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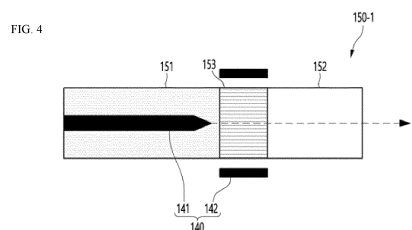
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(54) **AEROSOL-GENERATING DEVICE FOR PROVIDING PERSONALIZED SMOKING EXPERIENCE, AND AEROSOL-GENERATING ARTICLE APPLIED THERETO**

(57) An aerosol generation device providing a customized smoking experience and an aerosol-generating article applied thereto are provided. The aerosol generation device according to some embodiments of the present disclosure may include a housing configured to form an accommodation space in which an aerosol-generating article is accommodated and a heater part configured to heat the aerosol-generating article accommodated in the accommodation space to generate an aerosol. Here, the aerosol-generating article may include an aerosol-forming substrate part and an additive accommodation part in which an additive is accommodated, and the heater part may include a user control-type heater configured to heat the additive accommodation part. The user control-type heater may heat the additive accommodation part on the basis of a user input to provide a customized smoking experience according to a user's preferences.



**Description**

[Technical Field]

**[0001]** The present disclosure relates to an aerosol generation device providing a customized smoking experience and an aerosol-generating article applied thereto, and more particularly, to an aerosol generation device capable of providing a customized smoking experience according to user preferences through various control functions such as flavor control and vapor production control, and an aerosol-generating article designed to be applied to the device.

[Background Art]

**[0002]** In recent years, demand for alternative articles that overcome the disadvantages of traditional cigarettes has increased. For example, demand for devices that electrically heat a cigarette to generate an aerosol and heating-type cigarettes applied to such devices has increased, and accordingly, active research has been carried out on heating-type aerosol generation devices and heating-type cigarettes.

**[0003]** Recently, as user preferences have diversified, active research has also been carried out to provide customized smoking experiences. Crush-type flavor capsules added to a filter are one product of such research. The crush-type flavor capsules contain a flavoring liquid therein and may provide general flavors or enhanced flavors to users according to whether the capsules are crushed.

**[0004]** However, the flavor capsules have a disadvantage that the flavoring liquid is rapidly expressed upon crushing and flavor expression progressively decreases towards the end of smoking, and there is also a disadvantage that a precise control function is not provided for a flavor intensity.

[Disclosure]

[Technical Problem]

**[0005]** Some embodiments of the present disclosure are directed to providing an aerosol generation device capable of providing a customized smoking experience according to user preferences.

**[0006]** Some embodiments of the present disclosure are also directed to providing an aerosol-generating article applied to the aerosol generation device to provide a customized smoking experience.

**[0007]** Some embodiments of the present disclosure are also directed to providing an aerosol generation device capable of providing a precise control function according to user preferences and an aerosol-generating article applied thereto.

**[0008]** Objectives of the present disclosure are not limited to the above-mentioned objectives, and other un-

mentioned objectives should be clearly understood by those of ordinary skill in the art to which the present disclosure pertains from the description below.

5 [Technical Solution]

**[0009]** Some embodiments of the present disclosure provide an aerosol generation device including a housing configured to form an accommodation space in which an aerosol-generating article is accommodated and a heater part configured to heat the aerosol-generating article accommodated in the accommodation space to generate an aerosol, wherein the aerosol-generating article includes an aerosol-forming substrate part and an additive accommodation part in which an additive is accommodated, and the heater part includes a heater configured to heat the aerosol-forming substrate part and a user control-type heater configured to heat the additive accommodation part while being controlled on the basis of a user input.

**[0010]** In some embodiments, the user input may be received through a button formed on an outer surface of the housing.

**[0011]** In some embodiments, the additive may be a flavoring agent.

**[0012]** In some embodiments, the flavoring agent may be a flavoring sheet produced in the form of a sheet.

**[0013]** In some embodiments, the additive may be a moisturizer.

**[0014]** In some embodiments, the additive accommodation part may include a first accommodation part and a second accommodation part, and the user control-type heater may include a first heater configured to heat the first accommodation part and a second heater configured to heat the second accommodation part.

**[0015]** In some embodiments, a heating strength of the user control-type heater may be controlled on the basis of the user input.

**[0016]** In some embodiments, the user control-type heater may be an external heating type, the additive may be a flavoring agent, and the flavoring agent may also be added to a wrapper of the additive accommodation part.

**[0017]** In some embodiments, the user control-type heater may be an external heating type, the additive may be a flavoring agent, and the flavoring agent may also be added to a wrapper of a segment adjacent to the additive accommodation part.

50 [Advantageous Effects]

**[0018]** According to some embodiments of the present disclosure, an aerosol-generating article including an additive accommodation part and an aerosol generation device including a user control-type heater can be provided. The user control-type heater may heat the additive accommodation part on the basis of a user input to provide a customized smoking experience to the user. For ex-

ample, when the additive is a flavoring agent, a customized smoking experience can be provided through flavor control, and when the additive is a moisturizer, a customized smoking experience can be provided through vapor production control.

**[0019]** Also, a heating strength of the user control-type heater can be controlled on the basis of a user input. In this case, a more precise control function can be provided. For example, when the additive is a flavoring agent, a more precise flavor control function can be provided.

**[0020]** In addition, a flavoring sheet produced in the form of a sheet may be used as the flavoring agent. The flavoring sheet may, when heated, slowly release a flavoring fixed therein to ensure better flavor persistence than flavor capsules.

**[0021]** The advantageous effects according to the technical concept of the present disclosure are not limited to those mentioned above, and other unmentioned advantageous effects should be clearly understood by those of ordinary skill in the art from the description below.

[Description of Drawings]

**[0022]**

FIGS. 1 to 3 are exemplary views schematically illustrating aerosol generation devices according to various embodiments of the present disclosure.

FIGS. 4 and 5 are exemplary views for describing a detailed structure of an aerosol-generating article and an operation principle of a heater part according to a first embodiment of the present disclosure.

FIG. 6 is an exemplary view for describing a detailed structure of an aerosol-generating article and an operation principle of a heater part according to a second embodiment of the present disclosure.

FIG. 7 is an exemplary view for describing a detailed structure of an aerosol-generating article and an operation principle of a heater part according to a third embodiment of the present disclosure.

FIG. 8 is an exemplary view for describing a detailed structure of an aerosol-generating article and an operation principle of a heater part according to a fourth embodiment of the present disclosure.

FIG. 9 is an exemplary view for describing various ways of adding a flavoring sheet according to some embodiments of the present disclosure.

FIGS. 10 and 11 are exemplary views for describing various processed forms of the flavoring sheet according to some embodiments of the present disclosure.

[Modes of the Invention]

**[0023]** Hereinafter, exemplary embodiments of the present disclosure will be described in detail with reference to the accompanying drawings. Advantages and features of the present disclosure and methods of achiev-

ing the same should become clear from embodiments described in detail below with reference to the accompanying drawings. However, the technical concept of the present disclosure is not limited to the following embodiments and may be implemented in various different forms. The following embodiments only make the technical concept of the present disclosure complete and are provided to completely inform those of ordinary skill in the art to which the present disclosure pertains of the scope of the disclosure. The technical concept of the present disclosure is defined only by the scope of the claims.

**[0024]** In assigning reference numerals to components of each drawing, it should be noted that the same reference numerals are assigned to the same components where possible even when the components are illustrated in different drawings. Also, in describing the present disclosure, when detailed description of a known related configuration or function is deemed as having the possibility of obscuring the gist of the present disclosure, the detailed description thereof will be omitted.

**[0025]** Unless otherwise defined, all terms including technical or scientific terms used in this specification have the same meaning as commonly understood by those of ordinary skill in the art to which the present disclosure pertains. Terms defined in commonly used dictionaries should not be construed in an idealized or overly formal sense unless expressly so defined herein. Terms used in this specification are for describing the embodiments and are not intended to limit the present disclosure. In this specification, a singular expression includes a plural expression unless the context clearly indicates otherwise.

**[0026]** Also, in describing components of the present disclosure, terms such as first, second, A, B, (a), and (b) may be used. Such terms are only used for distinguishing one component from another component, and the essence, order, sequence, or the like of the corresponding component is not limited by the terms. In a case in which a certain component is described as being "connected," "coupled," or "linked" to another component, it should be understood that, although the component may be directly connected or linked to the other component, still another component may also be "connected," "coupled," or "linked" between the two components.

**[0027]** The terms "comprises" and/or "comprising" used herein do not preclude the possibility of presence or addition of one or more components, steps, operations, and/or devices other than those mentioned.

**[0028]** First, some terms used in various embodiments of the present disclosure will be clarified.

**[0029]** In the following embodiments, "aerosol-forming substrate" may refer to a material that is able to form an aerosol. The aerosol may include a volatile compound. The aerosol-forming substrate may be a solid or liquid.

**[0030]** For example, solid aerosol-forming substrates may include solid materials based on tobacco raw materials such as reconstituted tobacco leaves, shredded

tobacco, and reconstituted tobacco, and liquid aerosol-forming substrates may include liquid compositions based on nicotine, tobacco extracts, and/or various flavoring agents. However, the scope of the present disclosure is not limited to the above-listed examples.

**[0031]** In the following embodiments, "aerosol generation device" may refer to a device that generates an aerosol using an aerosol-forming substrate in order to generate an aerosol that can be inhaled directly into the user's lungs through the user's mouth. Some examples of the aerosol generation device will be described below with reference to FIGS. 1 to 3.

**[0032]** In the following embodiments, "aerosol-generating article" may refer to an article that is able to generate an aerosol. The aerosol-generating article may include an aerosol-forming substrate. A typical example of the aerosol-generating article may include a cigarette, but the scope of the present disclosure is not limited thereto.

**[0033]** In the following embodiments, "upstream" or "upstream direction" may refer to a direction moving away from an oral region of a user, and "downstream" or "downstream direction" may refer to a direction approaching the oral region of the user. The terms "upstream" and "downstream" may be used to describe relative positions of elements constituting an aerosol-generating article. For example, in an aerosol-generating article 150-1 illustrated in FIG. 4, a filter part 152 is disposed downstream of or in a downstream direction from an aerosol-forming substrate part 151, and the aerosol-forming substrate part 151 is disposed upstream of or in an upstream direction from the filter part 152.

**[0034]** In the following embodiments, "longitudinal direction" may refer to a direction corresponding to a longitudinal axis of an aerosol-generating article.

**[0035]** In the following embodiments, "puff" refers to inhalation by a user, and the inhalation may be a situation in which a user draws smoke into his or her oral cavity, nasal cavity, or lungs through the mouth or nose.

**[0036]** In the following embodiments, "sheet" may refer to a thin layer component whose width and length are substantially larger than a thickness thereof. The term "sheet" may be interchangeably used with the term "web" or "film" in the art.

**[0037]** In the following embodiments, "flavor sheet" or "flavoring sheet" may refer to a material that contains a flavoring agent or a flavoring and is produced in the form of a sheet.

**[0038]** Hereinafter, various embodiments of the present disclosure will be described in detail with reference to the accompanying drawings.

**[0039]** First, aerosol generation devices 100-1 to 100-3 according to various embodiments of the present disclosure will be described with reference to FIGS. 1 to 3.

**[0040]** FIG. 1 is an exemplary view schematically illustrating the aerosol generation device 100-1 according to some embodiments of the present disclosure. In particular, FIG. 1 illustrates a state in which an aerosol-generating article 150 is accommodated in the device 100-1

as an example.

**[0041]** As illustrated in FIG. 1, the aerosol generation device 100-1 may include a housing, a heater part 140, a battery 130, and a controller 120. However, this is only an exemplary embodiment for achieving the objectives of the present disclosure, and, of course, some components may be added or omitted as necessary. Also, the components of the aerosol generation device 100-1 illustrated in FIG. 1 represent functional components that are functionally distinct, and the plurality of components may be implemented in a form of being integrated with each other in an actual physical environment, or a single component may be implemented in a form of being divided into a plurality of specific functional components. Hereinafter, each component of the aerosol generation device 100-1 will be described.

**[0042]** The housing may form an exterior of the aerosol generation device 100-1. Also, the housing may form an accommodation space in which the aerosol-generating article 150 is accommodated. The housing may be made of a sturdy material to protect components therein.

**[0043]** In some embodiments, a user interface module may be formed on an outer surface of the housing. Also, the aerosol generation device 100-1 may control the heater part 140 on the basis of a user input received through the user interface module to provide a customized smoking experience. For example, the user interface module may be implemented in various forms such as a button or a touchable display. The present embodiment will be described in more detail below with reference to FIG. 4 and so on.

**[0044]** Next, the heater part 140 may be disposed to heat the aerosol-generating article 150 accommodated in the accommodation space. The aerosol-generating article 150 may include a solid aerosol-forming substrate and may generate an aerosol when heated. The generated aerosol may be inhaled through an oral region of a user. The operation, heating temperature, or the like of the heater part 140 may be controlled by the controller 120.

**[0045]** In some embodiments, the heater part 140 may include a user control-type heater (hereinafter referred to as "control-type heater") that can be controlled on the basis of a user input. For example, the heater part 140 may include a basic heater, which heats the aerosol-generating article 150 according to a pre-stored temperature profile, and the control-type heater. The user may directly control the control-type heater to receive a customized smoking experience. The present embodiment will be described in more detail below with reference to FIG. 4 and so on.

**[0046]** Next, the battery 130 may supply power used to operate the aerosol generation device 100-1. For example, the battery 130 may supply power to allow the heater part 140 to heat the aerosol-forming substrate included in the aerosol-generating article 150 and may supply power required for the operation of the controller 120.

**[0047]** Also, the battery 130 may supply power re-

quired to operate electrical components such as a display (not illustrated), a sensor (not illustrated), and a motor (not illustrated) which are installed in the aerosol generation device 100-1.

**[0048]** Next, the controller 120 may control the overall operation of the aerosol generation device 100-1. For example, the controller 120 may control the operation of the heater part 140 and the battery 130 and may also control the operation of other components included in the aerosol generation device 100-1. The controller 120 may control the power supplied by the battery 130, a heating temperature of the heater part 140, and the like. Also, the controller 120 may check a state of each of the components of the aerosol generation device 100-1 and determine whether the aerosol generation device 100-1 is in an operable state.

**[0049]** The controller 120 may be implemented with at least one processor. The processor may also be implemented with an array of a plurality of logic gates or implemented with a combination of a general-purpose microprocessor and a memory which stores a program that may be executed by the microprocessor. Also, those of ordinary skill in the art to which the present disclosure pertains should understand that the controller 120 may also be implemented with other forms of hardware.

**[0050]** Meanwhile, in various embodiments of the present disclosure, a customized smoking experience can be provided through an additive accommodation part of the aerosol-generating article 150 and the control-type heater configured to heat the additive accommodation part. Here, an additive accommodated in the additive accommodation part is a material that can change a smoking experience and whose degree of expression may be changed by heating. For example, the additive may be a flavoring agent, a moisturizer, a sound-generating agent, or the like but is not limited thereto. The present embodiment will be described in more detail below with reference to FIG. 4 and so on.

**[0051]** Hereinafter, other types of aerosol generation devices 100-2 and 100-3 will be briefly described with reference to FIGS. 2 and 3.

**[0052]** FIG. 2 illustrates an aerosol generation device 100-2 in which a vaporizer 1 and the aerosol-generating article 150 are disposed in parallel, and FIG. 3 illustrates an aerosol generation device 100-3 in which the vaporizer 1 and the aerosol-generating article 150 are disposed in series. However, internal structures of the aerosol generation devices are not limited to those illustrated in FIGS. 2 and 3, and the arrangement of the components may be changed according to a design method.

**[0053]** In FIGS. 2 and 3, the vaporizer 1 may include a liquid reservoir configured to store a liquid aerosol-forming substrate, a wick configured to absorb the aerosol-forming substrate, and a vaporizing element configured to vaporize the absorbed aerosol-forming substrate to generate an aerosol. The vaporizing element may be implemented in various forms such as a heating element and a vibration element. Also, in some embodiments, the

vaporizer 1 may be designed to have a structure that does not include a wick.

**[0054]** The aerosol generated in the vaporizer 1 may be inhaled through an oral region of a user after passing through the aerosol-generating article 150. The vaporizing element of the vaporizer 1 may also be controlled by the controller 120.

**[0055]** The aerosol generation devices 100-1 to 100-3 according to various embodiments of the present disclosure have been schematically described above with reference to FIGS. 1 to 3. Hereinafter, the operation principle of the aerosol-generating article 150 and the heater part 140 that can provide a customized smoking experience will be described in detail with reference to FIG. 4 and so on.

**[0056]** First, the aerosol-generating article 150-1 and the heater part 140 according to a first embodiment of the present disclosure will be described with reference to FIGS. 4 and 5.

**[0057]** FIGS. 4 and 5 are exemplary views for describing a detailed structure of the aerosol-generating article 150-1 and an operation principle of the heater part 140 according to the first embodiment of the present disclosure.

**[0058]** As illustrated in FIGS. 4 and 5, the aerosol-generating article 150-1 according to the present embodiment may include the aerosol-forming substrate part 151, the filter part 152, and an additive accommodation part 153. However, only the components relating to the embodiment of the present disclosure are illustrated in FIGS. 4 and 5. Therefore, those of ordinary skill in the art to which the present disclosure pertains should understand that the aerosol-generating article 150-1 may further include general-purpose components other than the components illustrated in FIGS. 4 and 5. Also, FIGS. 4 and 5 only illustrate some examples of aerosol-generating articles according to various embodiments of the present disclosure, and a detailed structure of the aerosol-generating article may be changed from that illustrated. Hereinafter, each component of the aerosol-generating article 150-1 will be described.

**[0059]** The aerosol-forming substrate part 151 may be disposed upstream of the filter part 152 and perform a function of forming an aerosol A. Specifically, the aerosol-forming substrate part 151 may include an aerosol-forming substrate and may form an aerosol using the aerosol-forming substrate. The aerosol-forming substrate part 151 may form an aerosol when heated by the heater part 140. The formed aerosol may be delivered to an oral region of a user via the filter part 152 according to a puff. The aerosol-forming substrate part 151 may further include a wrapper that wraps around the aerosol-forming substrate.

**[0060]** Since the aerosol-forming substrate part 151 is produced in the form of a rod, the aerosol-forming substrate part 151 may be referred to as an "aerosol-forming rod 151" or a "tobacco rod 151" in some cases. Alternatively, the aerosol-forming substrate part 151 may also

be referred to as a "medium part 151" in some cases.

**[0061]** In some embodiments, the aerosol-forming substrate part 151 may further include a flavoring sheet. For example, cut pieces of the flavoring sheet and shredded tobacco (e.g., shredded tobacco leaves, shredded reconstituted tobacco leaves) may be mixed and included in the aerosol-forming substrate part 151. In this case, since a flavoring fixed inside the flavoring sheet is slowly released as the aerosol-forming substrate part 151 is heated, flavor persistence of the aerosol-generating article 150-1 can be significantly improved. The flavoring sheet will be described in more detail below.

**[0062]** Next, the filter part 152 may be disposed downstream of the aerosol-forming substrate part 151 and perform a function of filtering an aerosol. To this end, the filter part 152 may include a filter material. Examples of the filter material may include a cellulose acetate fiber, paper, or the like, but the filter material is not limited thereto. Also, the filter part 152 may be disposed at a downstream end portion of the aerosol-generating article 150-1 and also serve as a mouthpiece that comes into contact with an oral region of a user. The filter part 152 may further include a wrapper that wraps around the filter material (plug).

**[0063]** Since the filter part 152 is also produced in the form of a rod, the filter part 152 may be referred to as a "filter rod 152" in some cases and may be produced in various shapes such as a cylindrical shape, a tubular shape including a hollow therein (e.g., a cellulose acetate filter having a tubular shape), and a recessed shape. Alternatively, since the filter part 152 serves as a mouthpiece, the filter part 152 may also be referred to as a "mouthpiece part 152."

**[0064]** Next, the additive accommodation part 153 may accommodate a predetermined additive. Here, the additive may be a material of any form that can change a smoking experience of a user and whose degree of expression is controlled by heating. For example, the additive may be a flavoring agent that can change a gustatory or olfactory experience element, a moisturizer (wetting agent) that can change a visual experience element, or a sound-generating agent that can change an aural experience element but is not limited thereto. The additive accommodation part 153 may further include a wrapper.

**[0065]** For example, the moisturizer may include at least one of glycerin, propylene glycol, ethylene glycol, dipropylene glycol, diethylene glycol, triethylene glycol, tetraethylene glycol, and oleyl alcohol but is not limited thereto. The moisturizer may maintain moisture at an optimum level and thus soften the inherent flavor and produce a large amount of vapor.

**[0066]** For example, the flavoring agent may include licorice, saccharose, fructose syrup, isosweet, cocoa, lavender, cinnamon, cardamom, celery, fenugreek, cascarilla, white sandalwood, bergamot, geranium, honey essence, rose oil, vanilla, lemon oil, orange oil, mint oil, caraway, cognac, jasmine, chamomile, menthol, cinna-

mon, ylang-ylang, sage, spearmint, ginger, cilantro, a clove extract (or a clove material), coffee, or the like but is not limited thereto.

**[0067]** In some embodiments, the flavoring sheet may be used as a flavoring agent. The flavoring sheet may be processed in various forms such as a cut form or a rolled or folded form and added to the additive accommodation part 153. By slowly releasing a flavoring fixed therein when heated, the flavoring sheet can significantly improve flavor persistence. The flavoring sheet will be described in more detail below.

**[0068]** The sound-generating agent may be a material that generates sound when heated. For example, the sound-generating agent may include a flavoring sheet produced to be porous. The flavoring sheet may generate sound as inner pores (or films forming the pores) rupture when heated. The porous flavoring sheet may be produced from a sheet composition that includes a solvent such as distilled water and/or ethanol, a hydrocolloid material, and an oil-type flavoring. The flavoring sheet produced from the sheet composition may serve as a sound-generating element in the aerosol-generating article 150-1 due to having porosity. For example, a plurality of pores may be formed in the composition as a hydrophilic hydrocolloid material and a lipophilic flavoring are mixed with a solvent, and a porous flavoring sheet may be produced as the sheet composition is dried. Additional description of the flavoring sheet will be given below.

**[0069]** As illustrated, the additive accommodation part 153 may be disposed downstream of the aerosol-forming substrate part 151. In this case, since a high-temperature aerosol formed in the aerosol-forming substrate part 151 passes through the additive accommodation part 153, the accommodated additive can be easily expressed (transferred). However, the scope of the present disclosure is not limited thereto, and the additive accommodation part 153 may also be disposed upstream of the aerosol-forming substrate part 151. For example, in a case in which the additive accommodation part 153 includes a moisturizer, the additive accommodation part 153 may be disposed upstream of the aerosol-forming substrate part 151.

**[0070]** Next, the heater part 140 may include a basic heater 141 configured to heat the aerosol-forming substrate part 151 and a control-type heater 142 configured to heat the additive accommodation part 153. The basic heater 141 may heat the aerosol-forming substrate part 151 to provide a basic (general) smoking experience, and the control-type heater 142 may be controlled on the basis of a user input to provide a customized smoking experience.

**[0071]** As mentioned above, the basic heater 141 may heat the aerosol-forming substrate part 151 on the basis of a pre-stored temperature profile. In other words, the basic heater 141 may be a heater that is controlled by the controller 120 on the basis of a pre-stored temperature profile.

**[0072]** The basic heater 141 may be implemented in

various forms. For example, the basic heater 141 may be implemented as an internal heating type as illustrated in FIG. 4 or implemented as an external heating type as illustrated in FIG. 5. Also, the basic heater 141 may be implemented as an electrically resistive heater or implemented by an induction heating method.

**[0073]** Next, the control-type heater 142 may heat the additive accommodation part 153 to provide a customized smoking experience. For example, as illustrated, the control-type heater 142 may be implemented as an external heating type and heat at least a portion of the additive accommodation part 153 from the outside. Also, the control-type heater 142 may control a degree of heating of the additive accommodation part 153 (that is, control a degree of expression of the accommodated additive) on the basis of a user input to provide a customized smoking experience. However, a specific control method may vary according to embodiments.

**[0074]** In some embodiments, operation of the control-type heater 142 may be controlled on the basis of a user input. For example, the control-type heater 142 may be turned on or off according to a user input. In this case, the user may control the on or off of the control-type heater 142 to receive a customized smoking experience.

**[0075]** Also, in some embodiments, a heating strength of the control-type heater 142 may be controlled on the basis of a user input. For example, the control-type heater 142 may operate with a first heating strength in response to a first user input or may operate with a second heating strength in response to a second user input. Here, the first user input and the second user input may be the same type of user input (e.g., a button push). According to the present embodiment, since a degree of expression of an additive (e.g., a flavor intensity, a vapor production level) can be more precisely controlled, a further customized smoking experience can be provided.

**[0076]** Also, in some embodiments, a heating mode of the control-type heater 142 may be controlled on the basis of a user input. For example, the control-type heater 142 may operate in a manual mode according to a first user input or may operate in an automatic mode according to a second user input. Here, the first user input and the second user input may be the same type of user input (e.g., a button push). In the manual mode, the operation and heating strength of the control-type heater 142 may be controlled according to a user input. Also, in the automatic mode, the control-type heater 142 may operate regardless of a user input. For instance, the controller 120 may automatically control the control-type heater 142 on the basis of a user's puff pattern. As a more specific example, the controller 120 may turn on the control-type heater 142 or increase the heating strength thereof in a case in which a puff intensity is increased, a puff interval is shortened, or a puff length is increased. In the opposite case, the controller 120 may turn off the control-type heater 142 or decrease the heating strength thereof. Also, in the automatic mode, the controller 120 may operate the control-type heater 142 according to a pre-

stored temperature profile.

**[0077]** Meanwhile, the control-type heater 142 may be controlled on the basis of a user input received through a user interface module. For example, the controller 120 may control the control-type heater 142 on the basis of a user input received through the user interface module, but the present disclosure is not limited thereto.

**[0078]** The user interface module may be implemented in various forms such as a button, a touchable display, or a voice recognition module. For example, the user interface module may be implemented as a button formed on an outer surface of a housing of an aerosol generation device (e.g., 100-1). In this case, since the user can control the control-type heater 142 through a simple input made by pushing the button, user convenience can be improved.

**[0079]** Meanwhile, in some embodiments, the control-type heater 142 may be implemented as an external heating type, and a flavoring agent may be added to the additive accommodation part 153. Also, a flavoring agent (e.g., a flavoring sheet) may also be added to a wrapper of the additive accommodation part 153 or a segment adjacent thereto (e.g., the aerosol-forming substrate part 151, the filter part 152, or a filter part 154, 155, or 158 of FIG. 7 or 8). In this case, since the flavoring agent in a portion of a wrapper that is located close to the control-type heater 142 is rapidly transferred as the control-type heater 142 is operated, a delay in flavor transfer can be minimized. In more detail, even when the control-type heater 142 is operated (turned on) by the user, some amount of time may be taken for a flavor to be transferred. This is because some amount of time is necessary for the additive accommodation part 153 to be sufficiently heated. In other words, flavor transfer may be delayed until the additive accommodation part 153 is sufficiently heated by the control-type heater 142, and according to the present embodiment, such a problem can be easily addressed.

**[0080]** The detailed structure of the aerosol-generating article 150-1 and the operation principle of the heater part 140 according to the first embodiment of the present disclosure have been described above with reference to FIGS. 4 and 5. According to the above description, the control-type heater 142 which is a dedicated heater for the additive accommodation part 153 and is controlled by a user may be provided. The control-type heater 142 may heat the additive accommodation part 153 on the basis of a user input to provide a customized smoking experience according to the user's preferences.

**[0081]** Hereinafter, a detailed structure of an aerosol-generating article 150-2 and an operation principle of the heater part 140 according to a second embodiment of the present disclosure will be described. However, for clarity of the present disclosure, description of content overlapping with the previous embodiment will be omitted.

**[0082]** FIG. 6 is an exemplary view for describing the detailed structure of the aerosol-generating article 150-2

and the operation principle of the heater part 140 according to the second embodiment of the present disclosure. For reference, illustration of the basic heater 141 has been omitted in FIG. 6 and so on in order to provide convenience of understanding.

**[0083]** As illustrated in FIG. 6, the aerosol-generating article 150-2 according to the present embodiment may include a plurality of additive accommodation parts 153-1 and 153-2, and the heater part 140 may include a plurality of control-type heaters 142-1 and 142-2. Here, a first control-type heater 142-1 may heat a first additive accommodation part 153-1, and a second control-type heater 142-2 may heat a second additive accommodation part 153-2.

**[0084]** FIG. 6 illustrates a case in which the aerosol-generating article 150-2 includes two additive accommodation parts 153-1 and 153-2 as an example, but the number of additive accommodation parts may be three or more. Also, FIG. 6 illustrates a case in which the plurality of additive accommodation parts 153-1 and 153-2 are disposed adjacent to each other as an example, but the plurality of additive accommodation parts 153-1 and 153-2 may be not disposed adjacent to each other. For example, the first additive accommodation part 153-1 may be disposed upstream of the aerosol-forming substrate part 151, and the second additive accommodation part 153-2 may be disposed downstream of the aerosol-forming substrate part 151.

**[0085]** Additives added to the additive accommodation parts 153-1 and 153-2 may be the same as or different from each other.

**[0086]** In a case in which the same additive is added, a degree of transfer of the additive can be more precisely controlled. For example, when the same flavoring agent is added to the two additive accommodation parts 153-1 and 153-2, the flavor intensity can be more precisely controlled by the two control-type heaters 142-1 and 142-2. For instance, a user may operate (turn on) both of the two control-type heaters 142-1 and 142-2 to taste a very strong flavor or may operate (turn on) only any one control-type heater 142-1 or 142-2 to taste a moderate flavor.

**[0087]** In a case in which different additives are added, a diverse smoking experience can be provided to a user. For example, when different flavoring agents are added to the two additive accommodation parts 153-1 and 153-2 and both of the two control-type heaters 142-1 and 142-2 are operated, two flavors may be combined and transferred to a user. Alternatively, when only any one control-type heater 142-1 or 142-2 is operated, only the flavoring agent added to the corresponding additive accommodation part 153-1 or 153-2 may be strongly transferred. As another example, when a flavoring agent and a moisturizer are added to the two additive accommodation parts 153-1 and 153-2 and both of the two control-type heaters 142-1 and 142-2 are operated, both flavor transfer and vapor production may be enhanced.

**[0088]** The detailed structure of the aerosol-generating article 150-2 and the operation principle of the heater

part 140 according to the second embodiment of the present disclosure have been described above with reference to FIG. 6. According to the above description, control precision can be improved through the plurality of additive accommodation parts 153-1 and 153-2 and the plurality of control-type heaters 142-1 and 142-2, and a diverse smoking experience can be provided to the user.

**[0089]** Hereinafter, a detailed structure of an aerosol-generating article 150-3 and an operation principle of the heater part 140 according to a third embodiment of the present disclosure will be described.

**[0090]** FIG. 7 is an exemplary view for describing the detailed structure of the aerosol-generating article 150-3 and the operation principle of the heater part 140 according to the third embodiment of the present disclosure.

**[0091]** As illustrated in FIG. 7, the aerosol-generating article 150-3 according to the present embodiment may include the aerosol-forming substrate part 151, the additive accommodation part 153, and a plurality of filter parts (or filter segments) 154 to 156.

**[0092]** A first filter part 154 may be disposed downstream of the aerosol-forming substrate part 151. The first filter part 154 may provide a movement path for an aerosol formed in the aerosol-forming substrate part 151 and may also perform a function of filtering or cooling the aerosol. As illustrated, the first filter part 154 may be made of a filter structure having a hollow formed therein. For example, the first filter part 154 may be a tubular cellulose acetate filter or a paper tube, but the scope of the present disclosure is not limited thereto.

**[0093]** Next, a second filter part 155 may perform a function of cooling an aerosol. The second filter part 155 may allow an aerosol at a suitable temperature to be delivered to a user and thus improve the user's smoking satisfaction. The second filter part 155 may be made of a structure having a hollow or a cavity formed therein. For example, the second filter part 155 may be a paper tube or a tubular cellulose acetate filter but is not limited thereto.

**[0094]** Since the second filter part 155 performs the cooling function, the second filter part 155 may also be referred to as a "cooling part 155" or a "cooling segment 155" in some cases.

**[0095]** Next, a third filter part 156 may correspond to the filter part 152 described above. Therefore, description thereof will be omitted.

**[0096]** The detailed structure of the aerosol-generating article 150-3 and the operation principle of the heater part 140 according to the third embodiment of the present disclosure have been described above with reference to FIG. 7. Hereinafter, a detailed structure of an aerosol-generating article 150-4 and an operation principle of the heater part 140 according to a fourth embodiment of the present disclosure will be described.

**[0097]** FIG. 8 is an exemplary view for describing the detailed structure of the aerosol-generating article 150-4 and the operation principle of the heater part 140 accord-

ing to the fourth embodiment of the present disclosure.

**[0098]** As illustrated in FIG. 8, the aerosol-generating article 150-4 according to the present embodiment may include a first filter part 157, the aerosol-forming substrate part 151, the additive accommodation part 153, a second filter part 158, and a third filter part 159.

**[0099]** The first filter part 157 may be disposed at an upstream end of the aerosol-generating article 150-4 and prevent the aerosol-forming substrate part 151 from falling to the outside. Also, the first filter part 157 may prevent a liquefied aerosol from flowing from the aerosol-forming substrate part 151 into an aerosol generation device (e.g., 100-2). Alternatively, the first filter part 157 may perform a function of controlling the aerosol-forming substrate part 151 to be disposed at an appropriate position inside the aerosol generation device (e.g., 100-2) in a case in which the aerosol-generating article 150-4 is inserted into the aerosol generation device (e.g., 100-2).

**[0100]** Since the first filter part 157 is disposed at a front end of the aerosol-forming substrate part 151, the first filter part 157 may also be referred to as a "front end filter part 157," a "front end filter segment 157," or a "front end plug 157" in some cases.

**[0101]** Next, the second filter part 158 and the third filter part 159 may respectively correspond to the filter parts 155 and 156 described above. Therefore, descriptions thereof will be omitted.

**[0102]** The detailed structure of the aerosol-generating article 150-4 and the operation principle of the heater part 140 according to the fourth embodiment of the present disclosure have been described above with reference to FIG. 8.

**[0103]** Meanwhile, in various embodiments described above, the flavoring agent added to the aerosol-forming substrate part 151 or the additive accommodation part 153 may be a flavoring sheet produced in the form of a sheet. Due to being able to slowly release a flavoring fixed therein when heated, the flavoring sheet can ensure better flavor persistence than a flavoring liquid. However, a specific method of adding the flavoring sheet and a form in which the flavoring sheet is processed may vary.

**[0104]** In some embodiments, a flavoring sheet 10 (see FIG. 9) may be added in a cut form. For example, the flavoring sheet 10 in a cut form may be mixed with shredded tobacco and added to the aerosol-forming substrate part 151. Alternatively, the flavoring sheet 10 in a cut form may be added to the additive accommodation part 153.

**[0105]** In some other embodiments, as illustrated in FIG. 9, the flavoring sheet 10 may be added in a rolled or folded form. For example, the flavoring sheet 10 may be added to the aerosol-forming substrate part 151 or the additive accommodation part 153 while having a form in which it is rolled or folded in irregular patterns (see "10-1"), having a vortex form (see "10-2"), having a concentric form (see "10-3"), or having a form in which it is folded several times (e.g., a form in which it is folded to secure an airflow path in the longitudinal direction; see "10-4"). When the flavoring sheet 10 is added in the

above-listed forms, an airflow path can be secured in the longitudinal direction, and thus a smooth airflow and appropriate resistance to draw can be ensured. Also, an area of contact between the flavoring sheet 10 and a high-temperature airflow is increased, and thus the amount of transferred flavoring can be increased.

**[0106]** In still some other embodiments, the flavoring sheet 10 may be applied (e.g., attached) to a wrapper of an aerosol-generating article (e.g., 150). For example, the flavoring sheet 10 may be disposed on an inner side of a wrapper of the additive accommodation part 153 or a segment adjacent thereto (e.g., the aerosol-forming substrate part 151 or the filter parts 152, 154, and 156 to 159). In a case in which the wrapper includes a metal foil, the flavoring sheet 10 may be disposed on an inner side of the metal foil. Alternatively, the flavoring sheet 10 may constitute at least a portion of the wrapper. For example, the flavoring sheet 10 itself may serve as (be used as) the wrapper, or a wrapping material produced in a form in which the flavoring sheet 10 and wrapping paper are integrated may be used as the wrapper.

**[0107]** In the previous embodiments, the flavoring sheet 10 may be processed through a predetermined process. However, a specific form in which the flavoring sheet 10 is processed may vary.

**[0108]** For example, as illustrated in FIG. 10, the flavoring sheet 10 may be processed to be pleated or folded in the longitudinal direction (that is, the machine direction) of the aerosol-generating article (e.g., 150). For example, the flavoring sheet 10 may be pleated or folded according to at least one of a crimping process, a pleating process, a folding process, and a gathering process. Specifically, the crimping process is a process in which creep is assigned to a sheet surface through a difference between a pressure and a speed of a roller of a crimping device, and the crimping process may be divided into a wet process and a dry process. The wet process refers to a process in which a base paper is soaked in water, then softened and crimped, and undergoes a re-drying process. The dry process refers to a drying process using two dryers with different temperatures. Since the pleating process, folding process, and gathering process should already be familiar to those of ordinary skill in the art, further descriptions thereof will be omitted. According to the present embodiment, a plurality of channels may be formed in the flavoring sheet 10 in the longitudinal direction thereof by at least one of the processes described above, and a smooth airflow and appropriate resistance to draw can be ensured by the formed channels. Further, an area of contact between the flavoring sheet 10 and a high-temperature airflow is increased, and thus the amount of transferred flavoring can be increased.

**[0109]** As another example, as illustrated in FIG. 11, the flavoring sheet 10 may be processed so that a plurality of holes 101 are formed therein. For example, the plurality of holes 101 may be formed in the flavoring sheet 10 by a punching process. Here, a diameter of the hole 101 may be in a range of about 0.05 mm to 5 mm and

may be in a range of about 0.1 mm to 3 mm, in a range of about 0.2 mm to 2.5 mm, in a range of about 0.3 mm to 2.1 mm, or in a range of about 0.4 mm to 1.8 mm. Within such numerical ranges, a smooth airflow and appropriate resistance to draw can be ensured. Further, an area of contact between the flavoring sheet 10 and the high-temperature airflow may be increased, and thus the amount of transferred flavoring can also be increased.

[0110] Meanwhile, in some embodiments, the flavoring sheet 10 may be added to a filter part (e.g., 155 or 158) performing the cooling function or may be added to a hollow-type filter part (e.g., 154). For example, the flavoring sheet 10 may be added into a filter part (e.g., 154, 155, or 158) or attached to an inner wall thereof. In this case, flavor expression and cooling performance of an aerosol-generating article (e.g., 150-3) can be improved. In more detail, since the flavoring sheet 10 absorbs high-temperature heat and releases a flavoring when in contact with a high-temperature aerosol, both the flavor expression and cooling performance can be improved.

[0111] The flavoring sheet 10 described above may be produced through a step in which a sheet composition is produced in a liquid phase (e.g., a slurry form) and a step in which the produced sheet composition is dried. Here, the liquid phase may not only include a liquid form but also include a form in which a liquid and a solid are mixed (e.g., a slurry form). For example, the flavoring sheet 10 may be produced by casting a sheet composition on a predetermined substrate and drying the sheet composition. However, the flavoring sheet 10 is not limited thereto, and a specific method of producing the flavoring sheet 10 may be changed.

[0112] A specific composition of the sheet composition may be designed in various ways, but in some embodiments, the sheet composition may be formed by mixing a solvent such as distilled water or ethanol, a polysaccharide material (or a hydrocolloid material), and a flavoring. The flavoring sheet 10 produced from the sheet composition may hold a large amount of flavor and have excellent flavor retention and thus can significantly enhance flavor expression and flavor persistence of the aerosol-generating article (e.g., 150). Hereinafter, each material constituting the sheet composition will be described.

[0113] The solvent such as distilled water or ethanol may be a component for controlling the viscosity of the slurry-type sheet composition.

[0114] Next, the polysaccharide material may be a material for covering and fixing the flavoring and may be a sheet-forming agent for forming a sheet. Examples of the polysaccharide material may include cellulose-based materials such as hydroxypropyl methylcellulose (HPMC), methyl cellulose (MC), carboxymethyl cellulose (CMC), and agar. Such cellulose-based materials have a property of easily absorbing heat through a phase change upon contact with a high-temperature airflow, and thus the flavoring sheet 10 may be utilized as a cooling material as well as a flavor expressing material.

[0115] In some embodiments, the sheet composition may include modified cellulose among various polysaccharide materials. Here, "modified cellulose" may refer to cellulose in which a specific functional group is substituted in a molecular structure. Examples of modified cellulose may include HPMC, MC, CMC, and ethyl cellulose (EC), but modified cellulose is not limited thereto. For example, HPMC may have a grade in a range of about 4 to 40000 according to a proportion and molecular weight in which a hydroxypropyl group and a methyl group (or methoxy group) are substituted. The viscosity of modified cellulose may be determined according to the grade. More specifically, physicochemical characteristics of HPMC relate to a proportion of the methoxy group and a proportion and molecular weight of the hydroxypropyl group, and according to the The United States Pharmacopeial Convention (USP), types of HPMC may be classified into HPMC 1828, HPMC2208, HPMC2906, HPMC2910, and the like according to proportions of the methoxy group and hydroxypropyl group. Here, the first two numbers may refer to a proportion of the methoxy group, and the last two numbers may refer to a proportion of the hydroxypropyl group. As a result of continuous experiments by the inventors of the present disclosure, the flavoring sheet 10 produced from a sheet composition including modified cellulose was confirmed as having excellent physical properties and holding a large amount of flavor.

[0116] Next, examples of the flavoring may include menthol, nicotine, nicotine salt, a leaf tobacco extract, a leaf tobacco extract containing nicotine, a natural vegetable flavoring (e.g., cinnamon, sage, herb, chamomile, kudzu, amacha, clove, lavender, cardamom, clove, nutmeg, bergamot, geranium, honey essence, rose oil, lemon, orange, cinnamon, caraway, jasmine, ginger, coriander, vanilla extract, spearmint, peppermint, cassia, coffee, celery, cascarilla, sandalwood, cocoa, ylang-ylang, fennel, anise, licorice, St. John's bread, plum extract, peach extract, etc.), sugars (e.g., glucose, fructose, isomerized sugar, caramel, etc.), cocoa (e.g., powder, extract, etc.), esters (e.g., isoamyl acetate, linalyl acetate, isoamyl propionate, linalyl butyrate, etc.), ketones (e.g., menthone, ionone, damascenone, ethyl maltol, etc.), alcohols (e.g., geraniol, linalool, anetol, eugenol, etc.), aldehydes (e.g., vanillin, benzaldehyde, anisaldehyde, etc.), lactones, (e.g.,  $\gamma$ -undecalactone,  $\gamma$ -nonalactone, etc.), an animal flavoring (e.g., musk, ambergris, civet, castoreum, etc.), and hydrocarbons (e.g., limonene, pinene, etc.). The flavoring may be used in a solid state or may be used by being dissolved or dispersed in an appropriate solvent, e.g., propylene glycol, ethyl alcohol, benzyl alcohol, or triethyl citrate. Also, a flavoring that is easily dispersed in a solvent by addition of an emulsifier, e.g., a hydrophobic flavoring or an oil-soluble flavoring, may be used. These flavorings may be used alone or used as a mixture. However, the scope of the present disclosure is not limited by the examples described above.

**[0117]** In some embodiments, a flavoring whose melting point is about 80 °C or lower may be used. In this case, when the flavoring sheet 10 comes into contact with an airflow having a temperature of 80 °C or higher, the flavoring may undergo a phase change and further absorb the heat. Thus, the cooling performance of the flavoring sheet 10 can be further improved. Considering the fact that a heated aerosol generally has a temperature of 80 °C or higher, the use of the above flavorings can effectively improve cooling performance of most aerosol-generating articles (e.g., 150). Further, since the phase-changed flavoring is easily volatilized, the flavor expression of the aerosol-generating article (e.g., 150) can also be improved. An example of the flavoring whose melting point is about 80 °C or lower may include menthol, but the flavoring is not limited thereto.

**[0118]** Meanwhile, in some embodiments, the sheet composition may further include low methoxyl pectin (LM-pectin). LM-pectin is a low ester-pectin or low methoxyl pectin in which relatively little esterification is performed. Specifically, LM pectin may be pectin that contains a carboxyl group by less than about 50% in a molecular structure. Due to having a characteristic of not gelling when cooled unlike carrageenan, LM-pectin may lower the viscosity of the slurry-type sheet composition (e.g., to about 600 cp to 800 cp). Further, since the slurry-type sheet composition can be produced without an emulsifier, a safety problem due to emulsifiers may not occur.

**[0119]** LM-pectin may contain a carboxyl group by less than about 50%, less than about 40%, less than about 30%, less than about 20%, or less than about 10% in a molecular structure. The lower the content of carboxyl group in the molecular structure of LM-pectin, the lower the viscosity of a slurry including LM-pectin.

**[0120]** Also, in some embodiments, the sheet composition may further include a bulking agent. The bulking agent may be a material that increases the total mass of components other than distilled water (that is, dry mass) to increase the volume of the flavoring sheet 10 being produced but does not affect the original function of the flavoring sheet 10. Specifically, the bulking agent may have characteristics of increasing the volume of the flavoring sheet 10 but not adversely affecting the flavor retaining function of the flavoring sheet 10 while not substantially increasing the viscosity of the slurry. Preferably, the bulking agent may be starch, modified starch, or starch hydrolyzate but is not limited thereto.

**[0121]** Modified starch refers to starch acetate, oxidized starch, hydroxypropyl distarch phosphate, hydroxypropyl starch, distarch phosphate, monostarch phosphate, phosphorylated distarch phosphate, or the like.

**[0122]** Starch hydrolyzate refers to a material obtained by a process that includes a process of hydrolyzing starch. For example, starch hydrolyzate may include a material obtained by directly hydrolyzing starch (that is, dextrin) or a material obtained by heating and hydrolyzing starch (that is, indigestible dextrin). For example, the

bulking agent may be dextrin, more specifically, cyclodextrin.

**[0123]** Generally, starch hydrolyzate may be starch hydrolyzate having a dextrose equivalent (DE) value in a range of about 2 to about 40, preferably, starch hydrolyzate having a DE value in a range of about 2 to about 20. For example, as the starch hydrolyzate having a DE value in a range of about 2 to about 20, Pinedex #100 (Matsutani Chemical Industry Co. Ltd), Pinefiber (Matsutani Chemical Industry Co. Ltd), TK-16 (Matsutani Chemical Industry Co. Ltd), or the like may be utilized.

**[0124]** Here, "DE" is an abbreviation of "dextrose equivalent," and the DE value indicates a degree of hydrolysis of starch, that is, a saccharification rate of starch. In the present disclosure, the DE value may be a value measured by the Willstatter-Schudel method. Characteristics of hydrolyzed starch (starch hydrolyzate), for example, characteristics such as a molecular weight of starch hydrolyzate and arrangement of sugar molecules constituting starch hydrolyzate, may not be constant for each molecule of starch hydrolyzate and may be present with a certain distribution or variation. Due to the distribution or variation of the characteristics of starch hydrolyzate or a difference in cut sections, each molecule of starch hydrolyzate may exhibit different physical properties (e.g., DE value). In this way, starch hydrolyzate is a set of molecules exhibiting different physical properties, but a measurement result (that is, DE value) by the Willstatter-Schudel method is considered a representative value indicating the degree of hydrolysis of starch.

**[0125]** Preferably, starch hydrolyzate may be selected from the group consisting of dextrin having a DE value in a range of about 2 to about 5, indigestible dextrin having a DE value in a range of about 10 to about 15, and a mixture thereof. For example, as the dextrin having a DE value in a range of about 2 to about 5, Pinedex #100 (Matsutani Chemical Industry Co. Ltd) may be utilized. As the indigestible dextrin having a DE value in a range of about 10 to about 15, Pinefiber (Matsutani Chemical Industry Co. Ltd) may be utilized.

**[0126]** Also, in some embodiments, the sheet composition may further include a plasticizer. The plasticizer may add appropriate flexibility to the flavoring sheet 10 and thus improve the physical property of the sheet. For example, the plasticizer may include at least one of glycerin and propylene glycol but is not limited thereto.

**[0127]** Also, in some embodiments, the sheet composition may further include an emulsifier. The emulsifier may allow a highly fat-soluble flavoring and a water-soluble polysaccharide material to be mixed well and increase the amount of flavor held in the flavoring sheet 10. An example of the emulsifier may include lecithin, but the emulsifier is not limited thereto.

**[0128]** Meanwhile, the flavoring sheet 10 produced from the above-described sheet composition may have various content ratios (composition ratios).

**[0129]** In some embodiments, the flavoring sheet 10 may include, with respect to a total of 100 parts by weight,

about 20 to 60 parts by weight of the polysaccharide material and about 10 to 50 parts by weight of the flavoring. Of course, the flavoring sheet 10 may further include an appropriate amount of moisture. The flavoring sheet 10 configured in this way was confirmed as significantly improving the flavor expression, flavor persistence and cooling performance of the aerosol-generating article (e.g., 150).

**[0130]** In some embodiments, the flavoring sheet 10 may include, with respect to a total of 100 parts by weight, about 2 to about 15 parts by weight of moisture, about 25 to about 90 parts by weight of modified cellulose, and about 0.1 to about 60 parts by weight of flavoring.

**[0131]** Also, in some embodiments, the flavoring sheet 10 may include, with respect to a total of 100 parts by weight, about 2 to about 15 parts by weight of moisture, about 1 to about 60 parts by weight of polysaccharide material, about 1 to about 60 parts by weight of LM-pectin, and about 0.1 to about 60 parts by weight of flavoring.

**[0132]** In some embodiments, with respect to a total of 100 parts by weight of the flavoring sheet 10, the plasticizer may be included by about 0.1 to about 15 parts by weight and may be included by about 1 to 10 parts by weight. For example, the flavoring sheet 10 may include, with respect to a total of 100 parts by weight, about 20 to 60 parts by weight of polysaccharide material, about 10 to 50 parts by weight of flavoring, and about 1 to 10 parts by weight of plasticizer. Within such numerical ranges, a sheet having appropriate flexibility (physical property) may be formed, and since processing (e.g., crimping, rolling, folding, etc.) of the flavoring sheet 10 is easy, workability may be improved. For example, in a case in which the amount of added plasticizer is too small, flexibility of the sheet may be decreased and thus the sheet may be easily damaged during processes, and in a case in which the amount of added plasticizer is too large, the sheet may not be formed well.

**[0133]** The flavoring sheet 10 according to some embodiments of the present disclosure has been described above.

**[0134]** The embodiments of the present disclosure have been described above with reference to the accompanying drawings, but those of ordinary skill in the art to which the present disclosure pertains should understand that the present disclosure may be embodied in other specific forms without changing the technical concept or essential features thereof. Therefore, the embodiments described above should be understood as being illustrative, instead of limiting, in all aspects. The scope of the present disclosure should be interpreted according to the claims below, and any technical concept within the scope equivalent to the claims should be interpreted as falling within the scope of the technical concept defined by the present disclosure.

## Claims

1. An aerosol generation device comprising:

5 a housing configured to form an accommodation space in which an aerosol-generating article is accommodated; and  
a heater part configured to heat the aerosol-generating article accommodated in the accommodation space to generate an aerosol, wherein the aerosol-generating article includes an aerosol-forming substrate part and an additive accommodation part in which an additive is accommodated, and  
10 the heater part includes a heater configured to heat the aerosol-forming substrate part and a user control-type heater configured to heat the additive accommodation part while being controlled on the basis of a user input.

2. The aerosol generation device of claim 1, wherein the user input is received through a button formed on an outer surface of the housing.

25 3. The aerosol generation device of claim 1, wherein the additive is a flavoring agent.

4. The aerosol generation device of claim 3, wherein the flavoring agent is a flavoring sheet produced in the form of a sheet.

5. The aerosol generation device of claim 3, wherein:  
the flavoring agent is a flavoring sheet produced in the form of a sheet; and  
the flavoring sheet is added in a cut form to the additive accommodation part.

6. The aerosol generation device of claim 3, wherein:  
the flavoring agent is a flavoring sheet produced in the form of a sheet; and  
the flavoring sheet is added in a rolled or folded form to the additive accommodation part.

7. The aerosol generation device of claim 1, wherein the additive is a moisturizer.

8. The aerosol generation device of claim 1, wherein:  
the additive accommodation part includes a first accommodation part and a second accommodation part; and  
the user control-type heater includes a first heater configured to heat the first accommodation part and a second heater configured to heat the second accommodation part.

9. The aerosol generation device of claim 1, wherein a heating strength of the user control-type heater is controlled on the basis of the user input.

10. The aerosol generation device of claim 1, wherein: 5

the user control-type heater is an external heating type;  
the additive is a flavoring agent; and  
the flavoring agent is also added to a wrapper of the additive accommodation part. 10

11. The aerosol generation device of claim 1, wherein:

the user control-type heater is an external heating type; 15  
the additive is a flavoring agent; and  
the flavoring agent is also added to a wrapper of a segment adjacent to the additive accommodation part. 20

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FIG. 1

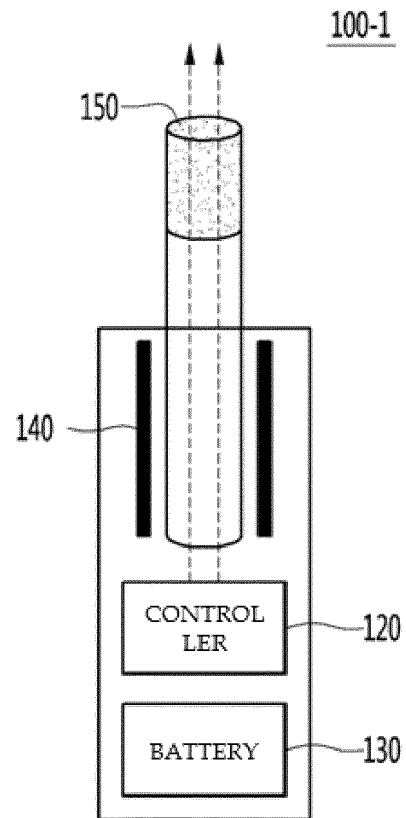


FIG. 2

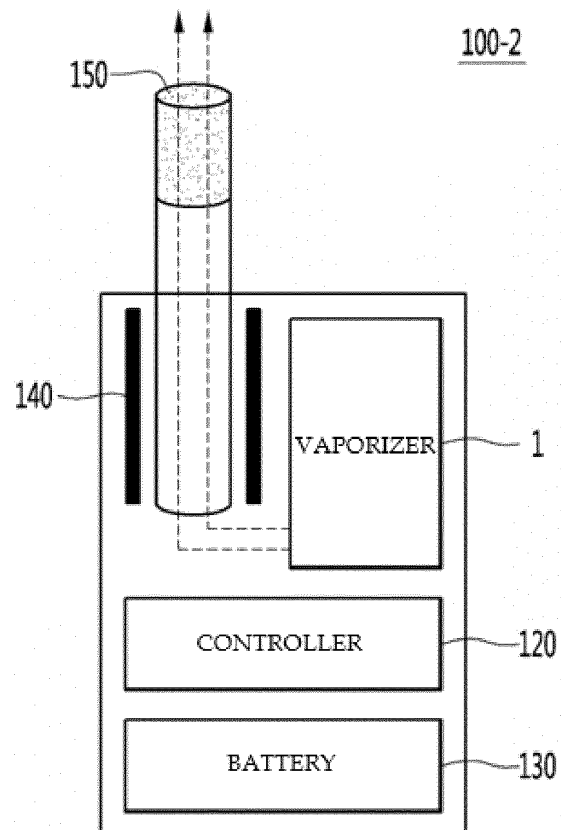


FIG. 3

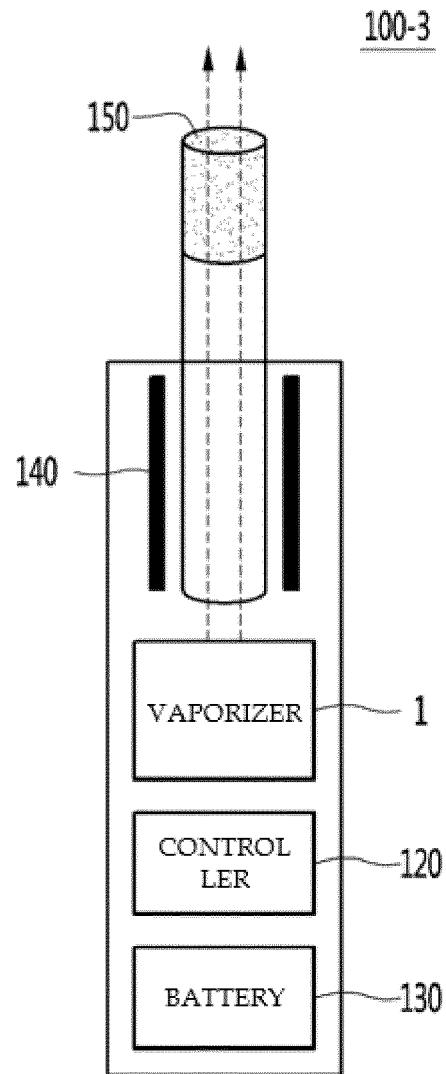


FIG. 4

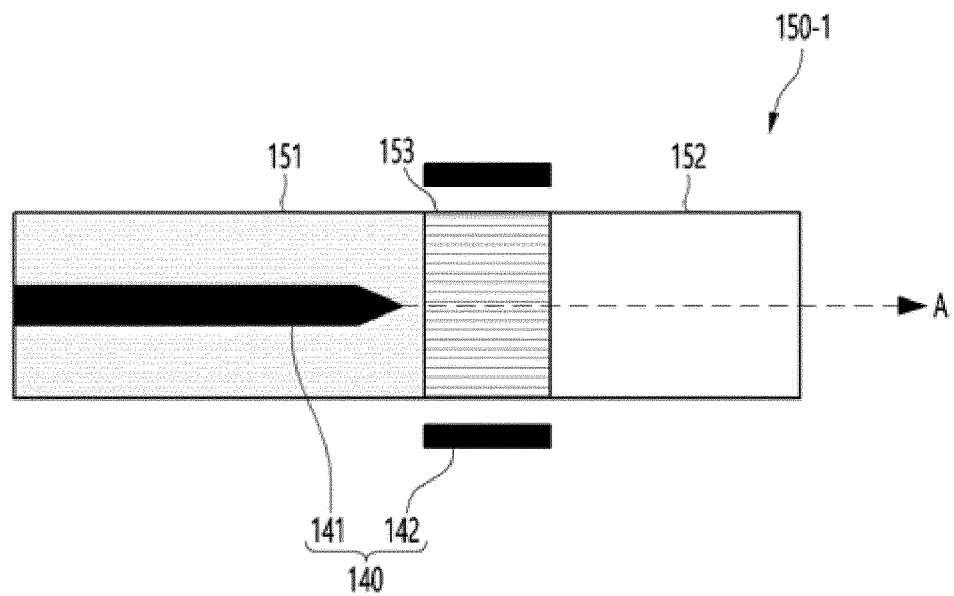


FIG. 5

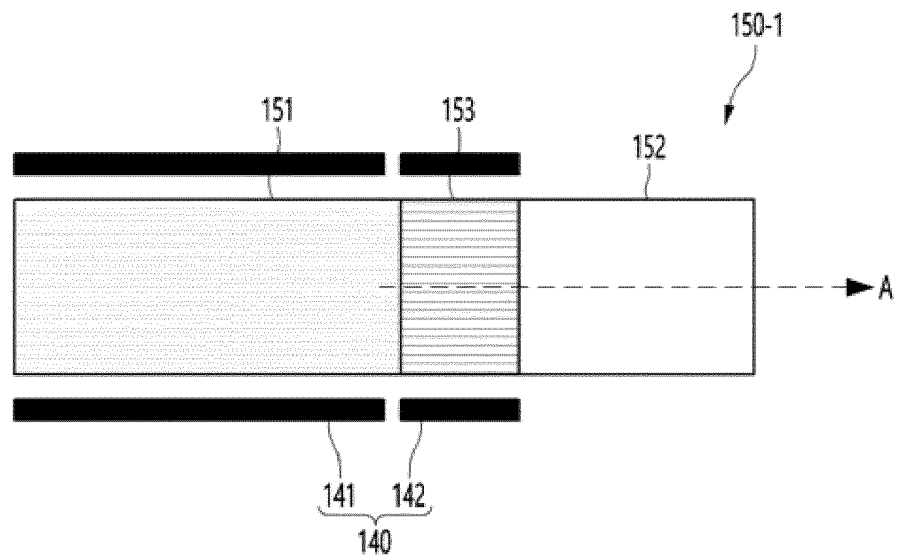


FIG. 6

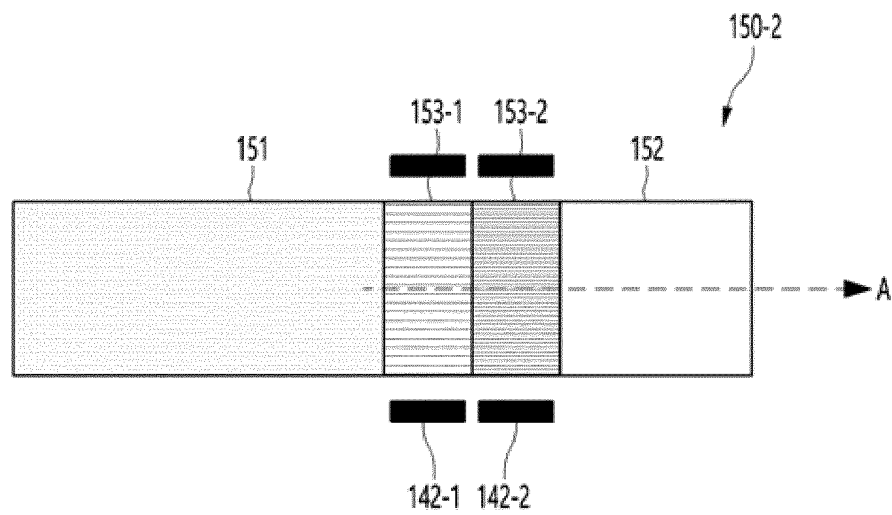


FIG. 7

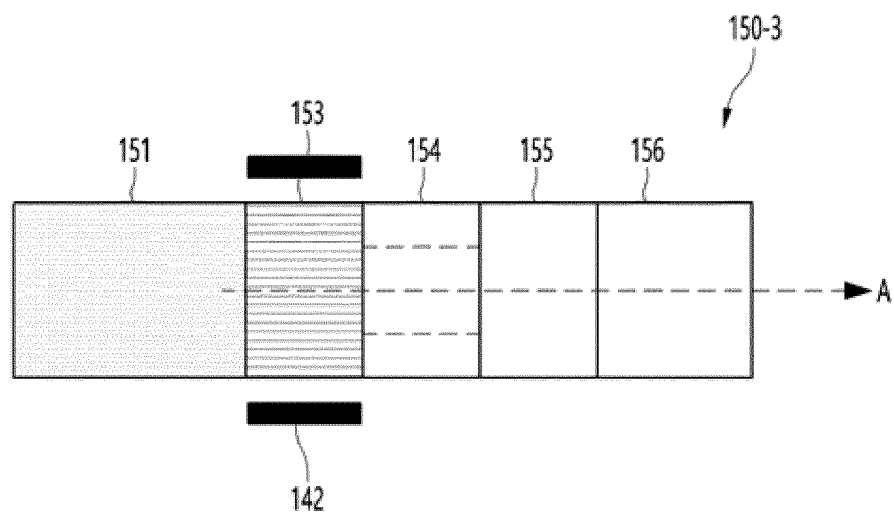


FIG. 8

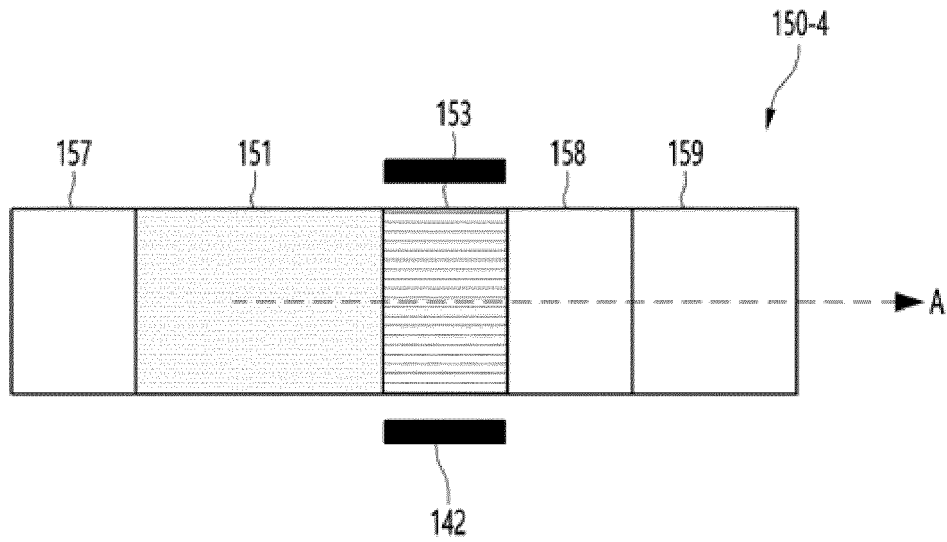


FIG. 9

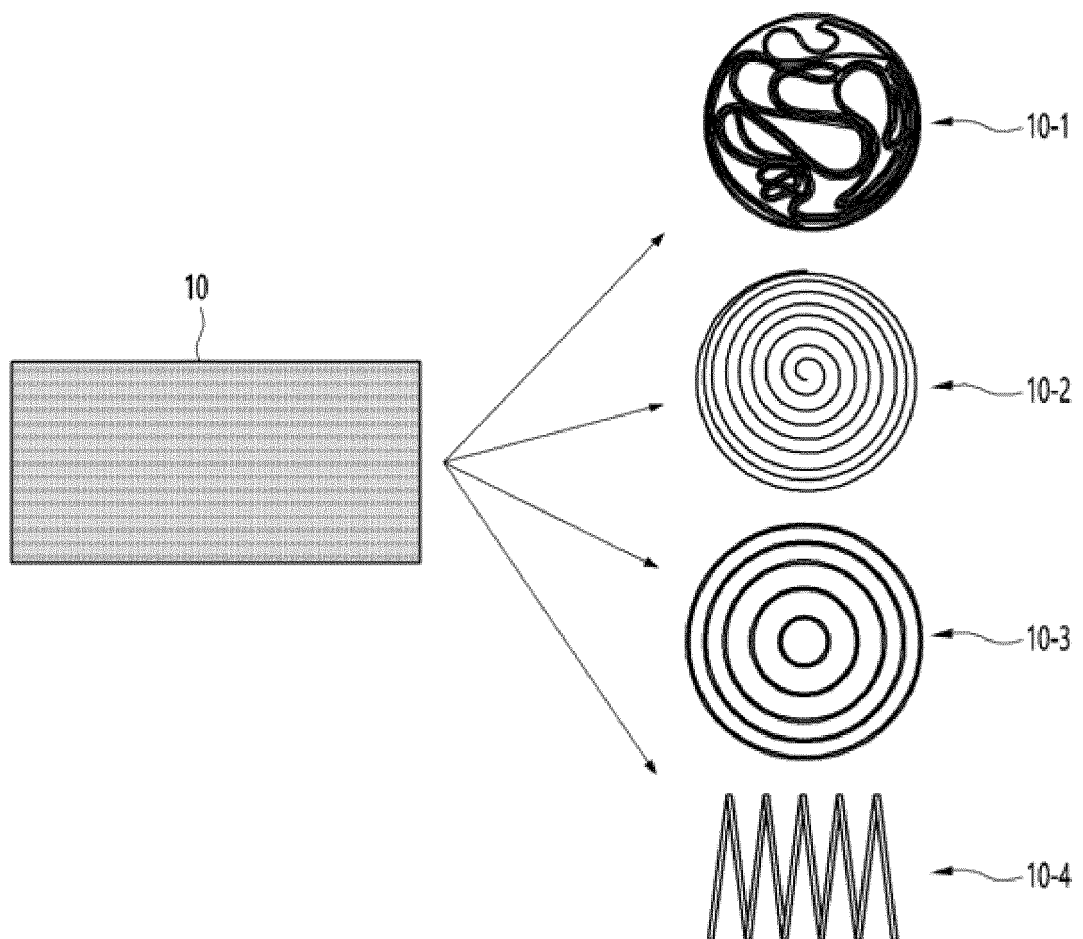


FIG. 10

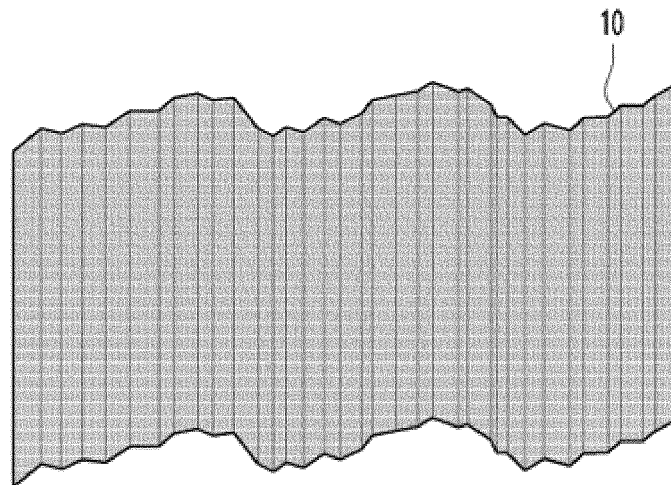
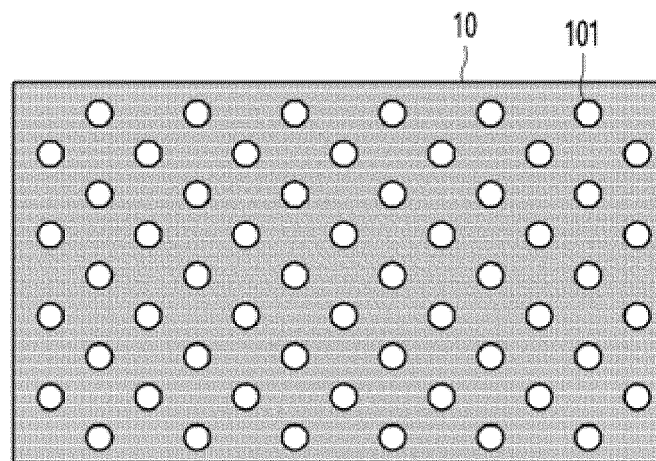


FIG. 11



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2022/005746

| <b>A. CLASSIFICATION OF SUBJECT MATTER</b><br><b>A24F 40/46(2020.01)i; A24F 40/60(2020.01)i; A24F 40/50(2020.01)i; A24B 3/14(2006.01)i; A24B 15/14(2006.01)i; A24D 1/00(2006.01)i; A24D 1/02(2006.01)i; A24D 1/20(2020.01)i</b><br>According to International Patent Classification (IPC) or to both national classification and IPC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                          |                                                                                    |                       |   |                                                                                                                                                                                                          |         |   |  |         |   |                                                                                                                                           |         |   |                                                                                                                                                        |       |   |                                                                                            |      |
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| <b>B. FIELDS SEARCHED</b><br>Minimum documentation searched (classification system followed by classification symbols)<br>A24F 40/46(2020.01); A24B 15/16(2006.01); A24D 1/00(2006.01); A24F 40/40(2020.01); A24F 40/57(2020.01); A24F 47/00(2006.01); C09J 11/00(2006.01)<br>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched<br>Korean utility models and applications for utility models: IPC as above<br>Japanese utility models and applications for utility models: IPC as above<br>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)<br>eKOMPASS (KIPO internal) & keywords: 에어로졸(aerosol), 히터(heater), 향미제(flavoring agent), 담배(cigarette), 래퍼(wrapper)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                          |                                                                                    |                       |   |                                                                                                                                                                                                          |         |   |  |         |   |                                                                                                                                           |         |   |                                                                                                                                                        |       |   |                                                                                            |      |
| <b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b> <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>KR 10-2019-0017732 A (PHILIP MORRIS PRODUCTS S.A.) 20 February 2019 (2019-02-20)<br/>See paragraphs [0004], [0064]-[0073], [0091], [0101], [0115], [0121]-[0127], [0134] and [0139]; and figures 5 and 6.</td> <td>1-6,8,9</td> </tr> <tr> <td>Y</td> <td></td> <td>7,10,11</td> </tr> <tr> <td>Y</td> <td>KR 10-2020-0005074 A (KT &amp; G CORPORATION) 15 January 2020 (2020-01-15)<br/>See paragraphs [0028], [0039], [0046] and [0077]; and figure 2.</td> <td>7,10,11</td> </tr> <tr> <td>X</td> <td>JP 6858915 B1 (JAPAN TOBACCO INC.) 14 April 2021 (2021-04-14)<br/>See paragraphs [0013], [0022], [0029], [0033]-[0040] and [0071]; and figures 1 and 3.</td> <td>1-3,9</td> </tr> <tr> <td>A</td> <td>KR 10-2020-0054156 A (KT &amp; G CORPORATION) 19 May 2020 (2020-05-19)<br/>See entire document.</td> <td>1-11</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                         | Category*                                                                                                                                                                                                | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. | X | KR 10-2019-0017732 A (PHILIP MORRIS PRODUCTS S.A.) 20 February 2019 (2019-02-20)<br>See paragraphs [0004], [0064]-[0073], [0091], [0101], [0115], [0121]-[0127], [0134] and [0139]; and figures 5 and 6. | 1-6,8,9 | Y |  | 7,10,11 | Y | KR 10-2020-0005074 A (KT & G CORPORATION) 15 January 2020 (2020-01-15)<br>See paragraphs [0028], [0039], [0046] and [0077]; and figure 2. | 7,10,11 | X | JP 6858915 B1 (JAPAN TOBACCO INC.) 14 April 2021 (2021-04-14)<br>See paragraphs [0013], [0022], [0029], [0033]-[0040] and [0071]; and figures 1 and 3. | 1-3,9 | A | KR 10-2020-0054156 A (KT & G CORPORATION) 19 May 2020 (2020-05-19)<br>See entire document. | 1-11 |
| Category*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                       | Relevant to claim No.                                                              |                       |   |                                                                                                                                                                                                          |         |   |  |         |   |                                                                                                                                           |         |   |                                                                                                                                                        |       |   |                                                                                            |      |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | KR 10-2019-0017732 A (PHILIP MORRIS PRODUCTS S.A.) 20 February 2019 (2019-02-20)<br>See paragraphs [0004], [0064]-[0073], [0091], [0101], [0115], [0121]-[0127], [0134] and [0139]; and figures 5 and 6. | 1-6,8,9                                                                            |                       |   |                                                                                                                                                                                                          |         |   |  |         |   |                                                                                                                                           |         |   |                                                                                                                                                        |       |   |                                                                                            |      |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                          | 7,10,11                                                                            |                       |   |                                                                                                                                                                                                          |         |   |  |         |   |                                                                                                                                           |         |   |                                                                                                                                                        |       |   |                                                                                            |      |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | KR 10-2020-0005074 A (KT & G CORPORATION) 15 January 2020 (2020-01-15)<br>See paragraphs [0028], [0039], [0046] and [0077]; and figure 2.                                                                | 7,10,11                                                                            |                       |   |                                                                                                                                                                                                          |         |   |  |         |   |                                                                                                                                           |         |   |                                                                                                                                                        |       |   |                                                                                            |      |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | JP 6858915 B1 (JAPAN TOBACCO INC.) 14 April 2021 (2021-04-14)<br>See paragraphs [0013], [0022], [0029], [0033]-[0040] and [0071]; and figures 1 and 3.                                                   | 1-3,9                                                                              |                       |   |                                                                                                                                                                                                          |         |   |  |         |   |                                                                                                                                           |         |   |                                                                                                                                                        |       |   |                                                                                            |      |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | KR 10-2020-0054156 A (KT & G CORPORATION) 19 May 2020 (2020-05-19)<br>See entire document.                                                                                                               | 1-11                                                                               |                       |   |                                                                                                                                                                                                          |         |   |  |         |   |                                                                                                                                           |         |   |                                                                                                                                                        |       |   |                                                                                            |      |
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| Date of the actual completion of the international search<br><b>10 August 2022</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Date of mailing of the international search report<br><b>10 August 2022</b>                                                                                                                              |                                                                                    |                       |   |                                                                                                                                                                                                          |         |   |  |         |   |                                                                                                                                           |         |   |                                                                                                                                                        |       |   |                                                                                            |      |
| Name and mailing address of the ISA/KR<br><b>Korean Intellectual Property Office<br/>Government Complex-Daejeon Building 4, 189 Cheongsaro, Seo-gu, Daejeon 35208</b><br>Facsimile No. <b>+82-42-481-8578</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Authorized officer<br><br>Telephone No.                                                                                                                                                                  |                                                                                    |                       |   |                                                                                                                                                                                                          |         |   |  |         |   |                                                                                                                                           |         |   |                                                                                                                                                        |       |   |                                                                                            |      |

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**Information on patent family members**

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