number of airflow passages is two or more.
3. The aerosol generation device of claim 2, wherein a size of at least one of the airflow passages is different from that of the others.
4. The aerosol generation device of claim 3, wherein the opening and closing control member is opened or closed based on the stimulation detected by the sensor unit.
5. The aerosol generation device of claim 2, wherein the opening and closing control member controls the opening and closing of the airflow passages independently of each other.
6. The aerosol generation device of claim 1, wherein the stimulation is temperature,

when the temperature is a preset temperature or higher, the opening and closing control member

is opened, and
 when the temperature is less than the preset temperature, the opening and closing control member is closed.

7. The aerosol generation device of claim 1, wherein the stimulation is a user's puff,

when the number of times of the puff is less than a first set number of times, the opening and closing control member is opened, and
 when the number of times of the puff is greater than or equal to the first set number of times, the opening and closing control member is closed.

8. The aerosol generation device of claim 7, wherein when the number of times of the puff is greater than or equal to a second set number of times, the opening and closing control member is opened, and the second set number of times is greater than the first set number of times.

9. The aerosol generation device of claim 1, wherein the sensor unit includes a touch sensor, and the opening and closing control member is opened or closed based on the number of times of touch input to the touch sensor.

10. The aerosol generation device of claim 1, wherein the sensor unit includes a touch sensor, and the opening and closing control member is opened or closed based on duration of touch input to the touch sensor.

11. The aerosol generation device of claim 1, wherein the sensor unit includes a touch sensor, and the opening and closing control member is opened or closed based on an intensity of touch input to the touch sensor.

12. The aerosol generation device of claim 1, further comprising a vaporizing unit that heats a composition to generate an aerosol and releases the generated aerosol to the aerosol generation article insertion part, wherein the generated aerosol is transmitted to the aerosol generation article insertion part through an aerosol passage.

13. The aerosol generation device of claim 1, wherein the stimulation is a user's puff, and when the number of times of the puff is greater than or equal to a preset number of times for a preset time, the opening and closing control member is opened.

14. The aerosol generation device of claim 1, wherein the opening and closing control member is partially opened or fully opened.

Figure 1A

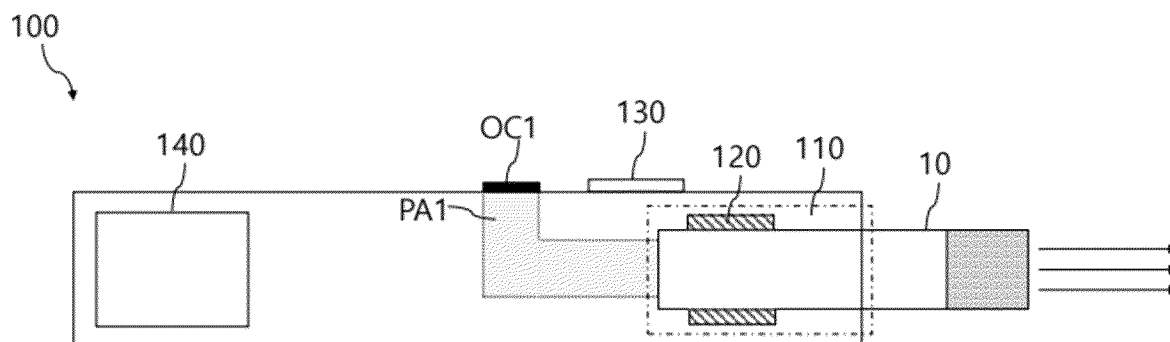


Figure 1B

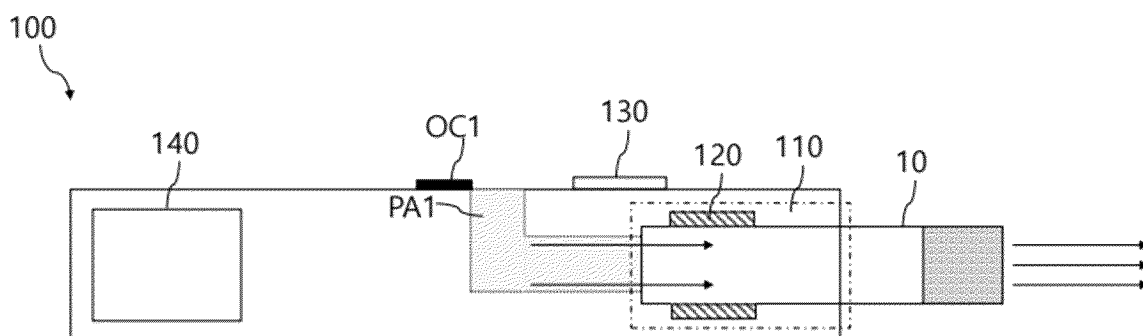


Figure 1C

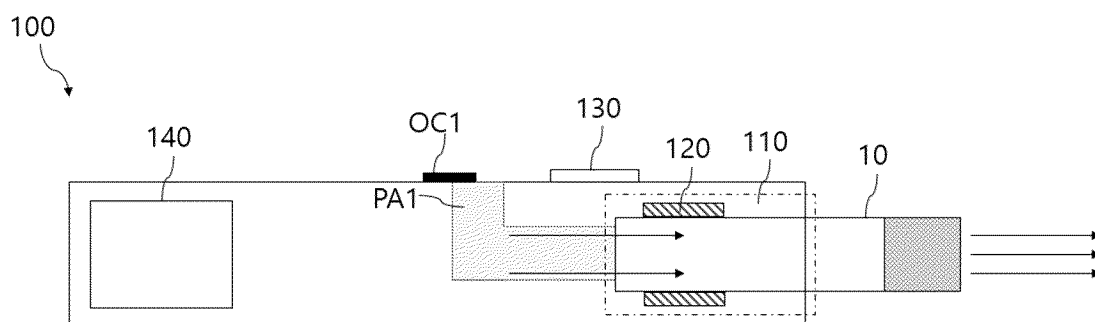


Figure 2

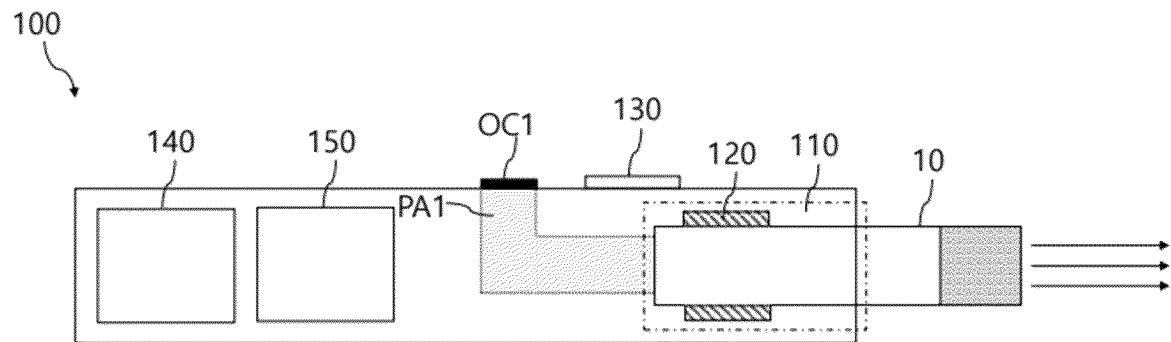


Figure 3A

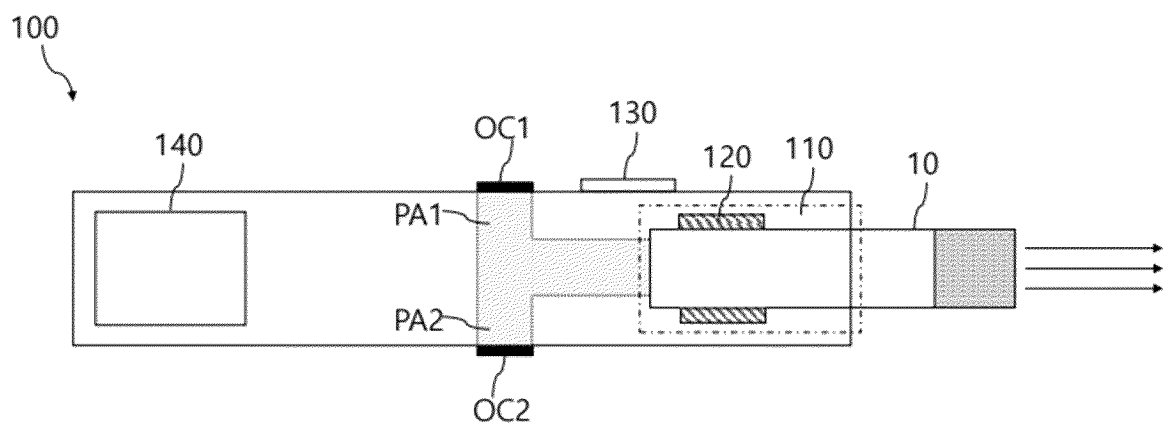


Figure 3B

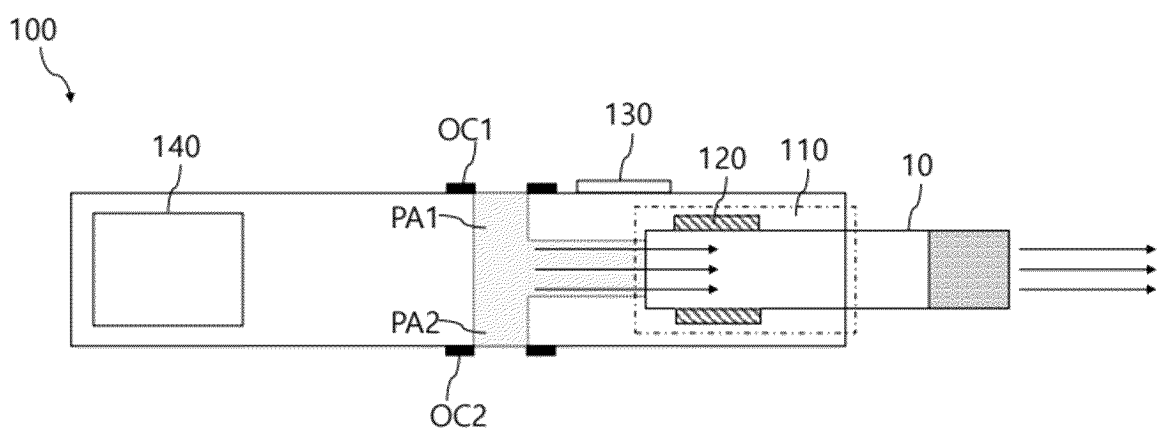


Figure 4A

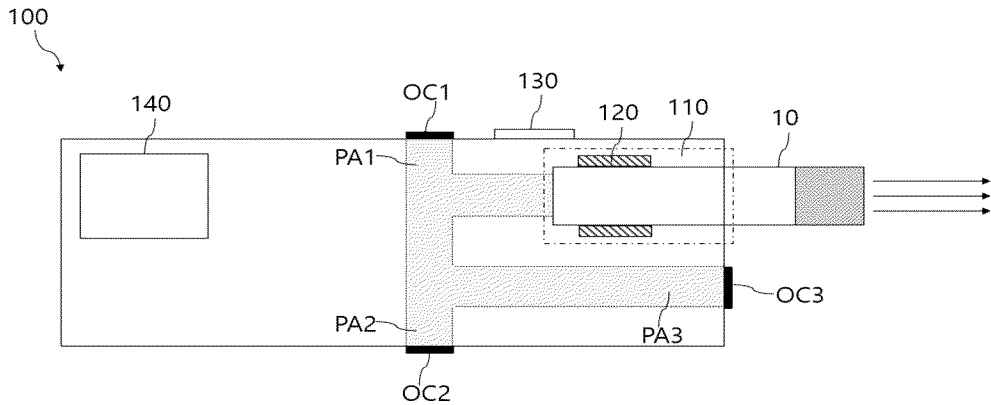


Figure 4B

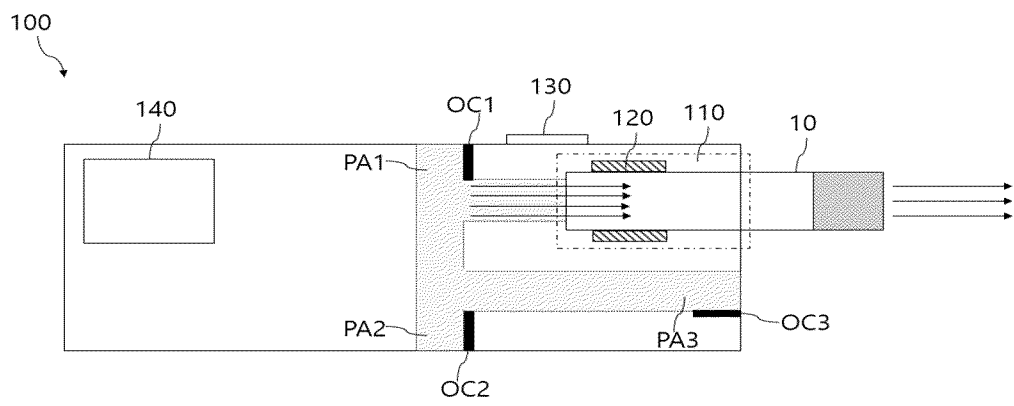


Figure 4C

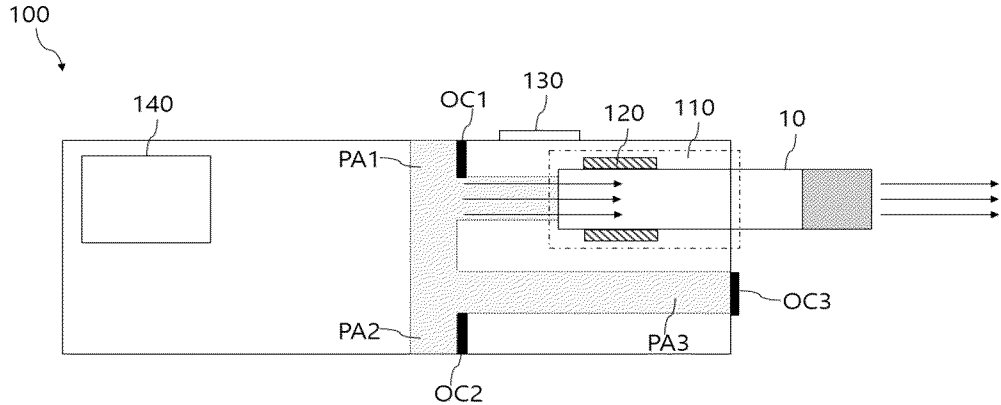


Figure 5

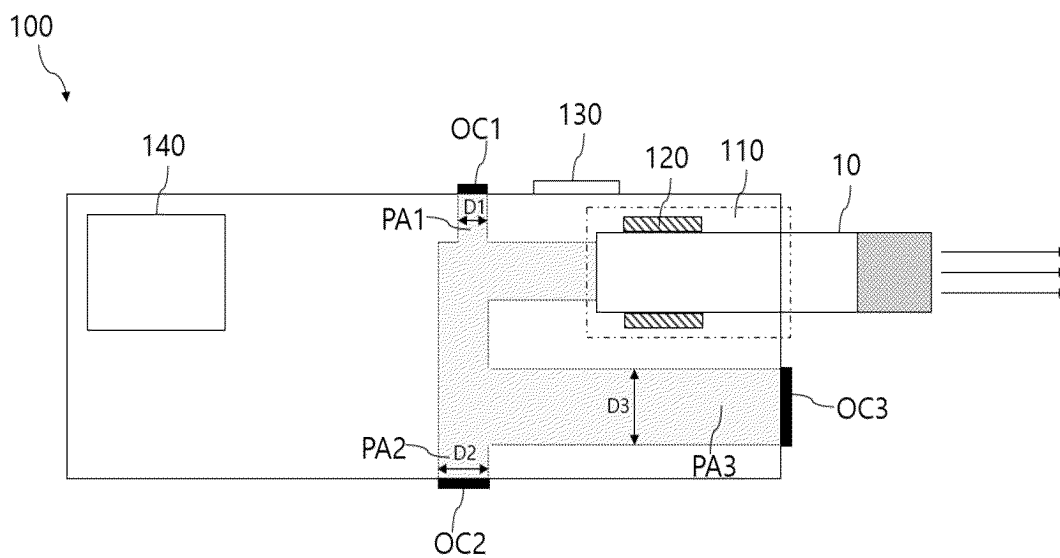
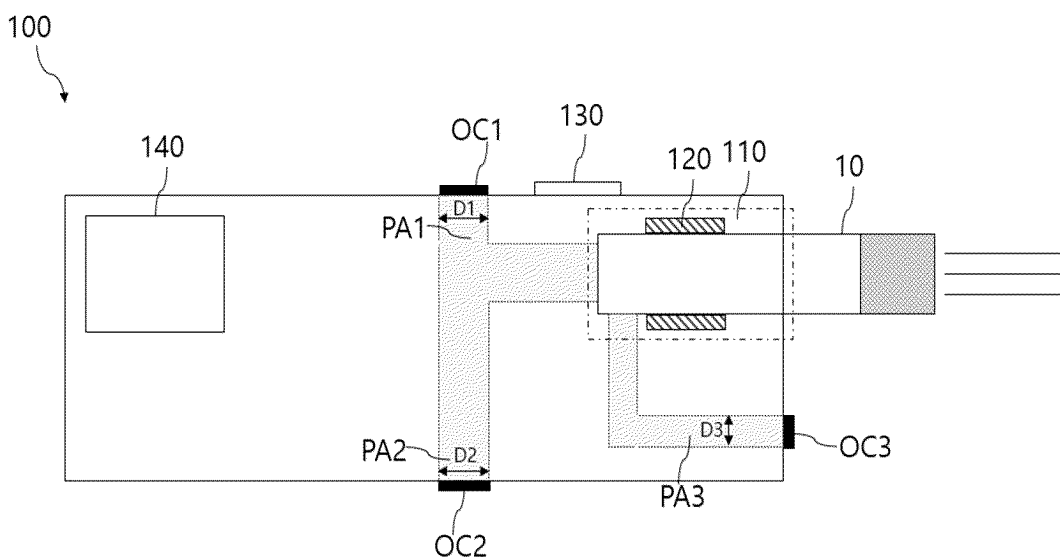


Figure 6



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2023/008363

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/485(2020.01)i; A24F 40/51(2020.01)i; A24F 40/50(2020.01)i; A24F 40/20(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 40/485(2020.01); A24B 15/16(2006.01); A24F 40/20(2020.01); A24F 47/00(2006.01); A61M 11/04(2006.01); A61M 15/00(2006.01)

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

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

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

eKOMPASS (KIPO internal) & keywords: 에어로졸(aerosol), 삽입부(insertion part), 자극(stimulation), 센서부(sensor part), 기류 통로(airflow passage), 개폐 조절 부재(opening/closing control member), 온도(temperature), 퍼프(puff), 터치(touch)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 10-2022-0086663 A (NICOVENTURES TRADING LIMITED) 23 June 2022 (2022-06-23) See paragraphs [0025], [0047]-[0055] and [0061]-[0070]; and figures 3-5.	1-6,12,14
Y		7-11,13
Y	KR 10-2017-0121162 A (PHILIP MORRIS PRODUCTS S.A.) 01 November 2017 (2017-11-01) See paragraphs [0014], [0016] and [0024].	7,8,13
Y	JP 2022-017463 A (JUUL LABS INC.) 25 January 2022 (2022-01-25) See paragraph [0074].	9-11
A	KR 10-2021-0026091 A (INNO-IT CO., LTD.) 10 March 2021 (2021-03-10) See entire document.	1-14

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

* Special categories of cited documents:

“A” document defining the general state of the art which is not considered to be of particular relevance

“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 2023

Date of mailing of the international search report

13 November 2023

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon Building 4, 189 Cheongsaro, Seo-gu, Daejeon 35208

Facsimile No. +82-42-481-8578

Authorized officer

Telephone No.

Form PCT/ISA/210 (second sheet) (July 2022)

INTERNATIONAL SEARCH REPORT

International application No. PCT/KR2023/008363

5

10

15

20

25

30

35

40

45

50

55

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 10-2013-0108825 A (ENBRIGHT CO., LTD.) 07 October 2013 (2013-10-07) See entire document.	1-14

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/KR2023/008363

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)		Publication date (day/month/year)	
KR	10-2022-0086663	A	23 June 2022	EP	4064913	A1	05 October 2022
				GB	2591073	A	21 July 2021
				JP	2023-502771	A	25 January 2023
				US	2023-0032298	A1	02 February 2023
				WO	2021-105242	A1	03 June 2021
KR	10-2017-0121162	A	01 November 2017	CA	2974463	A1	01 September 2016
				CN	107249366	A	13 October 2017
				CN	107249366	B	31 July 2020
				EP	3261465	A1	03 January 2018
				EP	3261465	B1	26 June 2019
				ES	2737956	T3	17 January 2020
				IL	252857	A0	31 August 2017
				IL	252857	B	31 August 2020
				JP	2018-508211	A	29 March 2018
				JP	6774423	B2	21 October 2020
				MX	2017010778	A	28 November 2017
				PL	3261465	T3	29 November 2019
				PT	3261465	T	15 October 2019
				RU	2017130450	A	27 March 2019
				RU	2017130450	A3	21 May 2019
				RU	2694925	C2	18 July 2019
				TR	201911257	T4	21 August 2019
				US	10694783	B2	30 June 2020
				US	2018-0020733	A1	25 January 2018
				WO	2016-135271	A1	01 September 2016
JP	2022-017463	A	25 January 2022	CN	108024579	A	11 May 2018
				CN	108024579	B	02 August 2022
				CN	115299642	A	08 November 2022
				EP	3319466	A1	16 May 2018
				HK	1255407	A1	16 August 2019
				IL	256759	A	29 March 2018
				IL	256759	B2	01 June 2023
				IL	300018	A	01 March 2023
				JP	2018-525978	A	13 September 2018
				JP	6971964	B2	24 November 2021
				JP	7297848	B2	26 June 2023
				KR	10-2018-0028493	A	16 March 2018
				US	11154669	B2	26 October 2021
				US	2018-0199627	A1	19 July 2018
				US	2022-023556	A1	27 January 2022
				WO	2017-011419	A1	19 January 2017
KR	10-2021-0026091	A	10 March 2021	KR	10-2021-0026092	A	10 March 2021
				KR	10-2381063	B1	31 March 2022
				WO	2021-040475	A2	04 March 2021
				WO	2021-040475	A3	22 April 2021
KR	10-2013-0108825	A	07 October 2013	CN	104114049	A	22 October 2014
				KR	10-1345358	B1	30 December 2013
				KR	10-2013-0127412	A	22 November 2013
				KR	20-0464889	Y1	06 February 2013
				US	2014-0334804	A1	13 November 2014

Form PCT/ISA/210 (patent family annex) (July 2022)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2023/008363

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
		WO 2013-147492 A1	03 October 2013

REFERENCES CITED IN THE DESCRIPTION

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

Patent documents cited in the description

- KR 1020220096631 [0002]
- KR 1020210127579 [0007]