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(71) Applicant: **Shenzhen Smoore Technology Limited**
Shenzhen, Guangdong 518102 (CN)

(72) Inventors:
- **LIANG, Feng**
Shenzhen, Guangdong 518102 (CN)
- **HU, Changhe**
Shenzhen, Guangdong 518102 (CN)
- **LIU, Ming**
Shenzhen, Guangdong 518102 (CN)
- **JIN, Zutao**
Shenzhen, Guangdong 518102 (CN)

(74) Representative: **Herrero & Asociados, S.L.**
Edificio Aqua - Agustín de Foxá, 4-10
28036 Madrid (ES)

(54) AEROSOL GENERATION DEVICE AND AEROSOL GENERATION SYSTEM

(57) The present application provides an aerosol generation device and an aerosol generation system. The aerosol generation device comprises an accommodating cavity body, a heating assembly and a conveying assembly. The accommodating cavity body is provided with an accommodating cavity, and the accommodating cavity is used for accommodating at least one aerosol-generating product. The conveying assembly is used for conveying, in batches, the at least one aerosol-generating product to an atomization area. The heating assembly is used for heating and atomizing the aerosol-generating product, which is in the atomization area, so as to generate an aerosol. The aerosol generation device can achieve uniform heating, and can maintain the freshness and consistency of the scent of the aerosol.

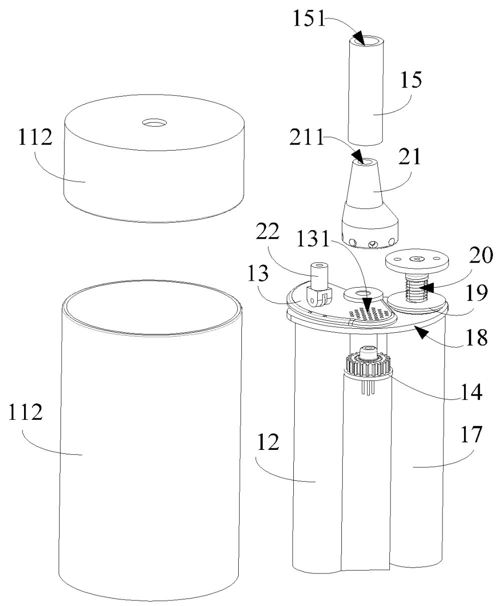

FIG. 2

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Description

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present disclosure claims priority to Chinese Patent Application No. 202210195710.9, filed March 1, 2022, which is herein incorporated by reference in its entirety.

TECHNICAL FIELD

[0002] The present disclosure relates to the field of electronic atomization technologies, in particular to an aerosol-generation device and an aerosol-generation system.

BACKGROUND

[0003] The aerosol-generation device is an appliance for heating and atomizing an aerosol-generation article to form aerosols.

[0004] Currently, heating technologies for the aerosol-generation article mainly include the following schemes: (1) resistance heating in a direct-contact way, (2) induction electromagnetic heating, (3) microwave heating, and so on. The scheme (1) and scheme (2) are both heat-conduction methods, require long waiting time for warm up when using, and may have the problem of non-uniform heating, and the suction experience of the user may be affected. The scheme (3) is radiation heating, the heating occurs simultaneously throughout the entire interior of the aerosol-generation article, and the heating is rapid and uniform. However, the aerosol-generation article is usually filled in the heating cavity as a whole. Since the wavelength of the microwave is long (about 12cm), and has significant fluctuations, it is difficult to heat a specific position, that is, each rapid heating of the aerosol-generation device may heat the aerosol-generation article as a whole to a temperature of about 300-400 °C, resulting in a large change in the taste of the aerosol-generation article in multiple times of suction.

SUMMARY

[0005] An aerosol-generation device and an aerosol-generation system are provided in some embodiments of the present disclosure, a uniform heating may be achieved, and the taste of aerosols may be kept fresh and consistent.

[0006] To solve the above technical problem, a technical solution adopted by some embodiments of the present disclosure is to provide an aerosol-generation device. The aerosol-generation device includes an accommodating cavity body, a heating assembly, and a delivering assembly. The accommodating cavity body defines an accommodating cavity. The accommodating cavity is configured to accommodate at least one aerosol-generation article. The delivering assembly configured to deliver an aerosol-generation article of the at least one aerosol-generation article to an atomization region. The heating assembly is configured to heat the aerosol-generation article on the atomization region to generate aerosols.

[0007] To solve the above technical problem, another technical solution adopted by some embodiments of the present disclosure is to provide an aerosol-generation system. The aerosol-generation system includes the aforesaid aerosol-generation device and at least one aerosol-generation article accommodated in the aerosol-generation device.

[0008] In the aerosol-generation device and the aerosol-generation system provided by some embodiments of the present disclosure, the storing position of the at least one aerosol-generation article is different from the atomization region, the at least one aerosol-generation article is delivered to the atomization region in batches through the delivering assembly, and the laser assembly may only heat the aerosol-generation article delivered to the atomization region every time. In this way, the at least one aerosol-generation article may be heated uniformly and quickly, and the atomization utilization rate may be high. In addition, after the atomization of the aerosol-generation article on the atomization region is completed, the aerosol-generation article to be atomized may be delivered to the atomization region for continuous atomization, in this way, the preset number of aerosol-generation articles delivered to the atomization region for atomization may be selected according to the quantity of aerosols corresponding to each suction or several times of suction, so that the taste of aerosols sucked by users may be kept fresh and kept consistent in an early stage and a late stage.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009]

FIG. 1 is a schematic overall structural view of an aerosol-generation system according to some embodiments of the present disclosure.

FIG. 2 is a schematic exploded view of FIG. 1 according to some embodiments of the present disclosure.

FIG. 3 is a perspective view of an aerosol-generation system other than a shell according to some embodiments of the present disclosure.

FIG. 4 is a schematic internal structural view of a part of an aerosol-generation system according to some embodiments of the present disclosure.

FIG. 5 is a schematic view of positional relationships between a rotating element and a bearing plate, an accommodating cavity body, and a recycling cavity body according to some embodiments of the present disclosure.

FIG. 6 is a schematic view of positional relationships between a rotating element and a bearing plate, an accommodating cavity body, and a recycling cavity body according to some embodiments of the present disclosure.

FIG. 7 is a schematic view of positional relationships between a rotating element and a bearing plate, an accommodating cavity body, and a recycling cavity body according to some embodiments of the present disclosure.

FIG. 8 is a schematic structural view of an aerosol-generation system in which a receiving groove of a rotating element is aligned with a first opening according to some embodiments of the present disclosure.

FIG. 9 is a schematic structural view of an aerosol-generation system in which a rotating element delivers an aerosol-generation article residue to a second opening according to some embodiments of the present disclosure.

FIG. 10 is a schematic structural view of positional relationships between a rotating element with three receiving grooves and a first opening, a second opening, and an atomization region after the rotating element is rotated by a certain angle according to some embodiments of the present disclosure.

FIG. 11 is a schematic structural view of positional relationships between the rotating element and the first opening, the second opening, and the atomization region after the rotating element continues to be rotated by a certain angle on the basis of FIG. 10.

FIG. 12 is a schematic internal view of an aerosol-generation system in which a receiving groove of a rotating element is rotated to another position different from a second opening according to some embodiments of the present disclosure.

FIG. 13 is a view of a positional relationship between a rotating element and an adapter after a receiving groove of the rotating element is rotated to an atomization region according to some embodiments of the present disclosure.

FIG. 14 is a sectional view of an aerosol-generation system of FIG. 13 along B-B according to some embodiments of the present disclosure.

[0010] Illustration of reference numbers: aerosol-generation article S; aerosol-generation article S'; shell 11; main body 111; cover 112; accommodating cavity body 12; accommodating cavity 121; rotating element 13; atomization hole 131; receiving groove 132; heating assembly 14; suction nozzle 15; air-outlet channel 151; first driving element 16; recycling cavity body 17; recycling cavity 171; bearing plate 18; first opening 181; second opening 182; atomization region 183; sealing cover 19; second driving element 20; adapter 21; airflow channel 211; pressing element 22.

DETAILED DESCRIPTIONS

[0011] The technical solutions in the embodiments of the present disclosure are clearly and completely described below with reference to the accompanying drawings in the embodiments of the present disclosure. Apparently, the described embodiments are merely some rather than all of the embodiments of the present disclosure. All other embodiments obtained by those skilled in the art based on the embodiments of the present disclosure without creative efforts shall fall within the protection scope of the present disclosure.

[0012] The terms "first", "second", and "third" in the embodiments of the present disclosure are only used for descriptive purposes, and cannot be understood as indicating or implying relative importance or implicitly indicating the number of indicated technical features. Thus, the features defined with "first", "second", and "third" may explicitly or implicitly include at least one of the features. In the description of the present application, "a plurality of" means at least two, e.g., two, three, etc., unless specifically defined otherwise. All directional indications (such as up, down, left, right, front, back) in the embodiments of the present disclosure are only configured to account for relative positional relationships, motion conditions, etc., between components in a particular orientation (as shown in the drawings), if the particular orientation changed, correspondingly changes the directional indications. In addition, the terms "including" and "having" and any variations thereof are intended to cover non-exclusive inclusions. For example, a process, method, system, product, or device that includes a series of steps or units is not limited to the listed steps or units, but optionally includes unlisted steps or units, or optionally also includes other steps or units inherent to these processes, methods, products or equipment.

[0013] Mentioning "embodiments" herein means that a specific feature, structure, or characteristic described in conjunction with the embodiments may be included in at least one embodiment of the present disclosure. The appearances of the phrase in various places in the specification are not necessarily all referring to the same embodiment, nor are separate or alternative embodiments mutually exclusive of other embodiments. It is explicitly and implicitly understood by those skilled in the art that the embodiments described herein may be combined with other embodiments.

[0014] The present disclosure will be described in detail below in combination with the drawings and embodiments.

[0015] FIG. 1 is a schematic overall structural view of an aerosol-generation system according to some embodiments of the present disclosure. FIG. 2 is a schematic exploded view of FIG. 1 according to some embodiments of the present disclosure. FIG. 3 is a perspective view of an aerosol-generation system other than a shell according to some embodiments of the present disclosure. As shown in FIGS. 1 to 3, in some embodiments, an aerosol-generation system is provided. The aerosol-generation system includes an aerosol-generation device and at least one aerosol-generation article S accommodated in the aerosol-generation device.

[0016] The aerosol-generation device is configured to heat the at least one aerosol-generation article S by laser, so as to form aerosols for a user to suck. The at least one aerosol-generation article S may be a solid substrate, which may include plant leaves such as vanilla leaves, tea leaves, and mint leaves, and may include one or more kinds of powders, particles, fragments, thin strips, strips, and sheets. In some embodiments, the solid substrate may include additional volatile aroma compounds, and the volatile aroma compounds may be released when the substrate is heated. In some embodiments, the at least one aerosol-generation article S may also be a liquid substrate, such as oils and medicinal liquids with aroma components added. In the following embodiments, the at least one aerosol-generation article S may be illustrated as the solid substrate for example.

[0017] In some embodiments, the at least one aerosol-generation article S includes a plurality of aerosol-generation articles S. Each of the plurality of aerosol-generation articles S is in the shape of a sheet, and the plurality of aerosol-generation articles S are stacked with each other. In this way, the density of the aerosol-generation articles S may be increased, the accommodating quantity of the aerosol-generation articles S in a fixed volume may be increased, and the storage quantity of aerosol-generation articles S in the aerosol-generation device may be increased. In this way, a long duration of suction of the aerosol-generation device may be achieved after a single filling. In some embodiments, the thickness of each aerosol-generation article S is 0.2-2mm. In some embodiments, the thickness of each aerosol-generation article S is 0.5-1mm. In some embodiments, 30 or more aerosol-generation articles S may be accommodated in the aerosol-generation device. Each aerosol-generation article S may be heated for one to five times to support a single suction, so as to ensure the consistency of the aerosols generated by atomization. In this way, after a single filling, the aerosol-generation device may be sucked by more than 30 times, or even more than 100 times, and the taste of the aerosols is long-term effective and consistent.

[0018] In some embodiments, the diameter of each aerosol-generation article S may be 2-15mm. In some embodiments, the surface of each aerosol-generation article S may be provided with a through hole, and the diameter the through hole and the filling ratio of each aerosol-generation article S may be designed according to different airflow-resistance requirements, so to ensure the release of aerosols.

[0019] The specific structure and function of the aerosol-generation device may be seen in any one of the following embodiments.

[0020] As shown in FIGS. 2 and 3, the aerosol-generation device includes a shell 11, an accommodating cavity body 12 arranged in the shell 11, a delivering assembly arranged in the shell 11, a heating assembly 14 arranged in the shell 11, and a suction nozzle 15.

[0021] The shell 11 may include a main body 111 and a cover 112. The cover 112 is covered on the main body 111. The main body 111 and the cover 112 cooperatively form a hollow body and are configured as the outer surface of the aerosol-generation device, which is configured to protect assemblies in the hollow body. In some embodiments, the shell 11 may also be assembled by engaging a left portion and a right portion together or engaging a front portion and a rear portion together, and the present disclosure does not limit the structure of the shell 11. The accommodating cavity body 12, the delivering assembly, and the heating assembly 14 are housed in the hollow body. The suction nozzle 15 is arranged on the shell 11 and defines an air-outlet channel 151. The air-outlet channel 151 is configured to be in communication with external atmosphere. The user may suck the aerosols formed by atomization through the suction nozzle 15. In some embodiments, the suction nozzle 15 may also be directly defined by the shell 11. In some embodiments, the suction nozzle 15 is a cylindrical tube inserted in a through hole on the top wall of the main body 111.

[0022] As shown in FIG.3, the accommodating cavity body 12 defines an accommodating cavity 121. The accommodating cavity 121 is configured to accommodate the plurality of aerosol-generation articles S. That is, the plurality of aerosol-generation articles S in the aerosol-generation system are stacked with each other along a depth direction of the accommodating cavity 121. In some embodiments, the accommodating cavity body 12 is a structure independent from the shell 11, and is detachably connected to the shell 11, in this way, the accommodating cavity body 12 is disposable. After the accommodated aerosol-generation articles S are completely heated, it is convenient to take out the accommodating cavity body 12, and new aerosol-generation articles S may be filled rapidly. In some embodiments, another new accommodating cavity body 12 with aerosol-generation articles S may be replaced, so as to improve the replaceability of the accommodating cavity body 12.

[0023] The accommodating cavity 121 may be cylindrical. The peripheral shape of the accommodating cavity 121 may match the peripheral shape of each aerosol-generation article S, and the diameter of the accommodating cavity 121 may be equal to or slightly greater than the diameter of each aerosol-generation article S, so as to prevent the aerosol-generation articles S from shaking in the accommodating cavity 121, and it is easy for the aerosol-generation article S to be filled in the accommodating cavity 121 or to be moved out of the accommodating cavity 121. In some embodiments, the material of the accommodating cavity body 12 may be harmless metal materials, such as aluminum alloy of series 6, stainless steel, etc., or harmless plastic materials, such as polyetheretherketone (PEEK), etc.

[0024] As shown in FIG.3, the delivering assembly is configured to deliver the aerosol-generation articles S to an atomization region 183 in batches. When the at least one aerosol-generation article S includes a plurality of aerosol-generation articles S stacked with each other, the delivering assembly is configured to deliver the plurality of aerosol-generation articles S to the atomization region 183 in sequence. That is, the delivering assembly delivers a preset number of aerosol-generation articles S to the atomization region 183 every time, rather than delivers all the aerosol-generation articles S in the accommodating cavity 121 to the atomization region 183 at one time. It may be understood that, when the at least one aerosol-generation article S is a liquid substrate, it may be controlled that a part of the aerosol-generation article S flows from the accommodating cavity 121 to the delivering assembly every time, or the delivering assembly may take a part of the aerosol-generation article S out of the accommodating cavity 121 and deliver the part of the aerosol-generation article S to the atomization region 183, so as to deliver the aerosol-generation article S in the accommodating cavity 121 to the atomization region 183 by several times.

[0025] In some embodiments, as shown in FIG. 2 or 3, the delivering assembly may include a rotating element 13, a power element (which is not shown in drawings), and a control circuit (which is not shown in drawings). The rotating element 13 is connected to the power element. The power element is configured to drive the rotating element 13 to rotate, so as to deliver the aerosol-generation article S to the atomization region 183 through the rotation of the rotating element 13. The rotating element 13 may be a rotatable plate, a movable machine arm, a movable machine hand, etc. The power element may be a motor, a pump, etc. In some embodiments, the rotating element 13 may also be driven by a manual mechanical mechanism. For example, a part of the rotating element 13 may be extended out of the shell 11 and may be rotated manually, in this way, the usage of the power element may be reduced, and the volume of the aerosol-generation device may be reduced. The control circuit is electrically connected to the power element and the heating assembly 14 respectively. The control circuit is configured to control the power element to enable the rotating element 13 to move the aerosol-generation article S to the atomization region 183, and control the heating assembly 14 to heat the aerosol-generation article S on the atomization region 183 after the rotating element 13 delivers the aerosol-generation article S to the atomization region 183. The control circuit may be powered by a built-in battery assembly. In some embodiments, the control circuit may further be configured to control the heating assembly 14 to output continuous laser or pulse laser, and may control a power output curve of a single suction, so as to improve the experience effect of aerosols.

[0026] As shown in FIGS 2 and 3, the heating assembly 14 is configured to heat the aerosol-generation article S on the atomization region 183. For example, the heating assembly 14 may adopt thermal-radiation heating methods such as laser heating, microwave heating, infrared heating, and so on. Since the thermal-radiation heating methods has characteristics of non-contact and instantaneous heating, a heat-not-burn technical scheme of the aerosol-generation article S may be achieved. The heat-not-burn technical scheme is safe and may reduce hazard. The heating assembly 14 is illustrated by using laser heating as an example, but is not limited by the embodiments of present disclosure. The heating assembly 14 may be configured to transmit laser, and the laser is configured to heat the aerosol-generation article S on the atomization region 183 to generate aerosols.

[0027] The heating assembly 14 may include a semiconductor laser chip. The semiconductor laser chip may be an Edge-Emitting semiconductor laser chip or a Vertical-Cavity Surface-Emitting semiconductor laser chip, which is made of gallium arsenide or indium phosphide. In some embodiments, an Edge-Emitting Laser (EEL) chip or a Vertical-Cavity Surface-Emitting Laser (VCSEL) chip, which is a Transistor Outline (TO) package or a Quad Flat No-leads (QFN) package, may be adopted. The semiconductor laser chip with a hermetic package may improve the stability and reliability of the aerosol-generation device in long-term operation. In some embodiments, the package body may adopt a passive conductive cooling scheme. For example, the TO or QFN package structure is directly packaged on a heat sink to assist the heat dissipation of the laser-transmitting module, and the heat sink may be made of metal. In some embodiments, the aerosol-generation device may also include a heat-dissipation element (which is not shown in drawings). The heat-dissipation element may be arranged at the upstream of the heating assembly 14 along the airflow path of the aerosol-generation device and configured to dissipate heat for the heating assembly 14. The heat-dissipation element may be heat-dissipation fins. The heat sink and heat-dissipation fins are made of materials with high thermal conductivity and high heat capacity, such as copper and aluminum. In some embodiments, the laser-package module is fixed to the metal heat-dissipation fins by a curable silver glue or a metal solder which is certified by ROHS (Restriction of Hazardous Substances Directive).

[0028] The output peak power of the semiconductor laser chip is 1-30W. The wavelength of the semiconductor laser chip is 800-1500nm. The wavelength of the laser transmitted by the semiconductor laser chip used in the embodiments of present disclosure is around 800-1500nm, the laser has obvious particle characteristics, and the quality and directionality of the laser beam are great. Therefore, based on typical physical characteristics of the laser, the aerosol-generation article S may be heated by the laser rapidly. Furthermore, due to optical characteristics of the laser, the aerosol-generation article S may be heated selectively and without directly contact, and the taste of aerosols may be kept fresh and stable. Compared with other heating methods, the laser heating does not need specialized laser shielding element, the structure is simple, and the cost is low. In some embodiments, the volume of the semiconductor laser chip is less than 4cm^3, the volume of the heating assembly 14 is reduced, and a miniaturized and commercialized heating device for the aerosol-generation articles S may be obtained.

[0029] In some embodiments, the diameter of the light spot formed by the laser on the surface of the aerosol-generation article S is substantially equal to the diameter of each aerosol-generation article S. The energy distribution of the light spot is in a TOP-HAT mode. In this way, the uniformity of light energy is greater than 70%, and the heating may be uniform.

[0030] In the aerosol-generation device provided by some embodiments of the present disclosure, an accommodating cavity body 12 is provided, the accommodating cavity body 12 defines an accommodating cavity 121, so as to receive at least one aerosol-generation article S through the accommodating cavity 121. A delivering assembly is further provided, and the delivering assembly is configured to deliver an aerosol-generation article S of the at least one aerosol-generation article S to an atomization region 183 in batches. A heating assembly 14 is further provided, and the heating assembly 14 is configured to transmit a laser, so as to heat the aerosol-generation article S on the atomization region 183 by the laser. The aerosol-generation article S is heated by the laser. Since the laser has characteristics of non-contact and instantaneous heating, a heat-not-burn technical scheme of the aerosol-generation article S may be achieved. The heat-not-burn technical scheme is safe and may reduce hazard. In addition, the storing position of the at least one aerosol-generation article S is different from the atomization region 183, the at least one aerosol-generation article S is delivered to the atomization region 183 in batches through the delivering assembly, and the heating assembly 14 may only heat the aerosol-generation article S delivered to the atomization region 183 every time. In this way, the preset number of aerosol-generation articles S for each heating may be selected according to the actual wavelength of the laser, the possibility that the laser is absorbed by the at least one aerosol-generation article S due to the wavelength characteristics of the laser may be reduced, the at least one aerosol-generation article S may be heated uniformly, and the atomization utilization rate may be high. When the laser is absorbed by the at least one aerosol-generation article S, the aerosol-generation article S far from the heating assembly 14 cannot be heated effectively. After the atomization of the aerosol-generation article S on the atomization region 183 is completed, the aerosol-generation article S to be atomized may be delivered to the atomization region 183 for continuous atomization. In this way, the preset number of aerosol-generation articles S delivered to the atomization region 183 for atomization may be selected according to the quantity of aerosols corresponding to each suction or several times of suction, so that the taste of aerosols sucked by users may be kept fresh and kept consistent in an early stage and a late stage.

[0031] As shown in FIG. 3, the aerosol-generation device also includes a first driving element 16. The first driving element 16 is arranged in the accommodating cavity 121, and is configured to drive the plurality of aerosol-generation articles S in the accommodating cavity 121 to move out of the accommodating cavity 121 in sequence. Whether the aerosol-generation device is in a horizontal position or a non-horizontal position, it may be ensured that the aerosol-generation articles S in the accommodating cavity 121 may be moved out of the accommodating cavity 121 under the driving force of the first driving element 16. In some embodiments, the first driving element 16 may drive one aerosol-generation article S to move out of the accommodating cavity 121 every time. In some embodiments, the delivering assembly is further configured to deliver the aerosol-generation article S moved out of the accommodating cavity 121 to the atomization region 183.

[0032] In some embodiments, the first driving element 16 is an elastic element arranged between the bottom wall of the accommodating cavity body 12 and the plurality of aerosol-generation articles S. For example, the elastic element may be a spring, a torsion spring, and so on. In some embodiments, the first driving element 16 may also be a rotating shaft or a piston connected to a driving source, such as a motor, a pump, and so on. The driving source may drive the first driving element 16, and the first driving element 16 may drives one aerosol-generation article S to move out of the accommodating cavity 121 every time.

[0033] After the aerosol-generation article S is completely heated, that is, after the aerosol-generation article S is completely atomized, an aerosol-generation article residue S' may be formed. In order to avoid the impact of the aerosol-generation article residue S' on the atomization effect of the aerosol-generation article S delivered to the atomization region 183 subsequently, the delivering assembly is further configured to remove the aerosol-generation article residue S' from the atomization region 183. The aerosol-generation article residue S' may be an outer package of the aerosol-generation article S, such as aluminum foil and so on. It may be understood that, if the aerosol-generation article S is a liquid substrate, there is substantially no aerosol-generation article residue S', and the removing operation is not needed. While a recycling container is needed to be arranged on the atomization region 183 to recycle the liquid substrate.

[0034] In some embodiment, as shown in FIGS 2 and 3, in order to recycle the aerosol-generation article residue S', the aerosol-generation device also includes a recycling cavity body 17. The recycling cavity body 17 defines a recycling cavity 171. The delivering assembly delivers the aerosol-generation article residue S' from the atomization region 183 to the recycling cavity 171 for recycling.

[0035] The recycling cavity body 17 is a structure independent from the shell 11, and is detachably connected to the shell 11. In this way, the recycling cavity body 17 may be disposable. After the recycling cavity 171 is full, the recycling cavity body 17 may be replaced environmental friendly and rapidly. In some embodiments, the recycling cavity body 17 and the accommodating cavity body 12 may be arranged side by side along the radial direction of the shell 11, so as to reduce the volume of the aerosol-generation system. In some embodiments, the recycling cavity 171 may also be cylindrical. The peripheral shape of the recycling cavity 171 may match the peripheral shape of the aerosol-generation article residue S'. The diameter of the recycling cavity 171 may be substantially equal to or slightly greater than the diameter of the aerosol-generation article residue S', so that the aerosol-generation article residue S' may fall into the recycling cavity 171. In some embodiments, the material of the recycling cavity body 17 may be harmless metal materials, such as aluminum alloy of series 6, stainless steel, etc., or harmless plastic materials, such as PEEK, etc. The recycling cavity body 17 may be integrated with the accommodating cavity body 12, and two different cavities are needed to be defined. In some embodiments, the accommodating cavity body 12 and/or the recycling cavity body 17 may also be constructed by the shell 11, that is, the accommodating cavity 121 and/or the recycling cavity 171 are directly defined by the shell 11.

[0036] As shown in FIGS. 2 to 4, FIG. 4 is a schematic internal structural view of a part of an aerosol-generation system according to some embodiments of the present disclosure. The aerosol-generation device also includes a bearing plate 18. A surface of the bearing plate 18 facing the suction nozzle 15 defines the atomization region 183, so as to support the aerosol-generation article S. The bearing plate 18 may be made of metals or plastics which are safe and non-toxic.

[0037] In some embodiments, as shown in FIG. 4, the accommodating cavity body 12 and the recycling cavity body 17 are both located on a side of the bearing plate 18 away from the suction nozzle 15, so as to reduce the volume of the aerosol-generation device. In some embodiments, in order to ensure that the aerosol-generation article S in the accommodating cavity 121 may move to the atomization region 183 of the bearing plate 18, the bearing plate 18 defines a first opening 181 in communication with the accommodating cavity 121, so that the aerosol-generation article S in the accommodating cavity 121 may reach the side of the bearing plate 18 facing the suction nozzle 15 through the first opening 181. In some embodiments, the bearing plate 18 defines a second opening 182 in communication with the recycling cavity 171, so that the aerosol-generation article residue S' may enter the recycling cavity 171 through the second opening 182. In this way, the aerosol-generation article S may be prevented from falling to other positions of the aerosol-generation device in a moving process, and waste or pollution may be avoided. In some embodiments, the first opening 181 faces the accommodating cavity 121 along a length direction of the shell 11, and the second opening 182 faces the recycling cavity 171 along the length direction of the shell 11.

[0038] In some embodiments, as shown in FIGS. 2 to 4, in order to facilitate the assembly of the aerosol-generation device and reduce the volume of the aerosol-generation device, the heating assembly 14 and the accommodating cavity body 12 are located on the same side of the bearing plate 18, and the part of the bearing plate 18 corresponding to the atomization region 183 is made of an optical transparent material. In this way, the heating assembly 14 may directly irradiate and heat the aerosol-generation article S on the atomization region 183 through the bearing plate 18. Compared with other heating methods in which a heat-conduction medium is heated firstly, and then the aerosol-generation article S is heated through the heat conduction of the heat-conduction medium, the aerosol-generation device in the embodiments of present disclosure may achieve non-contact heating, the heating is safe and may be completed instantaneously, and the heating may be uniform. The optical transparent material may be fused silica or sapphire. In some embodiments, the heating assembly 14 may also be arranged on the side of the bearing plate 18 towards the suction nozzle 15, the bearing plate 18 may not block the laser, and the material of the part of the bearing plate 18 corresponding to the atomization region 183 is not limited.

[0039] In some embodiments, the rotating element 13 may be in the shape of a plate, and may be rotatably connected to the surface of the bearing plate 18 facing the suction nozzle 15, so as to move the aerosol-generation article S outside the accommodating cavity 121 to the atomization region 183 along the surface of the bearing plate 18, and move the aerosol-generation article residue S' from the atomization region 183 to the recycling cavity 171.

[0040] In some embodiments, as shown in FIGS. 2, 3 and 5, FIG. 5 is a schematic view of positional relationships between a rotating element 13 and a bearing plate 18, an accommodating cavity body 12, and a recycling cavity body 17 according to some embodiments of the present disclosure. The surface of the rotating element 13 facing the bearing plate 18 defines at least one receiving groove 132, and the bottom wall or side wall of each of the at least one receiving groove 132 defines an atomization hole 131. The at least one receiving groove 132 is configured to receive the aerosol-generation article S outside the accommodating cavity 121 and limit the position of the aerosol-generation article S outside the accommodating cavity 121. In a rotating process, the rotating element 13 fixes the aerosol-generation article S through the receiving groove 132, moves the aerosol-generation article S to the atomization region 183, and moves the aerosol-generation article residue S' in the receiving groove 132 formed by atomization from the atomization region 183 to the second opening 182, in this way, the aerosol-generation article residue S' may fall into the recycling cavity 171. The atomization hole 131 is in communication with the receiving groove 132, the aerosol-generation article S in the receiving groove 132 is moved to the atomization region 183 for atomization, and the generated aerosols flows out through the atomization hole 131. As shown in FIG. 5, the atomization hole 131 includes several micropores spaced apart from each other, in this way, the aerosols may flow out of the receiving groove 132 and enter the air-outlet channel 151. The bottom wall of the receiving groove 132 may be directly used to shield the laser, so as to reduce the possibility that the highly-directional laser overflows from the shell 11 and reduce personnel-security risk. At the same time, a laser-shielding element is not needed, the structure may be simple, and the cost may be low. In some embodiments, as shown in FIG. 6, FIG. 6 is a schematic view of positional relationships between a rotating element 13 and a bearing plate 18, an accommodating cavity body 12, and a recycling cavity body 17 according to some embodiments of the present disclosure. The diameter of the atomization hole 131 may be slightly less than the diameter of the receiving groove 132. That is, the diameter of the atomization hole 131 may be slightly less than the diameter of the aerosol-generation article S. The atomization hole 131 is a large single through hole. The receiving groove 132 may limit the position of the aerosol-generation article S. An external force may be applied to the aerosol-generation article residue S' in the receiving groove 132 through the large atomization hole 131, and the aerosol-generation article residue S' may fall from the receiving groove 132.

[0041] In some embodiments, the depth of the receiving groove 132 may be equal to the thickness of one aerosol-generation article S. In this way, it is ensured that only one aerosol-generation article S enters the receiving groove 132 every time, and one aerosol-generation article S is delivered by the rotating element 13 every time. In this way, the heating assembly 14 only heats and atomizes one aerosol-generation article S every time. After the user sucks 1-5 times, the aerosol-generation article S is completely heated, a new aerosol-generation article S may be atomized, in this way, the taste of aerosols in an early stage and a late stage of the user's suction may be kept consistent. Furthermore, it may be ensured that the laser with short wavelength will not be absorbed by the aerosol-generation article S in the heating process of the aerosol-generation article S, the heating uniformity and the atomization efficiency may be improved, and the taste of aerosols may be kept fresh and kept consistent in an early stage and a late stage.

[0042] In some embodiments, the depth of the receiving groove 132 may also be equal to the thickness of two or three aerosol-generation articles S, which may be set according to the penetration distance of the laser and the user's needs. For example, the thickness of the aerosol-generation article S may be small, and the total thickness of several aerosol-generation articles S is equal to the penetration distance of the laser. In this way, several aerosol-generation articles S with different flavors and stacked with each other may be pushed into the receiving groove 132 every time, and then be delivered to the atomization region 183 for heating and atomization, and the user's suction experience may be enriched.

[0043] As shown in FIG. 7, FIG. 7 is a schematic view of positional relationships between a rotating element 13 and a bearing plate 18, an accommodating cavity body 12, and a recycling cavity body 17 according to some embodiments of the present disclosure. After the receiving groove 132 is moved away from the first opening 181, in order to prevent the aerosol-generation articles S in the accommodating cavity 121 from being ejected out of the accommodating cavity 121 under the drive of the first driving element 16, the rotating element 13 may block the first opening 181 when other positions of rotating element 13 except for the first opening 181 is aligned with the receiving groove 132. In this way, the aerosol-generation articles S in the accommodating cavity 121 cannot be moved out of the accommodating cavity 121 under the block of the rotating element 13.

[0044] The rotating process of the rotating element 13 may be described as follows. As shown in FIGS. 5 and 8, FIG. 8 is a schematic structural view of an aerosol-generation system in which a receiving groove 132 of a rotating element 13 is aligned with a first opening 181 according to some embodiments of the present disclosure. When the receiving groove 132 of the rotating element 13 is aligned with the first opening 181, as shown in FIGS. 5 and 8, the acting force of the rotating element 13 on the aerosol-generation article S in the accommodating cavity 121 disappears, and the aerosol-generation article S in the accommodating cavity 121 may be moved out of the accommodating cavity 121 under the action of the first driving element 16 and may be received in the receiving groove 132. The rotating element 13 starts to rotate and delivers the aerosol-generation article S received in the receiving groove 132, as shown in FIG. 2, the aerosol-generation article S received in the receiving groove 132 may be moved to the atomization region 183 for atomization with the rotation of the rotating element 13, at this time, the first opening 181 may be blocked by the rotating element 13. As shown in FIG. 9, FIG. 9 is a schematic structural view of an aerosol-generation system in which a rotating element 13 delivers an aerosol-generation article residue S' to a second opening 182 according to some embodiments of the present disclosure. After the aerosol-generation article S in the receiving groove 132 is completely heated and the aerosol-generation article residue S' is formed, the rotating element 13 continues to rotate and delivers the aerosol-generation article residue S' to the second opening 182. When the receiving groove 132 is aligned with the second opening 182, the aerosol-generation article residue S' receive in the receiving groove 132 may fall from the receiving groove 132 to the recycling cavity 171 through the second opening 182 for recycling. At this time, the first opening 181 may be still blocked by rotating element 13.

Then the rotating element 13 rotates in an opposite direction, and the receiving groove 132 of the rotating element 13 is moved to face the first opening 181. Another aerosol-generation article S in the accommodating cavity 121 may be moved out of the accommodating cavity 121 under the action of the first driving element 16 and may be received in the receiving groove 132.

[0045] In some embodiments, as shown in FIGS. 2, 8 and 9, the rotating element 13 defines only one receiving groove 132. The rotating element 13 is in the shape of a sector, and the rotating element 13 may rotate around an end or an edge of the sector. The radian of the rotating element 13 is not less than the radian of the rotating path of the rotating element 13 between the first opening 181 and the second opening 182. In this way, it may be ensured that when the receiving groove 132 of the rotating element 13 is aligned with the second opening 182, the first opening 181 may be still blocked by the rotating element 13, so as to reduce the possibility that the aerosol-generation article S in the accommodating cavity 121 is moved to a position outside the receiving groove 121 under the driving force of the first driving element 16. The following embodiments may use the aforesaid features as an example. In some embodiments, the rotating element 13 may rotate along the following path. The receiving groove 132 of the rotating element 13 rotates from the position of the first opening 181 shown in FIG. 8 to the atomization region 183 shown in FIG. 2 in a counterclockwise direction, and then rotates to the position of the second opening 182 shown in FIG. 9 in the counterclockwise direction. Subsequently, the receiving groove 132 of the rotating element 13 rotates to the position of the first opening 181 through the atomization region 183 shown in FIG. 2 in a clockwise direction, so as to continue to receive the aerosol-generation article S in the accommodating cavity 121.

[0046] In some embodiments, the rotating element 13 may be in the shape of a disc, and the rotating element 13 may rotate around the center of the disc. When the receiving groove 132 of the rotating element 13 is moved to any position different from the first opening 181, the rotating element 13 may always block the first opening 181. The rotating element 13 may rotate continuously in the same direction, and the rotation direction of the rotating element 13 is not limited by the present disclosure.

[0047] As shown in FIGS. 10 to 11, FIG. 10 is a schematic structural view of positional relationships between a rotating element with three receiving grooves and a first opening, a second opening, and an atomization region after the rotating element is rotated by a certain angle according to some embodiments of the present disclosure. FIG. 11 is a schematic structural view of positional relationships between the rotating element and the first opening, the second opening, and the atomization region after the rotating element continues to be rotated by a certain angle on the basis of FIG. 10. In some embodiments, the rotating element 13 may include at least three receiving grooves 132. The at least three receiving grooves 132 are spaced apart from each other along the rotating path of the rotating element 13. A distance between any adjacent two of the at least three receiving grooves 132 along the rotating path of the rotating element 13 may be equal to a distance between any adjacent two of the first opening 181, the atomization region 183, and the second opening 182 along the rotating path of the rotating element 13.

[0048] As shown in FIG. 10, in some embodiments, the rotating element 13 may define three receiving grooves 132. The three receiving grooves 132 may include two groups of receiving grooves 132. Each of the two groups of receiving grooves 132 may include two adjacent receiving grooves 132. A distance between two adjacent receiving grooves 132 of one of the two groups of receiving grooves 132 along the rotating path of the rotating element 13 may be equal to a distance between the first opening 181 and the atomization region 183 along the rotating path of the rotating element 13, and a distance between two adjacent receiving grooves 132 of the other of the two groups of receiving grooves 132 along the rotating path of the rotating element 13 may be equal to a distance between the atomization region 183 and the second opening 182 along the rotating path of the rotating element 13. Compared with the scheme in which the rotating element 13 only defines one receiving groove 132, there is no need to rotate the rotating element 13 back and forth to deliver a next aerosol-generation article S. FIGS. 10 to 11 illustrate a counterclockwise direction rotation, and the rotating element 13 may rotate in the same direction all the time. When one of the three receiving grooves 132 is moved to the atomization region 183, a next receiving groove 132 may be rotated to the position of the first opening 181 to receive a new aerosol-generation article S. When the aerosol-generation article S on the atomization region 183 is completely heated and rotates towards the second opening 182, the receiving groove 132 receiving the new aerosol-generation article S may rotates towards the atomization region 183 to atomize the new aerosol-generation article S, and so on. In this way, the atomization efficiency may be improved, and the energy may be utilized sufficiently.

[0049] In some embodiments, as shown in FIG. 12, FIG. 12 is a schematic internal view of an aerosol-generation system in which a receiving groove 132 of a rotating element 13 is rotated to another position different from a second opening 182 according to some embodiments of the present disclosure. If the rotating element 13 is in the shape of a sector, the second opening 182 is always exposed when the receiving groove 132 of the rotating element 13 is located at another position different from the second opening 182. In order to prevent the aerosol-generation article residue S' in the recycling cavity body 17 from being leaked or the waste gas in the recycling cavity body 17 from being escaped, as shown in FIGS. 2 or 3, the aerosol-generation device may also include a sealing cover 19 and a second driving element 20. The sealing cover 19 may be configured to switch between a first position and a second position different from the first position. The sealing cover 19 covers the second opening 182 when being on the first position, and exposes the second opening 182 when being on the second position. The second driving element 20 is connected to the sealing cover 19, and is configured to drive the sealing cover 19 to move from the second position to the first position. In some embodiments, the sealing cover 19 may also be driven manually to switch between the first position and the second position. The driving force for the sealing cover 19 to move from the first position to the second position may be provided by the rotating force of the rotating element 13.

[0050] The second position may be any position which is spaced apart from the second opening 182 along a direction parallel to the bearing plate 18, or any position which is spaced apart from the second opening 182 along a direction perpendicular to the bearing plate 18. In some embodiments, the second position may be directly above the second opening 182, and the sealing cover 19 may moves along a direction perpendicular to the surface of the bearing plate 18 to be located on the first position or the second position. The second driving element 20 may be a motor, a pump, an elastic component, and so on. It may be understood that, if the second position is any position spaced apart from the second opening 182 in the direction parallel to the bearing plate 18, the rotating element 13 swings back and forth around a central axis.

[0051] In some embodiments, the sealing cover 19 moves along a direction perpendicular to the plane on which the bearing plate 18 is located to switch between the first position and the second position. When the receiving groove 132 of the rotating element 13 moves towards the second opening 182, the sealing cover 19 moves away from the second opening 182. When the receiving groove 132 of the rotating element 13 moves towards the second opening 182, the sealing cover 19 moves close to the second opening 182, and a part of the sealing cover 19 may pass through the atomization hole 131 and contact the aerosol-generation article residue S' in the receiving groove 132. The second driving element 20 may continue to drive the sealing cover 19 to move towards the first position, and the aerosol-generation article residue S' in the receiving groove 132 may move towards the recycling cavity 171 under the driving force and then fall into the recycling cavity 171 for recycling. In this way, the possibility that the aerosol-generation article residue S' in the receiving groove 132 is stuck in the receiving groove 132 and is unable to fall off may be reduced.

[0052] In some embodiments, as shown in FIGS. 2, 13 and 14, FIG. 13 is a view of a positional relationship between a rotating element 13 and an adapter 21 after a receiving groove 132 of the rotating element 13 is rotated to an atomization region 183 according to some embodiments of the present disclosure. FIG. 14 is a sectional view of an aerosol-generation system of FIG. 13 along B-B according to some embodiments of the present disclosure. The aerosol-generation device also includes an adapter 21. The adapter 21 defines an airflow channel 211. One end of the adapter 21 is connected to the suction nozzle 15, and the airflow channel 211 is in communication with the air-outlet channel 151 of the suction nozzle 15. The other end of the airflow channel 211 is configured to be in communication with the atomization hole 131 on the rotating element 13 after the receiving groove 132 of the rotating element 13 rotates to the atomization region 183. In this way, the aerosols formed by atomization in the receiving groove 132 may enter the user's mouth through the atomization hole 131, the airflow channel 211, and the air-outlet channel 151 in sequence. It should be noted that, the position of the adapter 21 relative to the suction nozzle 15 is fixed. When the receiving groove 132 of the rotating element 13 rotates to another position different from the atomization region 183, the aerosol-generation article S or the aerosol-generation article residue S' in the receiving groove 132 may be exposed through the atomization hole 131, so that an external force may be applied to the aerosol-generation article residue S' in the receiving groove 132 through the atomization hole 131, and the aerosol-generation article residue S' may fall into the recycling cavity 171.

[0053] In some embodiments, in order to ensure that the highly-directional laser cannot overflow from the shell 11 and that personal-security risk is avoided, as shown in FIG. 14, the air-outlet channel 151 of the suction nozzle 15 is misaligned with the optical path of the heating assembly 14 along the radial direction of the air-outlet channel 151. That is, the air-outlet channel 151 and the optical path of the heating assembly 14 are not coaxial. Furthermore, the inner wall of the outlet channel 151 may be blacken (such as anodizing). The roughness of the inner wall of the air-outlet channel 151 of suction nozzle 15 is 0.4-3.2 um. In some embodiments, the aperture of the air-outlet channel 151 of the suction nozzle 15 gradually decreases in a direction away from the airflow channel 211, so as to ensure the using safety of the aerosol-generation device.

[0054] In some embodiments, as shown in FIG. 2, 3 or 14, the aerosol-generation device may also include a pressing element 22. The rotating element 13 is clamped between the pressing element 22 and the bearing plate 18, and the pressing element 22 may apply a force towards the bearing plate 18 on the rotating element 13. In this way, the rotating element 13 may abut against the bearing plate 18 in the rotating process of rotating element 13. In some embodiments, the pressing element 22 may be arranged directly above the first opening 181 in the direction perpendicular to the plane on which the bearing plate 18 is located, in this way, when the receiving groove 132 of the rotating element 13 rotates to the first opening 181, the rotating element 13 may abut against the bearing plate 18 tightly by using the pressing element 22, so as to prevent too much aerosol-generation articles

S in the accommodating cavity 121 from moving out of the accommodating cavity 121. When too much aerosol-generation articles S moves out of the accommodating cavity 121, the rotation of the rotating element 13 may be affected. The pressing element 22 may be an element with a roller, so as to avoid affecting the rotation of the rotating element 13.

[0055] In some embodiments, the aerosol-generation device may also include a key, a connecting element, a mounting seat, and so on. The specific structure and function of these components are the same or similar to the structure and function of the relevant components in the existing aerosol-generation device, and the same or similar technical effects may be achieved. Further details may be referred to the related art and will not be repeated herein.

[0056] In the aerosol-generation device provided by some embodiments of the present disclosure, it may be controlled that one aerosol-generation article S is heated every time, and single to multiple times of suction may be achieved. In this way, the aerosol-generation article S may be heated uniformly, the taste experience is uniform and consistent, and a long duration of suction may be achieved after a single filling. In addition, the accommodating cavity body 12 and/or the recycling cavity body 17 are designed as disposable, the accommodating cavity body 12 may be replaced when the aerosol-generation articles S therein are completely heated. The filling or replacement may be rapidly, and the aerosol-generation article residue S' may be recycled. In addition, a safe and non-contact heating may be achieved by using the scheme of heating by laser directly, the heating may be completed instantaneously, and the heating may be uniform. In addition, a miniaturized chip based on laser may reduce the volume of the heating assembly 14, and a miniaturized and commercialized heating device for the aerosol-generation articles S may be obtained. In addition, the air-outlet channel 151 of the suction nozzle 15 and the optical path of the heating assembly 14 are designed to be non-coaxial, the air-outlet channel 151 may be tapered, the inner wall of the air-outlet channel 151 is blackened, in this way, the safety of the heating assembly 14 in usage may be ensured.

[0057] The foregoing are merely some preferred embodiments of the present disclosure and are not intended to limit the present disclosure. For those skilled in the art, the present disclosure may have various modifications and changes. Any modifications, equivalents, improvements, etc. that are within the spirit and principles of present disclosure are intended to be included within the scope of present disclosure.

Claims

1. An aerosol-generation device, comprising:

    an accommodating cavity body, defining an accommodating cavity configured to accommodate at least one aerosol-generation article;
    a delivering assembly, configured to deliver an aerosol-generation article of the at least one aerosol-generation article to an atomization region; and
    a heating assembly, configured to heat the aerosol-generation article on the atomization region to generate aerosols.

2. The aerosol-generation device of claim 1, wherein the at least one aerosol-generation article comprises a plurality of aerosol-generation articles, and the accommodating cavity is configured to accommodate the plurality of aerosol-generation articles stacked with each other; and the delivering assembly is configured to deliver the plurality of aerosol-generation articles to the atomization region in batches.

3. The aerosol-generation device of claim 2, further comprising a first driving element, wherein the first driving element is arranged in the accommodating cavity and configured to drive the plurality of aerosol-generation articles in the accommodating cavity to move out of the accommodating cavity in sequence; and the delivering assembly is configured to deliver an aerosol-generation article of the plurality of aerosol-generation articles moved out of the accommodating cavity to the atomization region.

4. The aerosol-generation device of claim 3, wherein the first driving element is a first elastic element arranged between a bottom wall of the accommodating cavity body and the plurality of aerosol-generation articles; or
    wherein the first driving element is a rotating shaft or a piston connected to a motor, and the motor is configured to move a preset number of aerosol-generation articles of the plurality of aerosol-generation articles out of the accommodating cavity every time through the first driving element.

5. The aerosol-generation device of claim 2, wherein an aerosol-generation article residue is formed after the aerosol-generation article on the atomization region is heated; and the delivering assembly is further configured to remove the aerosol-generation article residue from the atomization region.

6. The aerosol-generation device of claim 5, further comprising a recycling cavity body, wherein the recycling cavity body defines a recycling cavity, and the delivering assembly is configured to deliver the aerosol-generation article residue from the atomization region to the recycling cavity.

7. The aerosol-generation device of claim 6, further comprising a suction nozzle and a bearing plate,

wherein the suction nozzle defines an air-outlet channel, a side of the bearing plate facing the suction nozzle defines the atomization region, and the accommodating cavity body and the recycling cavity body are located on the other side of the bearing plate away from the suction nozzle;
wherein the bearing plate defines a first opening in communication with the accommodating cavity for the plurality of aerosol-generation articles in the accommodating cavity to reach the side of the bearing plate facing the suction nozzle; and/or the bearing plate defines a second opening in communication with the recycling cavity for the aerosol-generation article residue to enter the recycling cavity.

8. The aerosol-generation device of claim 7, wherein the delivering assembly comprises a rotating element, the rotating element is rotatably connected to a surface of the bearing plate away from the accommodating cavity body, an aerosol-generation article of the plurality of aerosol-generation articles outside the accommodating cavity is moved to the atomization region along the surface of the bearing plate, and the aerosol-generation article residue is moved from the atomization region to the recycling cavity.

9. The aerosol-generation device of claim 8, wherein the rotating element defines a receiving groove and an atomization hole; the receiving groove is arranged on a surface of the rotating element facing the bearing plate, and the receiving groove is configured to receive the aerosol-generation article outside the accommodating cavity; and the atomization hole is in communication with the receiving groove, and aerosols generated by an atomization of the aerosol-generation article in the receiving groove flow out through the atomization hole.

10. The aerosol-generation device of claim 9, wherein the rotating element blocks the first opening when the receiving groove is moved to another position different from the first opening.

11. The aerosol-generation device of claim 10, wherein the rotating element is in the shape of a disc and rotates around the center of the disc; and
wherein the rotating element defines at least three receiving grooves, the at least three receiving grooves are spaced apart from each other along a rotating path of the rotating element, and a distance between any adjacent two of the at least three receiving grooves along the rotating path of the rotating element is equal to a distance between any adjacent two of the first opening, the atomization region, and the second opening along the rotating path of the rotating element.

12. The aerosol-generation device of claim 10, wherein the rotating element is in the shape of a sector and rotates around an end of the sector; and the radian of the rotating element is not less than the radian of the rotating path of the rotating element between the first opening and the second opening.

13. The aerosol-generation device of claim 12, further comprising a sealing cover, wherein the sealing cover is configured to switch between a first position and a second position different from the first position, cover the second opening when being on the first position, and expose the second opening when being on the second position.

14. The aerosol-generation device of claim 13, wherein a rotating force of the rotating element is configured to drive the sealing cover to move from the first position to the second position; and the aerosol-generation device further comprises a second driving element connected to the sealing cover, and the second driving element is configured to drive the sealing cover to move from the second position to the first position.

15. The aerosol-generation device of claim 8, wherein the delivering assembly further comprises:

a power element, connected to the rotating element, and configured to drive the rotating element to move; and
a control circuit, electrically connected to the power element and the heating assembly respectively, and configured to control the power element to enable the rotating element to move the aerosol-generation article to the atomization region, and control the heating assembly to heat the aerosol-generation article on the atomization region after the rotating element delivers the aerosol-generation article to the atomization region.

16. The aerosol-generation device of claim 8, further comprising a pressing element, wherein the rotating element is clamped between the pressing element and the bearing plate, and the pressing element is configured to tightly press the rotating element onto the bearing plate.

17. The aerosol-generation device of claim 6, further comprising a shell comprising a hollow body, wherein the accommodating cavity body and/or the recycling cavity body are detachably arranged in the hollow body.

18. The aerosol-generation device of claim 1, wherein the heating assembly is one of a laser heating assembly, a microwave heating assembly, and an infrared heating assembly.

19. The aerosol-generation device of claim 1, further comprising a heat-dissipation element, wherein the heat-dissipation element is arranged on an upstream of the heating assembly along an airflow path of the aerosol-generation device and configured to dissipate heat for the heating assembly.

20. An aerosol-generation system, comprising an aerosol-generation device of any one of claims 1-14 and an aerosol-generation article accommodated in the aerosol-generation device.

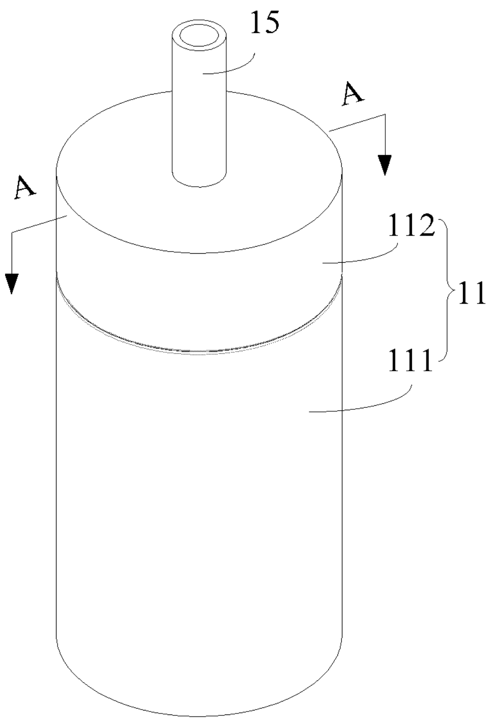

FIG. 1

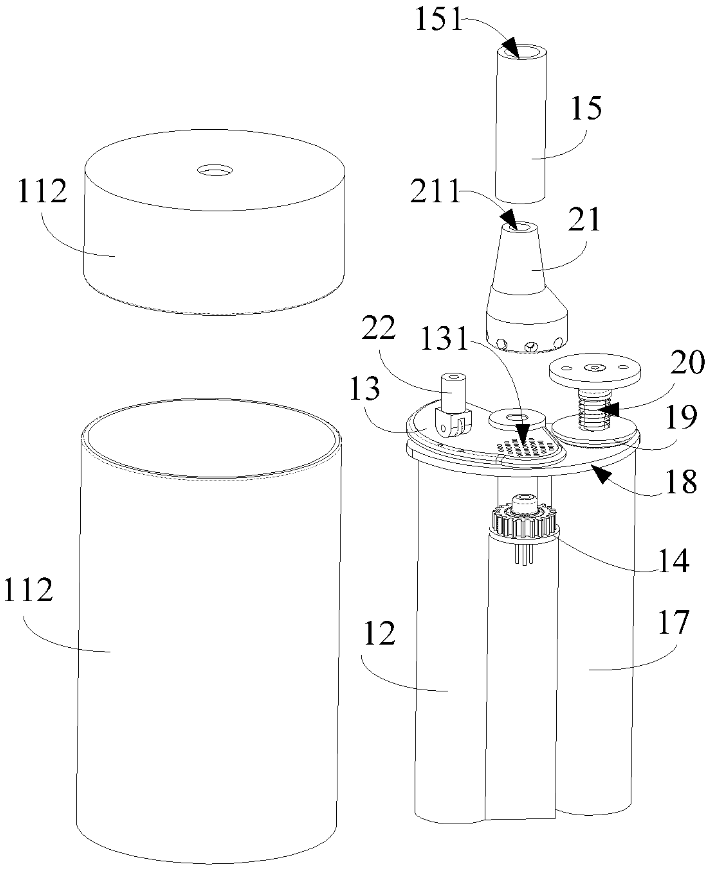

FIG. 2

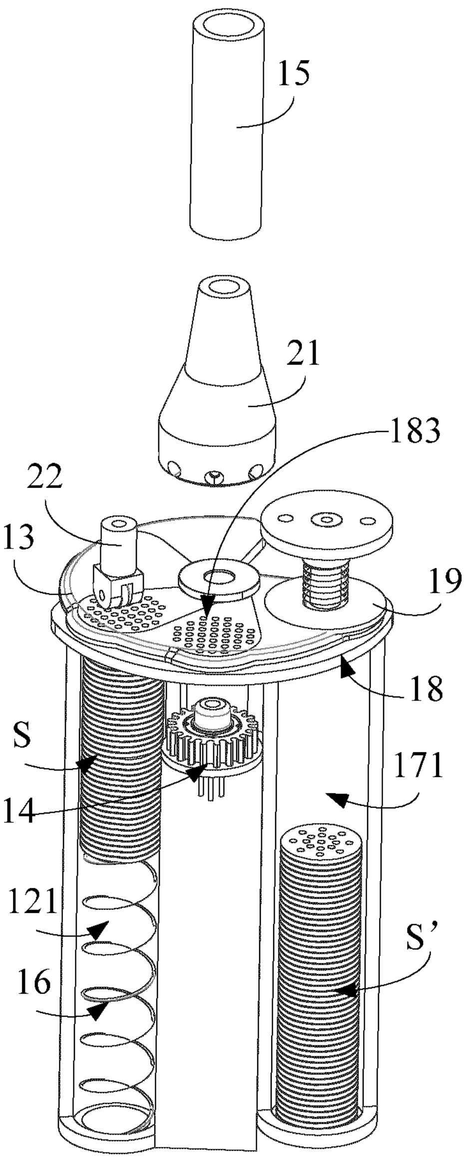

FIG. 3

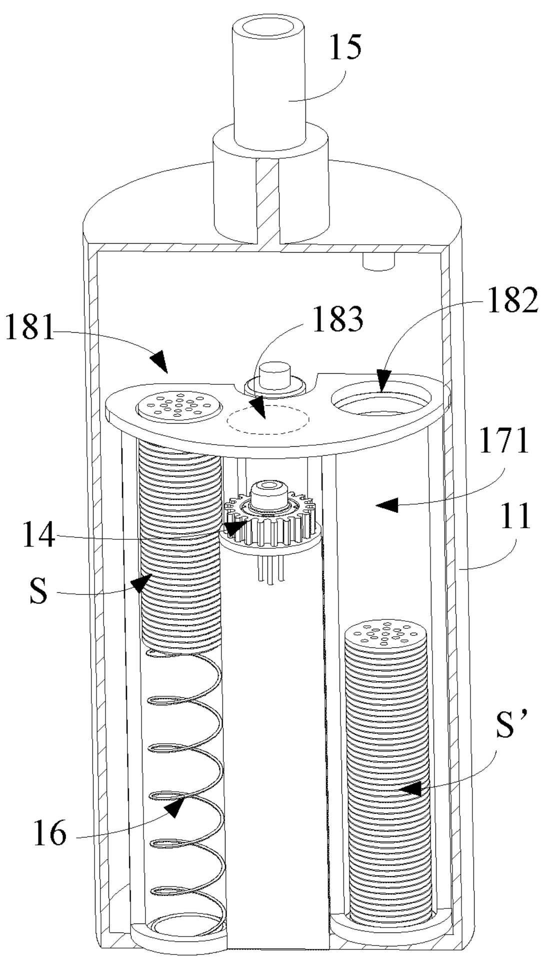

FIG. 4

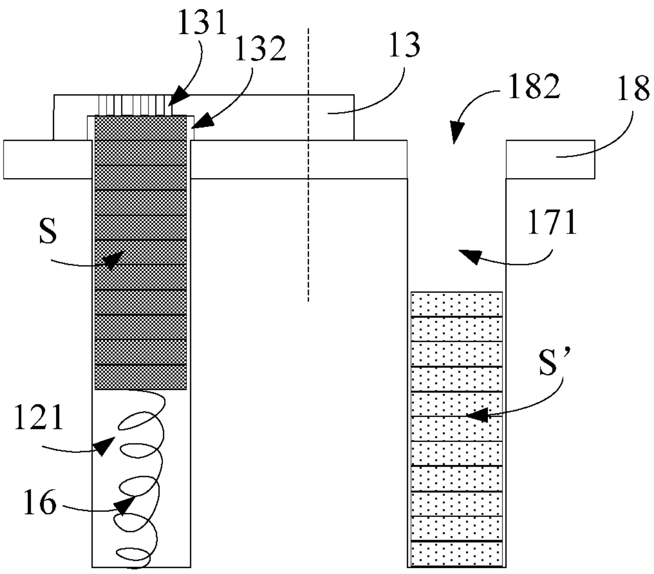

FIG. 5

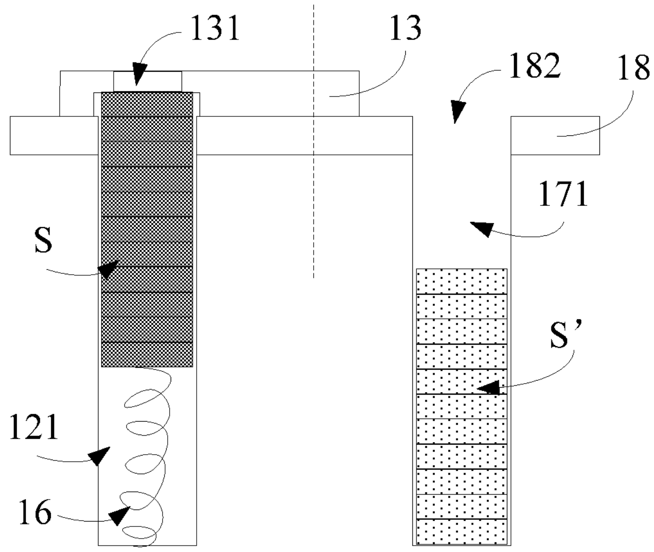

FIG. 6

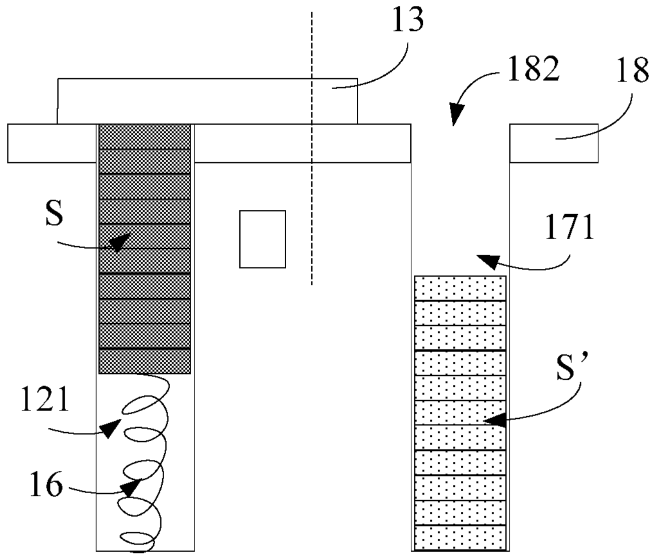

FIG. 7

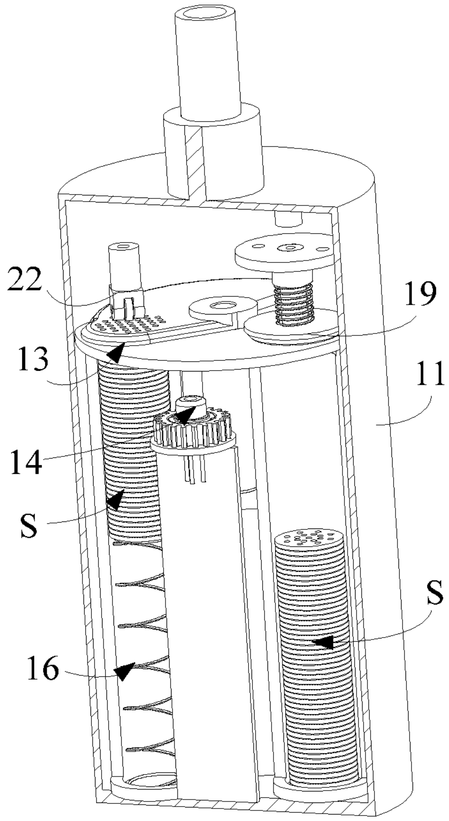

FIG. 8

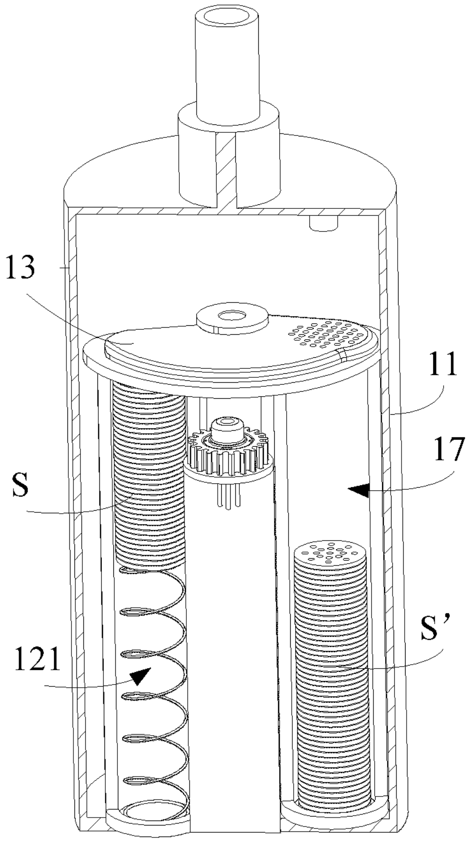

FIG. 9

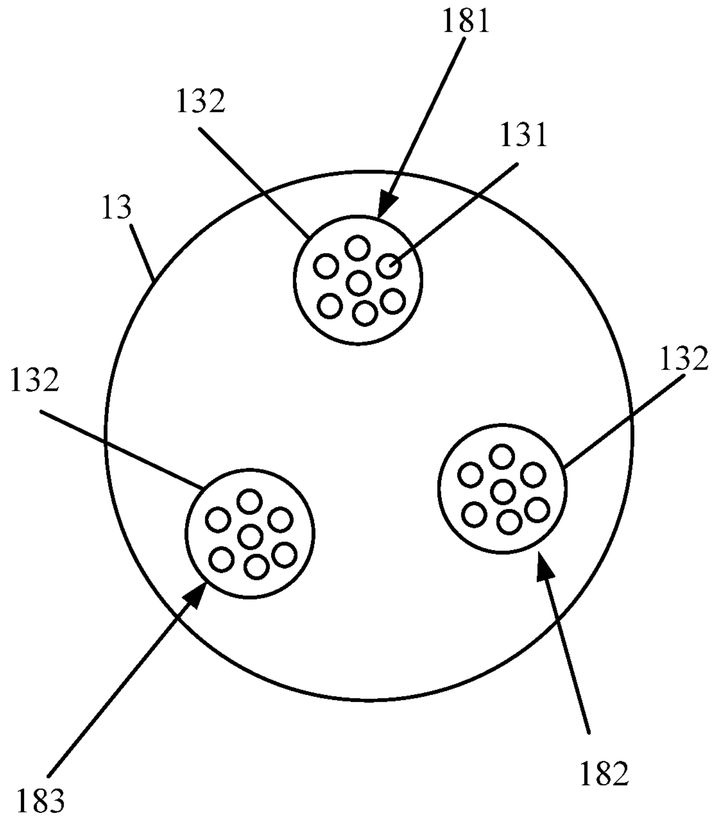

FIG. 10

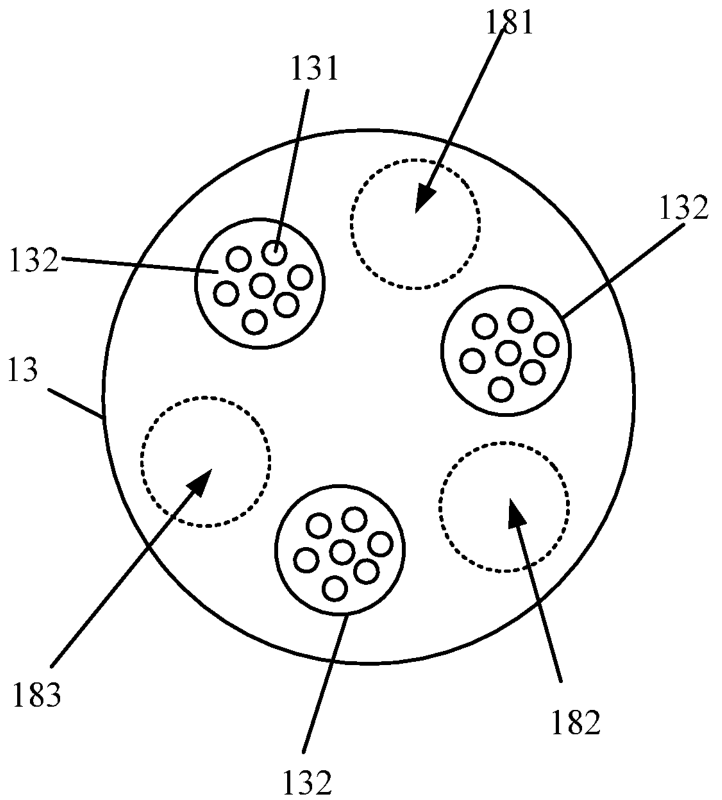

FIG. 11

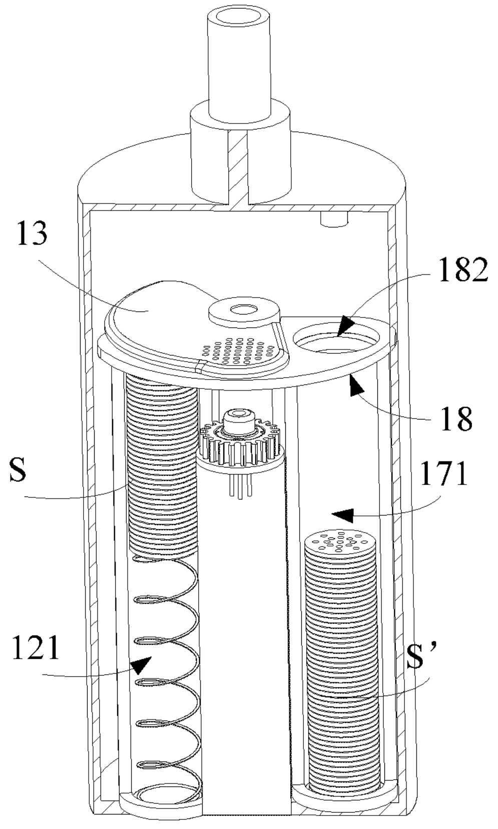

FIG. 12

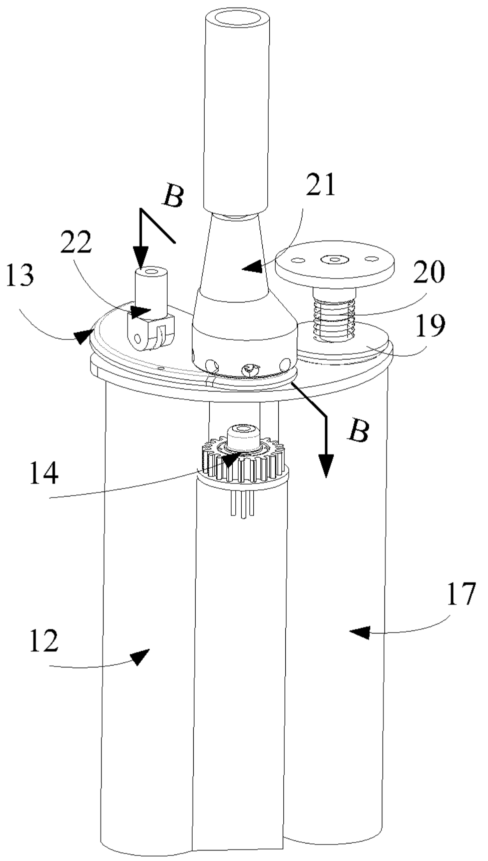

FIG. 13

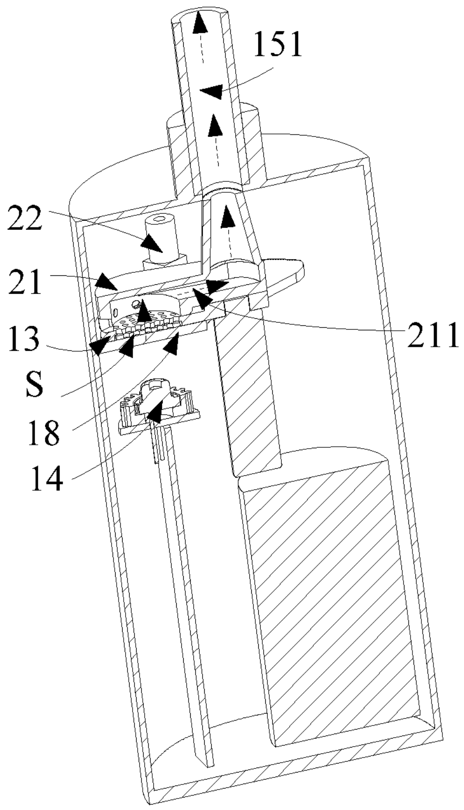

FIG. 14

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2022/138146

A. CLASSIFICATION OF SUBJECT MATTER

A24F47/00(2020.01)i;A24F40/40(2020.01)i;A24F40/46(2020.01)i;A24F40/42(2020.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A24F

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

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

CNTXT; CNABS; CNKI; VEN; ENTXT; ENTXTC; WPABS: 层叠, 气溶胶, 输送, 烟液, 烟油, 运输, 转动, 旋转, 扇形, stack, rotat+, transport+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 114668188 A (SHENZHEN SMOORE TECHNOLOGY LTD.) 28 June 2022 (2022-06-28) claims 1-20	1-20
X	US 2018110943 A1 (RAICHMAN, Y.) 26 April 2018 (2018-04-26) description, paragraphs [0142], [0153]-[0155], [0161], and [0203], and figures 1A-14C	1-20
X	US 2018104214 A1 (RAICHMAN, Y.) 19 April 2018 (2018-04-19) description, paragraphs [0079]-[0114], and figures 1-9C	1-7, 17-20
A	CN 110799050 A (PHILIP MORRIS PRODUCTS S.A.) 14 February 2020 (2020-02-14) entire document	1-20
A	CN 112654268 A (PHILIP MORRIS PRODUCTS S.A.) 13 April 2021 (2021-04-13) entire document	1-20

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

* Special categories of cited documents:
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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
01 February 2023	**28 February 2023**

Name and mailing address of the ISA/CN	Authorized officer
China National Intellectual Property Administration (ISA/CN) **China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088**	
Facsimile No. **(86-10)62019451**	Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2022/138146

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