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(54) **AEROSOL GENERATING SUBSTRATE, AEROSOL GENERATING PRODUCT, AND ELECTRONIC ATOMIZING DEVICE**

(57) The present application relates to the technical field of aerosol generation, and provides an aerosol generating substrate, an aerosol generating product, and an electronic atomizing device. The aerosol generating substrate comprises a base part and a plurality of subunits, wherein the plurality of subunits are located on the outer side of the base part in a first direction, the plurality of subunits are spaced in a second direction of the base part, and the space between every two adjacent subunits is a gap space, wherein the first direction intersects with the second direction. The outer surface of each subunit receives heat and then transfers the heat to the base part, where the heat is transferred from outside to inside; the aerosol generating substrate is provided with the gap spaces, and the gap spaces play a role in collecting and circulating aerosol; a subunit can release vapor in an inward direction and an outward direction, and further, the subunit can release aerosol to the gap spaces on two sides in the second direction, thereby obtaining a clear aerosol release path, avoiding the si-

tuation that the aerosol cannot be released in time, and thus improving the aerosol extraction efficiency.

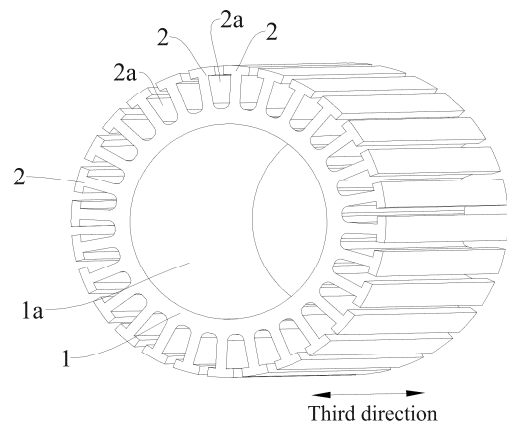


FIG. 1

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Description

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The present application claims priority to Chinese Patent Application No. 202310818339.1, filed on July 04, 2023, the contents of which are hereby incorporated by reference in its entirety.

TECHNICAL FIELD

[0002] The present application relates to the technical field of aerosol generation, and in particular to an aerosol generating substrate, an aerosol generating article, and an electronic atomizing device.

BACKGROUND

[0003] The aerosol generating substrate may form an aerosol by ignition or form an aerosol by heating without combustion. Taking an aerosol generating substrate that is heated without combustion as an example, the aerosol generating substrate is heated by an external heat source, so that the aerosol generating substrate is heated just enough to generate an aerosol, the aerosol generating substrate will not burn, and the aerosol is released by heating the aerosol generating substrate in use.

[0004] In the related art, the density of the substantial substrate of the aerosol generating substrate is high, which leads to the fact that the aerosol cannot be released in time, and the extraction efficiency of the aerosol is greatly reduced.

SUMMARY

[0005] In view of this, embodiments of the present application desire to provide an aerosol generating substrate, an aerosol generating article, and an electronic atomizing device which can improve the extraction efficiency of an aerosol.

[0006] In order to achieve the above object, an embodiment of the present application provides an aerosol generating substrate, including:

a base part; and
a plurality of subparts located at an outer side of the base part in a first direction, in which the plurality of subparts are spaced apart from each other in a second direction of the base part, and a space between any two adjacent subparts of the plurality of subparts is a gap space, in which the first direction and the second direction intersect with each other.

[0007] In some embodiments, each of the plurality of subparts includes a first portion and at least one second portion, the second portion and the first portion are arranged in the first direction, and a dimension of the first

portion in the second direction is greater than a dimension of the second portion in the second direction.

[0008] The second portion connects the base part and the first portion, or the first portion connects the base part and the second portion.

[0009] In some embodiments, each of the plurality of subparts includes one first portion and a plurality of second portions, the plurality of second portions are spaced apart from each other in the second direction and located at an inner side of the first portion, and the plurality of second portions connect the base part and the first portion.

[0010] In some embodiments, a spacing between any two adjacent first portions in the second direction is a first spacing, and a ratio of the dimension of the first portion in the second direction to the first spacing is between 10:1 and 1:1.

[0011] In some embodiments, a wall thickness of the first portion ranges from 0.1 mm to 0.5 mm.

[0012] In some embodiments, a dimension of the second portion in the first direction ranges from 0.5 mm to 5 mm.

[0013] In some embodiments, a ratio of the dimension of the first portion in the second direction to a dimension of the second portion in the first direction ranges from 1:2 to 2:1.

[0014] In some embodiments, a difference between a maximum wall thickness and a minimum wall thickness of the aerosol generating substrate is a first difference, and a percentage of the first difference to the minimum wall thickness of the aerosol generating substrate ranges from 0% to 100%.

[0015] In some embodiments, taking a plane perpendicular to a third direction as a projection plane, a hydraulic diameter of a projection shape of the aerosol generating substrate ranges from 5 mm to 15 mm.

[0016] In some embodiments, a number of the plurality of subparts is between 6 and 30.

[0017] In some embodiments, a minimum spacing between the any two adjacent subparts in the second direction ranges from 0.1 mm to 1 mm.

[0018] In some embodiments, taking a plane perpendicular to a third direction as a projection plane, a ratio of a total projection area of all of the plurality of subparts to a total projection area of all the gap spaces ranges from 1:9 to 1:1.

[0019] In some embodiments, the base part is a plate-like structure, and a wall thickness direction of the base part is consistent with the first direction; or the base part is a cylindrical structure.

[0020] In some embodiments, at least one air passage is formed inside the base part and penetrates through at least one end of the base part in a third direction.

[0021] In some embodiments, there are a plurality of air passages arranged spaced apart from each other.

[0022] In some embodiments, a heat generating layer is arranged at an outer side of the aerosol generating substrate, and the heat generating layer is arranged on

outer surfaces of the plurality of subparts and is configured to heat the plurality of subparts; and/or taking a plane perpendicular to a third direction as a projection plane, a projection shape of the aerosol generating substrate is circular, elliptical or polygonal.

[0023] In some embodiments, the plurality of subparts are located at an outermost side of the aerosol generating substrate in the first direction; and/or

taking a plane perpendicular to a third direction as a cross section, a cross section at any position of each of the plurality of subparts is identical, in which the first direction and the third direction are perpendicular to each other.

[0024] In an embodiment, the first direction and the second direction are perpendicular to each other; or the first direction is a radial direction, and the second direction is a circumferential direction.

[0025] The present application provides an aerosol generating article, including:

the aerosol generating substrate according to any one of the embodiments described above; and a functional section arranged at an end of the aerosol generating substrate in a third direction, in which the functional section includes at least a filter section configured to filter an aerosol.

[0026] The present application also provides an electronic atomizing device, including:

the aerosol generating article described above; and a heating member arranged at an outer side of each of the plurality of subparts in the first direction, in which the heating member is configured to heat the aerosol generating substrate to generate the aerosol.

[0027] In some embodiments, the heating member is a laser heater.

[0028] In the embodiment of the present application, heat is received by the outer surface of the subpart first and then is transferred to the base part, and the heat is transferred from the outside to the inside. The aerosol generating substrate is provided with the gap space, and the gap space plays a role in collecting and circulating the aerosol. A smoke release direction of the subpart includes not only an outward direction and an inward direction, but also the aerosol can be released toward the gap space at two sides of the subpart in the second direction, which can smooth the release path of the aerosol and avoid the situation that the aerosol cannot be released in time. Therefore, the extraction efficiency of the aerosol may be improved.

BRIEF DESCRIPTION OF THE DRAWINGS

[0029]

FIG. 1 is a schematic diagram of a first type of aerosol

generating substance according to an embodiment of the present application.

FIG. 2 is a schematic diagram of the first type of aerosol generating substance shown in FIG. 1 from another angle of view.

FIG. 3 is a schematic diagram of a second type of aerosol generating substance according to an embodiment of the present application.

FIG. 4 is a schematic diagram of the second type of aerosol generating substance shown in FIG. 3 from another angle of view.

FIG. 5 is a schematic diagram of a third type of aerosol generating substance according to an embodiment of the present application.

FIG. 6 is a schematic diagram of the third type of aerosol generating substance shown in FIG. 5 from another angle of view.

FIG. 7 is a schematic diagram of a first type of subpart according to an embodiment of the present application.

FIG. 8 is a schematic diagram of a second type of subpart according to an embodiment of the present application.

FIG. 9 is a schematic diagram of a third type of subpart according to an embodiment of the present application.

FIG. 10 is a schematic diagram of a fourth type of subpart according to an embodiment of the present application.

FIG. 11 is a schematic diagram of a fifth type of subpart according to an embodiment of the present application.

FIG. 12 is a schematic diagram of a sixth type of subpart according to an embodiment of the present application.

DETAILED DESCRIPTION

[0030] It should be noted that embodiments and features in the embodiments of the present application may be combined with each other without conflict, and the detailed description should be understood as an explanation of the present application and should not be regarded as an undue limitation of the present application.

[0031] In the present application, the plurality includes two or more. The unit "mm" is millimeters.

[0032] In the related art, since the density of the substantial substrate of the aerosol generating substrate is high, it is difficult for the aerosol to circulate inside the aerosol generating substrate in a short time, or it is difficult for the aerosol to be released from the substantial substrate of the aerosol generating substrate to the outside world, which leads to the fact that the aerosol cannot be released in time, and the extraction efficiency of the aerosol is greatly reduced.

[0033] An embodiment of the present application provides an aerosol generating substrate. Referring to FIG. 1 to FIG. 5, the aerosol generating substrate includes a

base part 1 and a plurality of subparts 2. The plurality of subparts 2 are located at an outer side of the base part 1 in a first direction. The plurality of subparts 2 are spaced apart from each other in a second direction of the base part 1, and a space between any two adjacent subparts 2 of the plurality of subparts 2 is a gap space 2a, in which the first direction and the second direction intersect with each other. That is, an outer surface of the aerosol generating substrate is a non-continuous surface. The gap space 2a is configured to collect and circulate an aerosol.

[0034] It should be noted that in the embodiment of the present application, the aerosol generating substrate is heated to generate an aerosol. In an example, the aerosol generating substrate may be adapted to generate an aerosol by heating without combustion. That is, the aerosol generating substrate is heated below the ignition point to generate an aerosol. The aerosol generating substrate does not burn during the process of generating the aerosol. In some application scenarios, the aerosol generating substrate may be adapted to generate an aerosol by ignition. In the present application, the aerosol generating substrate is more applicable to the generation of an aerosol by heating without combustion.

[0035] An embodiment of the present application also provides an aerosol generating article, including the aerosol generating substrate according to any one of the embodiments of the present application, and a functional section. The functional section is arranged at an end of the aerosol generating substrate in a third direction, and the functional section includes at least a filter section configured to filter the aerosol. The filter section is configured to filter the aerosol generated by the aerosol generating substrate.

[0036] The aerosol generating article is configured for a user to inhale the aerosol generated by an aerosol generating substrate. For example, the user may inhale the filtered aerosol by holding the filter section in his/her mouth. The aerosol generated by the aerosol generating substrate is delivered to the filter section under an inhalation negative pressure.

[0037] The aerosol generating article is intended to be used together with an electronic atomizing device provided with a heating member.

[0038] An electronic atomizing device according to an embodiment of the present application includes the aerosol generating article according to any one of the embodiments of the present application and a heating member. The heating member is arranged at the outer side of the subpart 2 in the first direction, and the heating member is configured to heat the aerosol generating substrate to generate the aerosol.

[0039] The heating member is arranged at the outer side of the subpart 2 to bake and heat the aerosol generating substrate from the outside to the inside. For example, the heating member heats the subpart 2 from the outer side of the subpart 2, and heat may be transferred to the base part 1 through the subpart 2. That is, the

heat is transferred from the outside to the inside.

[0040] The heating manner of the heating member includes, but is not limited to, resistance heating, electromagnetic heating, infrared heating, microwave heating, laser heating, and the like. The heating member may be in contact with or may not be in contact with an outer surface of the subpart 2. Heat transfer in the form of thermal convection means that the heating member is not in contact with the aerosol generating substrate, and the heating member first heats the air, and then the hot air bakes and heats the aerosol generating substrate. Heat conduction means that the heating member is in contact with the aerosol generating substrate and conducts the heat to the aerosol generating substrate. In an example, the resistance heating or the electromagnetic heating transfers the heat to the aerosol generating substrate primarily in the form of thermal conduction or thermal convection. The infrared heating, the microwave heating or the laser heating mainly transfers the heat to the aerosol generating substrate in the form of thermal radiation. That is, the heating member can heat the aerosol generating substrate by one or more of the three forms of heat conduction, heat convection and heat radiation.

[0041] In an embodiment, the heating member is a laser heater. The laser heater is a device that emits laser to heat the aerosol generating substrate. Because the laser has the characteristics of high energy concentration and high timeliness, it can achieve the purpose of the rapid generation of the aerosol. High timeliness means that the laser heating time and stopping heating time are very short. That is, the laser can heat the aerosol generating substrate to generate an aerosol in a short time, and can also stop heating the aerosol generating substrate in a short time. Therefore, it is necessary that the aerosol generating substrate can release the generated aerosol in time to avoid the accumulation of the aerosol.

[0042] In an example, the heating member includes, but is not limited to, a laser diode, a semiconductor laser, a helium-neon laser, a single-mode laser, a multi-mode laser, and the like.

[0043] In the embodiment of the present application, heat is received by the outer surface of the subpart 2 first and then is transferred to the base part 1, and the heat is transferred from the outside to the inside. The aerosol generating substrate is provided with the gap space 2a, and the gap space 2a plays a role in collecting and circulating the aerosol. A smoke release direction of the subpart 2 includes not only an outward direction and an inward direction, but also the aerosol can be released toward the gap space 2a at two sides of the subpart 2 in the second direction, which can smooth the release path of the aerosol and avoid the situation that the aerosol cannot be released in time. Therefore, the extraction efficiency of the aerosol may be improved.

[0044] In an embodiment, a heat generating layer is arranged at the outer side of the aerosol generating substrate, and the heat generating layer is arranged on the outer surface of the subpart 2 and is configured to

heat the subpart 2. In this way, the amount of heat conducted to the subpart 2 can be increased. The heat generating layer can cover a spacing opening between the outer surfaces of any two adjacent subparts 2, thereby playing a guide role for restricting the flow of the aerosol in the gap space 2a and the outside air in the third direction, and increasing the amount of air entered and improving the extraction efficiency of the aerosol. Since the aerosol can be released in a plurality of directions, such as an outward direction, an inward direction, and a direction toward the gap space 2a at the two sides in the second direction, it is possible to reduce the risk that the heat transfer efficiency between the outer surface and the heat generating layer is reduced due to the bulging of the heat generating layer.

[0045] The specific structure of the heat generating layer is not limited. In an example, the heat generating layer is a light absorbing layer. That is, the heat generating layer may absorb a light beam and generate heat. For example, the heat generating layer may absorb laser and dissipate heat.

[0046] In an embodiment, referring to FIG. 1, the subpart 2 is located at an outermost side of the aerosol generating substrate in the first direction. That is, other parts of the aerosol generating substrate are located at an inner side of the subpart 2 in the first direction, and an outer peripheral surface of the subpart 2 is an outer peripheral surface of the aerosol generating substrate. The subpart 2 is a part of the aerosol generating substrate closest to the heat generating layer.

[0047] In an embodiment, referring to FIG. 2 and FIG. 7, the subpart 2 includes a first portion 21 and a second portion 22, the second portion 22 and the first portion 21 are arranged in the first direction, and a dimension W2 of the first portion 21 in the second direction is greater than a dimension W3 of the second portion 22 in the second direction.

[0048] In an embodiment, referring to FIG. 1 to FIG. 6, the second portion 22 connects the base part 1 and the first portion 21. That is, the first portion 21 is located at an outer side of the second portion 22. In this way, after the first portion 21 is irradiated with laser or receives heat conducted by the light absorbing layer, the first portion 21 releases an aerosol in various directions such as an outward direction, an inward direction, and the second direction. In addition, the second portion 22 and the base part 1 are also heated by the heat conduction action (the degree of heating is less than the degree of heating of the first portion 21), and the aerosol generated by the heating is also released into the gap space 2a. Since the dimension W2 of the first portion 21 in the second direction is greater than the dimension W3 of the second portion 22 in the second direction, the area of the outer surface of the first portion 21 is larger. Due to the large concentration of energy generated by the laser, the larger the area of the substrate in which the subpart 2 is initially in contact with the laser, the better. In this way, there is enough substantial substrate to receive the energy generated by the

laser to release more aerosol.

[0049] It should be noted that the outer surface of the subpart 2, for example, the outer surface of the first portion 21, may be configured to receive heat generated by laser irradiation, and the outer surface of the subpart 2 may be directly irradiated with the laser, or the light absorbing layer may generate heat and heat the subpart 2 after the light absorbing layer is irradiated with the laser.

[0050] In an embodiment, the first portion 21 connects the base part 1 and the second portion 22. That is, the second portion 22 is located at an outer side of the first portion 21. In this way, after the second portion 22 is irradiated with laser or receives heat conducted by the light absorbing layer, the second portion 22 releases an aerosol in various directions such as an outward direction, an inward direction, and the second direction. In addition, the first portion 21 and the base part 1 are also heated by the heat conduction action, and the aerosol generated by the heating is also released into the gap space 2a. Since the dimension W3 of the second portion 22 in the second direction is less than the dimension W2 of the first portion 21 in the second direction, the area of the outer surface of the second portion 22 is smaller, which results in that relatively less aerosol is released.

[0051] In an embodiment, referring to FIG. 1, a plane perpendicular to the third direction is taken as a cross section, and the cross section at any position of the subpart 2 is identical, in which the first direction and the third direction are perpendicular to each other. Identical cross section means that the shape of the cross section is identical and the area of the cross section is identical. That is, in the third direction, the cross section of the subpart 2 remains constant. For example, taking a plane perpendicular to the third direction as a cross section, the cross section at any position of the first portion 21 is identical and the cross section at any position of the second portion 22 is identical.

[0052] In an embodiment, referring to FIG. 1 and FIG. 2, the gap space 2a spans across two ends of the subpart 2 in the third direction. The air flow may flow from one end to another end of the subpart 2 in the third direction. In this way, the air flow formed by the aerosol carried by the air can flow more smoothly, and the air flow resistance is smaller, which can significantly reduce the inhalation resistance during the inhalation process and improve the inhalation experience.

[0053] In an embodiment, the aerosol generating substrate is a one-piece structure. For example, the aerosol generating substrate is a one-piece structure formed by extrusion molding. Extrusion molding refers to a processing method in which through the interaction between a barrel of an extrusion device and an extrusion screw, a material is thermally plasticized and pushed by the extrusion screw toward a discharge opening, and is formed into an aerosol generating substrate with a predetermined projection shape and corresponding pores by an extrusion die, such as a die opening. In an example, the base part 1, the subpart 2, and the gap space 2a may

be formed through extrusion molding. In this way, during the use of the aerosol generating substrate, for example, after being heated and inhaled or after being stopped to be heated, the aerosol generating substrate is a one-piece substrate, which will not easily lead to the problem of disintegration and falling.

[0054] It should be noted that the third direction refers to an extension direction of the aerosol generating substrate. For example, the aerosol generating substrate is formed through extrusion molding, and the third direction is the extrusion direction of the aerosol generating substrate. The projection shape refers to a shape of the aerosol generating substrate taking a plane perpendicular to the third direction as the projection plane.

[0055] In an embodiment, referring to FIG. 1 to FIG. 7, the first portion 21 is a plate-like structure extending in the second direction, and the second portion 22 is a plate-like structure extending in the first direction. That is, each of the first portion 21 and the second portion 22 is a substantial substrate. With this design, the first portion 21 and the second portion 22 are simple in structure and easy to manufacture.

[0056] In an embodiment, referring to FIG. 12, the subpart 2 includes a first portion 21 and a plurality of second portions 22, the plurality of second portions 22 are spaced apart from each other in the second direction and located at an inner side of the first portion 21, and the plurality of second portions 22 connect the base part 1 and the first portion 21. On the one hand, the mass of the substantial substrate of the subpart 2 may be increased by the plurality of second portions 22, and the greater the mass of the substrate, the greater the mass of the aerosol that can be produced, thereby increasing the total amount of the aerosol that can be released. On the other hand, the plurality of second portions 22 are spaced apart from each other in the second direction, and a gap is formed between any two adjacent second portions 22, to facilitate the flow of the aerosol and also to facilitate the penetration of the heat into the inner side through the gap. On the other hand, it is also possible to increase the support for the first portion 21 through the plurality of second portions 22, so that the first portion 21 can better maintain the shape and reduce the deformation of the first portion 21. In this way, both the amount of release of the aerosol and the circulation of the aerosol can be taken into account.

[0057] Exemplarily, in an embodiment, referring to FIG. 12, each of the first portion 21 and the second portion 22 is a plate-like structure, the subpart 2 includes one first portion 21 and two second portions 22. Taking a plane perpendicular to the third direction as a projection plane, the projection of the first portion 21 and the projections of the two second portions 22 are collectively π -shaped.

[0058] In an embodiment, referring to FIG. 1 to FIG. 11, the subpart 2 includes one first portion 21 and one second portion 22, and each of the first portion 21 and the second portion 22 is a plate-like structure. Taking a plane perpendicular to the third direction as a projection plane, the

projection of the one first portion 21 and the projection of the one second portion 22 are collectively T-shaped.

[0059] In an embodiment, referring to FIG. 7, each of the first portion 21 and the second portion 22 is a structure with an equal wall thickness, and the wall thickness H1 of the first portion 21 is equal to the wall thickness of the second portion 22.

[0060] It should be noted that the structure with the equal wall thickness refers to a structure in which the wall thickness of the substrate is equal everywhere.

[0061] In an embodiment, referring to FIG. 8, the first portion 21 is a structure with an equal wall thickness, and the wall thickness of the second portion 22 gradually increases from being close to the first portion 21 toward being away from the first portion 21.

[0062] In an embodiment, referring to FIG. 9, the corners of the first portion 21 are rounded, and the junction of the first portion 21 and the second portion 22 is rounded. This can reduce the damage caused by stress concentration of sharp turning corners at the corners and at the junction.

[0063] In an embodiment, referring to FIG. 10, the junction of the first portion 21 and the second portion 22 is chamfered. That is, the wall thickness of the junction of the first portion 21 and the second portion 22 gradually increases from being close to the second portion 22 toward being away from the second portion 22. Taking a plane perpendicular to the third direction as a projection plane, the projection of the one first portion 21 and the projection of the one second portion 22 are collectively T-shaped, and the junction of the first portion 21 and the second portion 22 is trapezoidal.

[0064] In an embodiment, referring to FIG. 11, the wall thicknesses of two ends of the first portion 21 in the second direction are greater than the wall thicknesses of the remaining parts of the first portion 21.

[0065] In an embodiment, referring to FIG. 2, a spacing between any two adjacent first portions 21 in the second direction is a first spacing L, and the ratio of the dimension W2 of the first portion 21 in the second direction to the first spacing L is between 10:1 and 1:1. Exemplarily, the ratio of the dimension W2 of the first portion 21 in the second direction to the first spacing L is 10:1, 9:1, 8:1, 7:1, 6:1, 5.5:1, 5:1, 4.5:1, 4:1, 3.5:1, 3:1, 2.5:1, 2:1, 1.5:1, 1:1, etc.

[0066] In this embodiment, if the ratio of the dimension W2 of the first portion 21 in the second direction to the first spacing L is greater than 10:1, the mass of the substrate of the first portion 21 is larger, and the first spacing L is relatively small, so that more aerosols are generated, the gap space 2a for circulating the aerosol is relatively small, and the inhalation resistance is larger. Further, the smaller the first spacing L is, the more complicated the manufacture process (for example, the extrusion process) of the aerosol generating substrate, the more difficult it is to extrude the aerosol generating substrate, and the lower the yield. If the ratio of the dimension W2 of the first portion 21 in the second direction to the first spacing L is less than 1:1, the mass of the substrate of the first

portion 21 is small, and the first spacing L is relatively large, so that less aerosol is generated, the gap space 2a for circulating the aerosol is relatively large, and the generated aerosol is difficult to meet the inhalation demand. Therefore, the ratio of the dimension W2 of the first portion 21 in the second direction to the first spacing L is between 10:1 and 1:1, which can ensure effective extraction of the aerosol to the maximum extent, can balance the amount of release of the aerosol and the inhalation resistance, and can provide a good user experience under the condition of ensuring a high yield of the manufacture of the aerosol generating substrate.

[0067] In an embodiment, referring to FIG. 7, the wall thickness H1 of the first portion 21 ranges from 0.1 mm to 0.5 mm. Exemplarily, the wall thickness H1 of the first portion 21 is 0.1 mm, 0.2 mm, 0.3 mm, 0.35 mm, 0.4 mm, 0.5 mm, or the like. If the wall thickness H1 of the first portion 21 is less than 0.1 mm, the wall thickness H1 of the first portion 21 is too small, the amount of release of the aerosol generated by the substantial substrate per unit area is too small, and the first portion 21 is easily deformed. If the wall thickness H1 of the first portion 21 is greater than 0.5 mm, the aerosol generated in the first direction of the first portion 21 is difficult to be effectively released. Thus, since the first portion 21 has a moderate wall thickness H1, the first portion 21 has good structural strength, is easy to manufacture, for example, through extrusion molding, and can produce a suitable amount of release of the aerosol, and the aerosol can be released quickly to be inhaled by the user.

[0068] In an embodiment, referring to FIG. 7, the dimension W1 of the second portion 22 in the first direction ranges from 0.5 mm to 5 mm. The dimension W1 of the second portion 22 in the first direction is 0.5 mm, 0.6 mm, 0.9 mm, 1 mm, 1.5 mm, 2 mm, 2.5 mm, 3 mm, 3.5 mm, 4 mm, 4.5 mm, 4.8 mm, 5 mm, or the like. If the dimension W1 of the second portion 22 in the first direction is less than 0.5 mm, the distance between the second portion 22 and the base part 1 is small, the dimension of the gap space 2a in the first direction is small, the space for circulating the aerosol is insufficient, and the inhalation is difficult. If the dimension W1 of the second portion 22 in the first direction is greater than 5 mm, the second portion 22 is easily deformed during manufacturing, which leads to a low yield rate. The dimension W1 of the second portion 22 in the first direction ranges from 0.5 mm to 5 mm. In this way, the dimension W1 of the second portion 22 in the first direction is moderate, so that the second portion 22 has good structural strength, is easy to manufacture, for example through extrusion molding, and facilitates the inhalation.

[0069] In an embodiment, referring to FIG. 7, the ratio of the dimension W2 of the first portion 21 in the second direction to the dimension W1 of the second portion 22 in the first direction ranges from 1:2 to 2:1. If the ratio of the dimension W2 of the first portion 21 in the second direction to the dimension W1 of the second portion 22 in the first direction is less than 1:2, a problem of an insufficient

amount of release of the aerosol or a deformation of the second portion 22 is likely to occur. If the ratio of the dimension W2 of the first portion 21 in the second direction to the dimension W1 of the second portion 22 in the first direction is greater than 2:1, the volume of the gap space 2a is insufficient, the circulation space for the aerosol is too small, and it is difficult to inhale. Therefore, the ratio of the dimension W2 of the first portion 21 in the second direction to the dimension W1 of the second portion 22 in the first direction ranges from 1:2 to 2:1. In this way, not only the subpart 2 has good structural strength and is easy to manufacture, for example through extrusion molding, but also it is ensured that the space of the gap space 2a is sufficient and the inhalation is facilitated.

[0070] In an embodiment, a difference between the maximum wall thickness and the minimum wall thickness of the aerosol generating substrate is a first difference, and the percentage of the first difference to the minimum wall thickness of the aerosol generating substrate ranges from 0% to 100%. That is, the maximum wall thickness of the aerosol generating substrate is not greater than one time of the minimum wall thickness of the aerosol generating substrate. If the maximum wall thickness of the aerosol generating substrate is greater than one time of the minimum wall thickness, that is, the percentage of the first difference to the minimum wall thickness of the aerosol generating substrate is greater than 100%, the difference between wall thicknesses of the parts of the aerosol generating substrate is too large, and it is easy to cause a situation where a portion of the structure of the aerosol generating substrate is difficult to form, for example, extrude, in a manufacturing process, for example, in an extrusion process.

[0071] In an embodiment, the percentage of the first difference to the minimum wall thickness of the aerosol generating substrate is 0%, that is, the wall thicknesses of the parts of the aerosol generating substrate are equal to each other. For example, the wall thicknesses of the first portion 21, the second portion 22, and the base part 1 are equal to each other, and the wall thicknesses of the parts of the aerosol generating substrate have a high uniformity, which can prevent a portion of the structure of the aerosol generating substrate from being difficult to form, for example, extrude, in a manufacturing process, for example, in an extrusion process, and can improve the yield rate.

[0072] In an embodiment, referring to FIG. 2, taking a plane perpendicular to the third direction as a projection plane, the hydraulic diameter D of the projection shape of the aerosol generating substrate ranges from 5 mm to 15 mm. Exemplarily, the hydraulic diameter D of the projection shape of the aerosol generating substrate is 5 mm, 6 mm, 9 mm, 10 mm, 11 mm, 12 mm, 13 mm, 14 mm, 15 mm, and the like. On the one hand, it is convenient to adapt the aerosol generating substrate to a handheld electronic atomizing device. On the other hand, the aerosol generating substrate transfers heat from the outer

side to the inner side for a moderate time, to facilitate a balanced release of the aerosol during the inhalation. In another aspect, the total amount of release of the aerosol of the aerosol generating substrate is appropriate, and the total time of release of the aerosol is moderate. That is, the service life of the aerosol generating substrate is moderate, which ensures that the number of times of inhalation is suitable for customer needs, avoids insufficient inhalation or excessive waste, and provides the user with good inhaling experience.

[0073] It is to be understood that the projection shape of the aerosol generating substrate refers to the contour shape of the aerosol generating substrate in the projection plane. For example, the projection shape of the aerosol generating substrate refers to the outer contour shape of the cross section consisted by the base part 1, the first portion 21, the second portion 22, and the release gap together. In the case where the first portion 21 is located at the outer side of the second portion 22, the projection shape of the aerosol generating substrate refers to the outer contour shape formed by the outer side surfaces of the first portions 21 of all the subparts 2.

[0074] In an embodiment, the first direction and the second direction are perpendicular to each other. Exemplarily, the first direction and the second direction are two linear directions. Referring to FIG. 6, in an example in which the projection shape of the aerosol generating substrate is a rectangle, the first direction may be a width direction, and the second direction may be a length direction.

[0075] In an embodiment, the first direction is a radial direction, and the second direction is a circumferential direction. Referring to FIG. 1, in an example in which the projection shape of the aerosol generating substrate is circular, the first direction may be a radial direction, and the second direction may be a circumferential direction.

[0076] Exemplarily, in an embodiment, taking a plane perpendicular to the third direction as a projection plane, and the projection shape of the aerosol generating substrate is circular (referring to FIG. 2 and FIG. 4), elliptical or polygonal. The polygon includes, but is not limited to, a square, a rectangle (referring to FIG. 6), a pentagon, a hexagon, or an octagon, etc. That is, the aerosol generating substrate may be in the form of a cylinder, a cuboid, a prism, or the like.

[0077] In the embodiment of the present application, the hydraulic diameter refers to the ratio of four times of the area of the projection shape to the circumference of the projection shape. For example, if the projection shape of the aerosol generating substrate is a rectangle, the hydraulic diameter is a ratio of four times of the area of the rectangle to the circumference of the rectangle. For another example, if the projection shape of the aerosol generating substrate is a circle, the hydraulic diameter is the diameter of the circle.

[0078] In an embodiment, the number of the subparts 2 is between 6 and 30 (inclusive of 6 and 30). In this way, the sum of the masses of substrate of all the subparts 2 is

adapted to the sum of the volumes of all the release gaps, that is, the amount of release of the aerosol is adapted to the flow rate of the aerosol within the release gaps, so that the aerosol of the aerosol generating substrate is released uniformly during the heating.

[0079] In an embodiment, the minimum spacing between any two adjacent subparts 2 in the second direction ranges from 0.1 mm to 1 mm. Exemplarily, the minimum spacing between any two adjacent subparts 2 in the second direction is 0.1 mm, 0.2 mm, 0.3 mm, 0.4 mm, 0.5 mm, 0.6 mm, 0.8 mm, 0.9 mm, 1 mm, or the like.

[0080] Exemplarily, referring to FIG. 2, the minimum spacing between any two adjacent subparts 2 in the second direction is the first spacing L between any two adjacent first portions 21 in the second direction. That is, the first spacing L between any two adjacent first portions 21 in the second direction ranges from 0.1 mm to 1 mm (inclusive of 0.1 mm and 1 mm).

[0081] In this embodiment, if the minimum spacing between any two adjacent subparts 2 in the second direction is less than 0.1 mm, the distance between the two adjacent subparts 2 is too small, the gap space 2a is relatively small, and the inhalation resistance is large. In addition, the smaller the minimum spacing between any two adjacent subparts 2 in the second direction, the more complicated the manufacturing process (for example, the extrusion process) of the aerosol generating substrate, the more difficult it is to extrude the aerosol generating substrate, and the lower the yield rate.

[0082] If the minimum spacing between any two adjacent subparts 2 in the second direction is greater than 1:1, the mass of the substrate of the subparts 2 is small, so that less aerosol is generated, the gap space 2a for circulating the aerosol is relatively large, and the generated aerosol is difficult to meet the inhalation demand.

[0083] Therefore, the minimum spacing between any two adjacent subparts 2 in the second direction ranges from 0.1 mm to 1 mm, which can balance the amount of release of the aerosol and the inhalation resistance under the condition of ensuring a high yield of the manufacture of the aerosol generating substrate.

[0084] In an embodiment, taking a plane perpendicular to the third direction as a projection plane, the ratio of the total projection area of all the subparts 2 to the total projection area of all the gap spaces 2a ranges from 1:9 to 1:1 (inclusive of 1:9 and 1:1). Preferably, the ratio of the total projection area of all the subparts 2 to the total projection area of all the gap spaces 2a ranges from 1:4 to 1:2 (inclusive of 1:4 and 1:2).

[0085] The total projection area of all the subparts 2 refers to the sum of the projection areas of all the subparts 2. The total projection area of all the gap spaces 2a refers to the sum of the projection areas of all the gap spaces 2a.

[0086] In this embodiment, if the ratio of the total projection area of all the subparts 2 to the total projection area of all the gap spaces 2a is greater than 1:1, the total mass of substrate of the subparts 2 is relatively high, and the projection area of the release gaps is relatively small,

so that the aerosol is easily adsorbed by the substantial substrate to generate condensation, the amount of release of aerosol is insufficient, and the effective utilization rate of the substantial substrate is low. If the ratio of the total projection area of all the subparts 2 to the total projection area of all the gap spaces 2a is less than 1:9, the projection area of the release gaps is relatively large, the flow velocity of the aerosol is slow, and the aerosol is not easy to be effectively extracted, which is not conducive to the inhalation experience.

[0087] In an embodiment, referring to FIG. 5 and FIG. 6, the base part 1 is a plate-like structure, and the wall thickness direction of the base part 1 is parallel to the first direction. The wall thickness of the base part 1, the wall thickness H1 of the first portion 21, and the wall thickness of the second portion 22 may be substantially consistent with each other to facilitate the manufacturing molding, such as the extrusion molding.

[0088] Exemplarily, in an embodiment, referring to FIG. 5 and FIG. 6, each of the base part 1, the first portion 21 and the second portion 22 is a plate-like structure, the aerosol generating substrate includes two side parts 3, all the subparts 2 are located between the two side parts 3, and all the second portions 22 and the two side parts 3 are connected to an outer surface of the base part 1. The projection shape of the aerosol generating substrate is a rectangle.

[0089] In an embodiment, referring to FIG. 1 to FIG. 4, the base part 1 is a cylindrical structure. The cylindrical structure not only facilitates the arrangement of more subparts 2 on the outer periphery thereof, but also facilitates the molding, for example, the extrusion molding.

[0090] In an embodiment, referring to FIG. 1 to FIG. 4, an air passage 1a is formed inside the base part 1 and penetrates through at least one end of the base part 1 in the third direction. The air passage 1a is also configured to collect and circulate an aerosol. The aerosol released from the base part 1 can quickly flow through the air passage 1a, which can improve the effective extraction rate of the aerosol.

[0091] In an embodiment, referring to FIG. 1 to FIG. 4, the air passage 1a penetrates through two opposite ends of the base part 1 in the third direction. The air flow may flow from one end of the base part 1 to another end of the base part 1 in the third direction. In this way, the air flow formed by the aerosol carried by the air can flow more smoothly, and the air flow resistance is smaller, which can significantly reduce the inhalation resistance during the inhalation process and improve the inhalation experience.

[0092] In an embodiment, referring to FIG. 1 and FIG. 2, there may be one air passage 1a.

[0093] In an embodiment, referring to FIG. 3 and FIG. 4, there may be a plurality of air passages 1a spaced apart from each other. On the one hand, the plurality of air passages 1a can further increase the porosity of the aerosol generating substrate, facilitate the penetration and/or diffusion of the heat, and reduce the flow resis-

tance of the aerosol. On the other hand, the plurality of air passages 1a are spaced apart from each other, that is, a substrate wall is arranged between the air passages 1a, the hole diameter of each single air passage 1a can be small, the mass of the substrate is suitable, and the structural strength of the base part 1 is good.

[0094] In an embodiment, the air passage 1a is a rectilinear air passage 1a extending along a straight line. The rectilinear air passage 1a is easily molded, which can reduce the manufacturing difficulty. The flow resistance of the air flow in the rectilinear air passage 1a is relatively small.

[0095] In an embodiment, the air passage 1a is a curvilinear air passage 1a, and at least a portion of the hole section of the curvilinear air passage 1a has a curved shape having a nonzero curvature. The curvilinear air passage 1a can increase the flow path of the air flow to a large extent without significantly increasing the length of the aerosol generating substrate, and can prolong the contact time of the air flow with the hole wall surface of the curvilinear air passage 1a, thereby improving the extraction rate of the aerosol.

[0096] In an embodiment, the curvilinear air passage 1a has a spiral shape. That is, the three-dimensional shape of the curvilinear air passage 1a has a spatial spiral shape. The line connecting an arbitrary point of the curvilinear air passage 1a and the starting point has an inclination angle with respect to the axis thereof. The spiral curvilinear air passage 1a can greatly extend the flow path of the air flow, precipitate the aerosol from the aerosol generating substrate into the curvilinear air passage 1a, and improve the flow speed of the aerosol in the aerosol generating substrate, thereby improving the impact force of the air flow, enabling the aerosol to be uniformly mixed, improving the uniformity of the aerosol, and improving the inhalation feeling for the user.

[0097] The projection shape of the air passage 1a is not limited. For example, the shape of the projection shape of the air passage 1a may be circular, polygonal (including but not limited to triangular, square, prismatic, etc.), elliptical, track-shaped, or special-shaped, in which the special shapes refer to other symmetrical or asymmetrical shapes other than the shapes listed above.

[0098] It should be noted that in the implementation of the present application, unless otherwise specified, the projection plane refers to a plane perpendicular to the third direction.

[0099] In an embodiment, referring to FIG. 3 and FIG. 4, the base part 1 includes one circular air passage 1a and a plurality of sector-shaped air passages 1a, and the plurality of sector-shaped air passage 1a are arranged around the circular air passage 1a and spaced apart from each other.

[0100] It can be understood that the plurality of air passages 1a may also be arranged in one dimension, in a two dimensional matrix, or in a plurality of concentric circles, or the like. The arrangement manner of the plurality of air passages 1a is not limited.

[0101] Exemplarily, in an embodiment, there may be four air passages 1a, each of the four air passages 1a is sector-shaped, and the four sector-shaped air passages 1a are evenly distributed. In this way, the projection of the substrate wall in the base part 1 has a substantially "cross" shape. In an embodiment, there may be eight air passages 1a, each of the eight air passages 1a is sector-shaped, and the eight sector-shaped air passages 1a are evenly distributed. In this way, the projection of the substrate wall in the base part 1 substantially has a pattern with a vertical cross and a diagonal cross intersecting with the vertical cross.

[0102] It should be noted that, micropores may exist inside the aerosol generating substrate. For example, for an aerosol generating substrate with a particle combination, gaps between particles constitute micropores. However, the air passage 1a described in the present application is different from the micropores in that the air passage 1a described in the present application is a macroscopic pore, the micropores are microscopic pores, and the dimensions such as the projection area and the length of the air passage 1a are much larger than those of the micropores. The air passage 1a is manufactured mainly by design, for example by an die opening. Therefore, the dimensions such as the projection area and the length of the air passage 1a can be changed according to the design requirements, while the dimensions of the micropores are determined by the gaps between the particles. For example, the material is granular material, the aerosol generating substrate extruded by the material includes micropores, and the dimensions such as the projection area and the length of the micropores are naturally formed by the extrusion process and the material components. After the material flows out of the die opening from the feeding barrel, it will expand to a certain extent and form micropores.

[0103] In an embodiment, at least some of the subparts 2 are made of the same material. For example, some of the subparts 2 may be made of the same material, and some of the subparts 2 may be made of different materials. For another example, all the subparts 2 may be made of the same material. In this way, the manufacturing equipment is simple, and taking the extrusion process as an example, the structure of the extruder is simple.

[0104] In an embodiment, all the subparts 2 may be made of different materials. In this way, different subparts 2 can release aerosols of different flavors with more selectivity.

[0105] In an embodiment, at least some of the subparts 2 have the same projection shape. For example, some of the subparts 2 may have different projection shapes, and some of the subparts 2 may have the same projection shape. For another example, all the subparts 2 may have the same projection shape. In this way, the die of the extruder, such as the die opening, is simple in structure.

[0106] In an embodiment, all the subparts 2 may have different projection shapes. In this way, it can provide a more refreshing or mellow taste, and it can also match

different heating methods to make the taste richer.

[0107] In an embodiment, all the gap spaces 2a may have the same volume.

[0108] In an embodiment, at least some of the gap spaces 2a may have different volumes. For example, some of the gap spaces 2a may have different volumes, and some of the gap spaces 2a may have the same volume. For another example, all the gap spaces 2a may have different volumes.

[0109] In an embodiment, at least some of the subparts 2 are evenly distributed along the second direction. For example, some of the subparts 2 are evenly distributed in the second direction, and some of the subparts 2 are unevenly distributed in the second direction. For another example, all the subparts 2 are uniformly distributed in the second direction. With such a design, the distribution of the mass of the substrate of different parts of the aerosol generating substrate is approximately the same, and the gap spaces 2a of different parts of the aerosol generating substrate are approximately the same, so that the amount of release of the aerosol and the flow resistance of different parts of the aerosol generating substrate are approximately the same. In this way, the release uniformity of the aerosol in the inhalation process can be improved, and the inhalation amount of each inhalation in the inhalation process tends to be consistent, thereby improving the inhalation consistency and improving the inhalation experience.

[0110] Exemplarily, in some embodiments, referring to FIG. 1 to FIG. 6, the manner in which the subparts 2 are evenly distributed along the second direction includes the following manners. The subparts 2 have the same projection shape, and the gap spaces 2a have the same projection shape. For example, the subparts 2 have the same projection shape, and the subparts 2 are distributed in one dimension along the plate-shaped base part 1 or are distributed concentrically around the cylindrical base part 1. That is, the arrangement manner of the subparts 2 itself is uniform.

[0111] In an embodiment, all the subparts 2 are uniformly distributed in the second direction. In this way, according to the inhalation demand, the subparts 2 which are unevenly distributed can cooperate with different heating methods, so that not only uniform heating of the aerosol generating substrate can be realized, but also the consistency of the aerosol of the first several inhalations and the end several inhalations in the inhalation process can be realized.

[0112] In some embodiments, the functional section may only be provided with a filter section.

[0113] In other embodiments, the functional section further includes a cooling section located between the filter section and the aerosol generating substrate. The cooling section is configured to cool the aerosol before the aerosol is filtered through the filter section. The cooling section can improve the phenomenon of "scalding the mouth" when the user inhales the aerosol.

[0114] The cooling material for the cooling section

includes, but is not limited to, one or more combinations of polyethylene, PE, Polylactic Acid, PLA, Polybutylene Adipate Terephthalate, PBAT, Polypropylene, PP, acetate fiber, propylene fiber, and the like.

[0115] The cooling material for the filter section includes, but is not limited to, one or more combinations of polyethylene, PE, Polylactic Acid, PLA, Polybutylene Adipate Terephthalate, PBAT, Polypropylene, PP, acetate fiber, propylene fiber, and the like.

[0116] The materials of the cooling section and the filter section may be the same or different.

[0117] In an embodiment, the aerosol generating substrate includes a plant raw material, an auxiliary agent raw material, a smoking agent raw material, an adhesive raw material, and a flavor raw material.

[0118] The plant raw material is configured to generate an aerosol when heated. The auxiliary agent raw material is configured to provide skeleton support for the plant raw material. The smoking agent raw material is configured to generate smoke when heated. The adhesive raw material is configured to bind the component raw materials. The flavor raw material is configured to provide a characteristic aroma. In this way, the plant raw material and the smoking agent raw material can ensure the amount of the generated aerosol, while the flavor raw material can improve the release of aroma during smoking and improve the user experience. The auxiliary agent raw material can not only improve the fluidity of the mixed materials, but also make the aerosol generating substrate have a porous structure, to facilitate the extraction and flow of the aerosol. The adhesive raw material ensures that the plant raw material power, the auxiliary agent raw material and the like form a stable mixture, which avoids a loose structure.

[0119] In an embodiment, the plant raw material is one or more combinations of powders formed after a crushing treatment of tobacco raw materials, tobacco leaf fragments, tobacco stalks, tobacco powders, flavored plants, and the like. The plant raw material is the core source of flavor, and endogenous substances in the plant raw material can give users physiological satisfaction. The endogenous substances such as alkaloids enter the human bloodstream, and promote the generation of dopamine by the pituitary gland, thereby obtaining physiological satisfaction.

[0120] In an embodiment, the auxiliary agent raw material may be one or more combinations of inorganic fillers, lubricants, and emulsifiers. The inorganic fillers include one or more combinations of heavy calcium carbonate, light calcium carbonate, zeolite, attapulgite, talc, and diatomaceous earth. The inorganic fillers can provide skeleton support for the plant raw material, and at the same time, the inorganic fillers are also provided with micropores, which can improve the porosity of the aerosol generating substrate, thereby increasing the release rate of the aerosol.

[0121] The lubricants include one or more combinations of candelilla wax, carnauba wax, shellac, sunflower

wax, rice bran, beeswax, stearic acid, and palmitic acid. The lubricants can increase the fluidity of the plant raw material powder, reduce the friction between the plant raw material powder, make the overall density of the plant raw material powder distribution more uniform, and also reduce the pressure required during the extrusion molding, and reduce the wear of the die opening.

[0122] The emulsifiers include one or more combinations of polyglycerol fatty acid esters, Tween-80, and polyvinyl alcohol. To a certain extent, the emulsifiers can slow down the loss of flavor substances during storage, increase the stability of the flavor substances and improve the sensory quality of products.

[0123] In an embodiment, the smoking agent raw material may include one or more combinations of monohydric alcohol (such as menthol); polyol (such as propylene glycol, glycerol, triethylene glycol, 1, 3-butanediol and tetraethylene glycol); ester of polyol (such as glyceryl triacetate, triethyl citrate, glyceryl diacetate mixtures, triethyl citrate, benzyl benzoate, tributyrates); monocarboxylic acid; dicarboxylic acid; polycarboxylic acid (such as lauric acid, myristic acid) or aliphatic ester of polycarboxylic acid (such as dimethyl dodecanedioate, dimethyl tetradecanedioate, erythritol, 1, 3-butanediol, tetraethylene glycol, triethyl citrate, propylene carbonate, ethyl laurate, Triactin, meso-erythritol, glyceryl diacetate mixture, diethyl suberate, triethyl citrate, benzyl benzoate, benzyl phenylacetate, ethyl vanilate, glyceryl tributyrates, lauryl acetate).

[0124] In an embodiment, the adhesive raw material is in close contact with the component raw material interface by wetting together with the component raw material interface to create an intermolecular attractive force, thereby bonding to the component raw material, such as a powder, a liquid, or the like. The adhesive raw material may be one or more combinations of natural plant extracts, non-ionized modified viscous polysaccharides including tamarind polysaccharides and guar gum, and modified cellulose (such as carboxymethyl cellulose). The adhesive is configured to bond the particles together, which are not easy to loosen, and the adhesive further improves the water resistance of the aerosol generating substrate, and is harmless to the human body.

[0125] In an embodiment, the flavor raw material is configured to provide characteristic aroma, such as hay aroma, roasted sweet aroma, solid or liquid substances of nicotine. The flavor raw material may include one or more combinations of tobacco, flavored plant extracts, extractum, essential oils, absolute oils. The flavor raw material may include a monomeric flavoring substance, for example, one or more combinations of macrotrienone, neophytadiene, geraniol, nerol, and the like.

[0126] In the description of the present application, an expression with reference to the terms "in an embodiment", "in some embodiments", "in other embodiments", "in still other embodiments", "exemplarily" or the like

means that specific features, structures, materials, or characteristics described in combination with the embodiment or example are included in at least one embodiment or example of the embodiments of the present application. In the present application, the schematic expression of the above terms is not necessarily directed to the same embodiment or example. Moreover, the specific features, structures, materials, or characteristics described may be combined with each other in any one or more embodiments or examples in a suitable manner. Furthermore, those skilled in the art can combine different embodiments or examples described in the present application and features of different embodiments or examples without contradicting each other.

[0127] The foregoing is merely a preferred embodiment of the present application, and is not intended to limit the present application, and various modifications and variations can be made for those skilled in the art. Any modifications, substitutions and improvements made within the spirit and principles of the present application should be included within the scope of protection of the present application.

Claims

1. An aerosol generating substrate, comprising:

a base part; and
a plurality of subparts located at an outer side of the base part in a first direction, the plurality of subparts being spaced apart from each other in a second direction of the base part, and a space between any two adjacent subparts of the plurality of subparts being a gap space, wherein the first direction and the second direction intersect with each other.

2. The aerosol generating substrate according to claim 1, wherein each of the plurality of subparts comprises a first portion and at least one second portion, the second portion and the first portion are arranged in the first direction, and a dimension of the first portion in the second direction is greater than a dimension of the second portion in the second direction;
the second portion connects the base part and the first portion, or the first portion connects the base part and the second portion.

3. The aerosol generating substrate according to claim 2, wherein each of the plurality of subparts comprises one first portion and a plurality of second portions, the plurality of second portions are spaced apart from each other in the second direction and located at an inner side of the first portion, and the plurality of second portions connect the base part and the first portion.

4. The aerosol generating substrate according to claim 2, wherein a spacing between any two adjacent first portions in the second direction is a first spacing, and a ratio of the dimension of the first portion in the second direction to the first spacing is between 10:1 and 1:1.

5. The aerosol generating substrate according to claim 2, wherein a wall thickness of the first portion ranges from 0.1 mm to 0.5 mm.

6. The aerosol generating substrate according to claim 2, wherein a dimension of the second portion in the first direction ranges from 0.5 mm to 5 mm.

7. The aerosol generating substrate according to claim 2, wherein a ratio of the dimension of the first portion in the second direction to a dimension of the second portion in the first direction ranges from 1:2 to 2:1.

8. The aerosol generating substrate according to claim 1, wherein a difference between a maximum wall thickness and a minimum wall thickness of the aerosol generating substrate is a first difference, and a percentage of the first difference to the minimum wall thickness of the aerosol generating substrate ranges from 0% to 100%.

9. The aerosol generating substrate according to claim 1, wherein taking a plane perpendicular to a third direction as a projection plane, a hydraulic diameter of a projection shape of the aerosol generating substrate ranges from 5 mm to 15 mm.

10. The aerosol generating substrate according to claim 1, wherein a number of the plurality of subparts is between 6 and 30.

11. The aerosol generating substrate according to claim 1, wherein a minimum spacing between the any two adjacent subparts in the second direction ranges from 0.1 mm to 1 mm.

12. The aerosol generating substrate according to claim 1, wherein taking a plane perpendicular to a third direction as a projection plane, a ratio of a total projection area of all of the plurality of subparts to a total projection area of all the gap spaces ranges from 1:9 to 1:1.

13. The aerosol generating substrate according to claim 1, wherein the base part is a plate-like structure, and a wall thickness direction of the base part is consistent with the first direction; or
the base part is a cylindrical structure.

14. The aerosol generating substrate according to claim 1, wherein at least one air passage is formed inside

the base part and penetrates through at least one end of the base part in a third direction.

15. The aerosol generating substrate according to claim 14, wherein there are a plurality of air passages arranged spaced apart from each other. 5

16. The aerosol generating substrate according to claim 1, wherein a heat generating layer is arranged at an outer side of the aerosol generating substrate, and the heat generating layer is arranged on outer surfaces of the plurality of subparts and is configured to heat the plurality of subparts; and/or taking a plane perpendicular to a third direction as a projection plane, a projection shape of the aerosol generating substrate is circular, elliptical or polygonal. 10 15

17. The aerosol generating substrate according to claim 1, wherein the plurality of subparts are located at an outermost side of the aerosol generating substrate in the first direction; and/or taking a plane perpendicular to a third direction as a cross section, a cross section at any position of each of the plurality of subparts is identical, wherein the first direction and the third direction are perpendicular to each other. 20 25

18. The aerosol generating substrate according to claim 1, wherein the first direction and the second direction are perpendicular to each other; or the first direction is a radial direction, and the second direction is a circumferential direction. 30

19. An aerosol generating article, comprising: 35
 - the aerosol generating substrate according to any one of claims 1 to 18; and
 - a functional section arranged at an end of the aerosol generating substrate in a third direction, the functional section comprising at least a filter section configured to filter an aerosol. 40

20. An electronic atomizing device, comprising: 45
 - the aerosol generating article according to claim 19; and
 - a heating member arranged at an outer side of each of the plurality of subparts in the first direction, the heating member being configured to heat the aerosol generating substrate to generate the aerosol. 50

21. The electronic atomizing device according to claim 20, wherein the heating member is a laser heater. 55

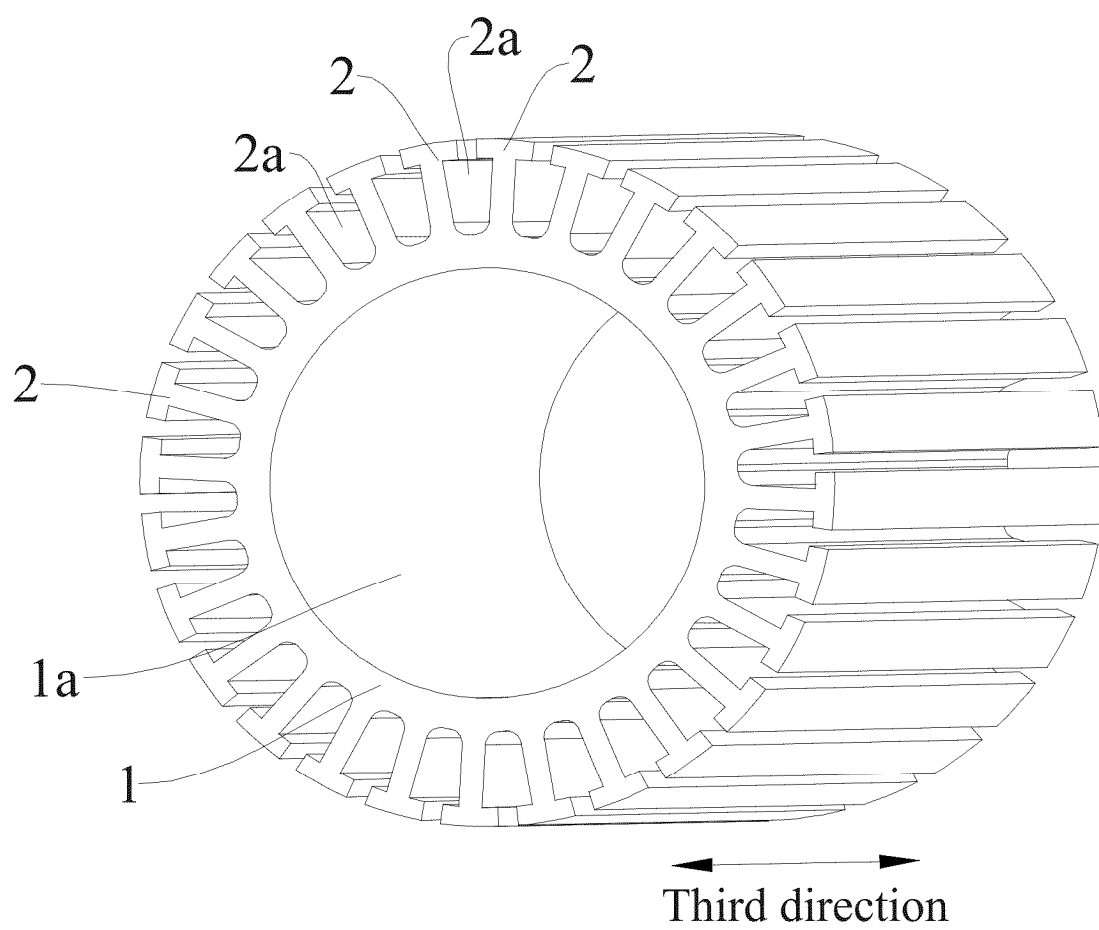


FIG. 1

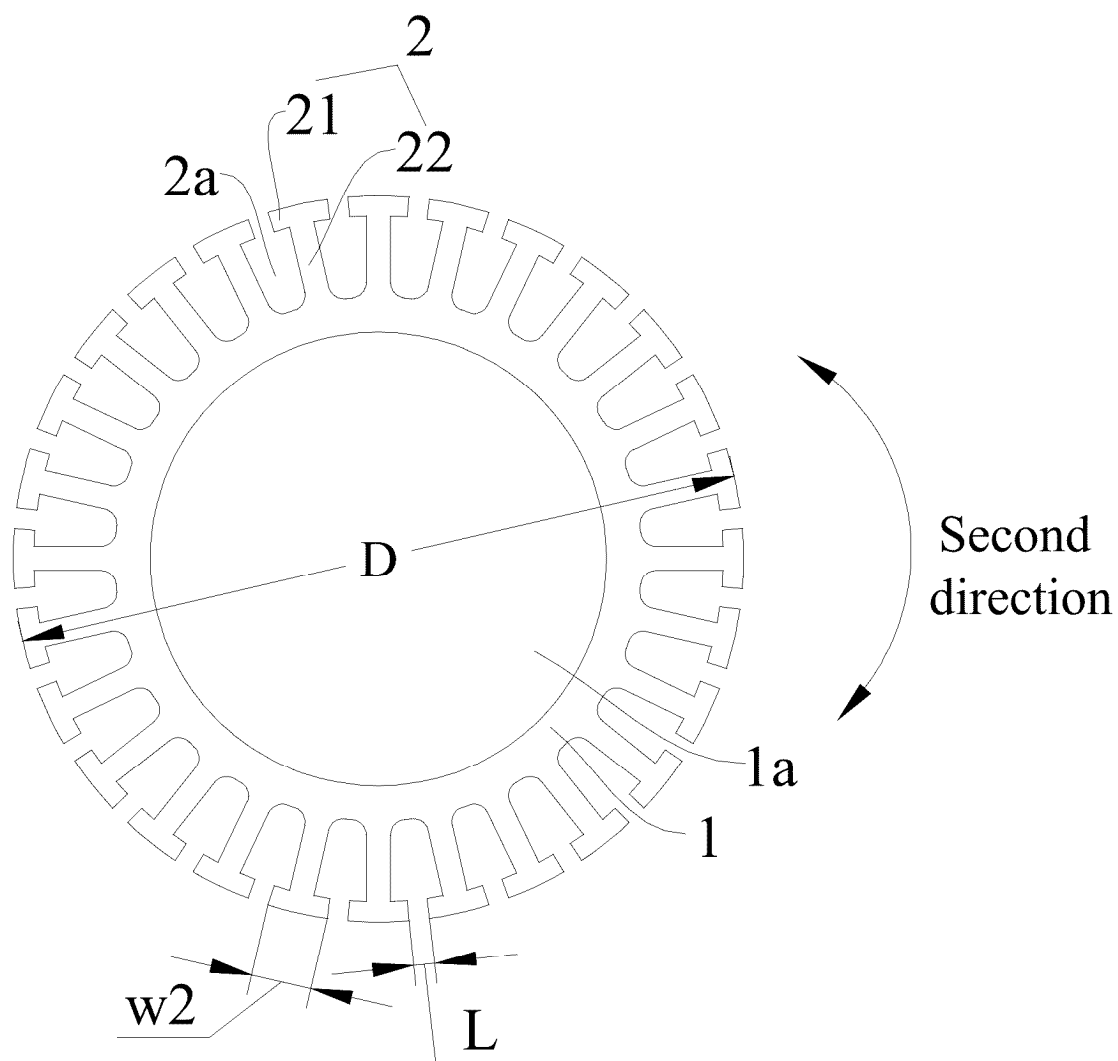


FIG. 2

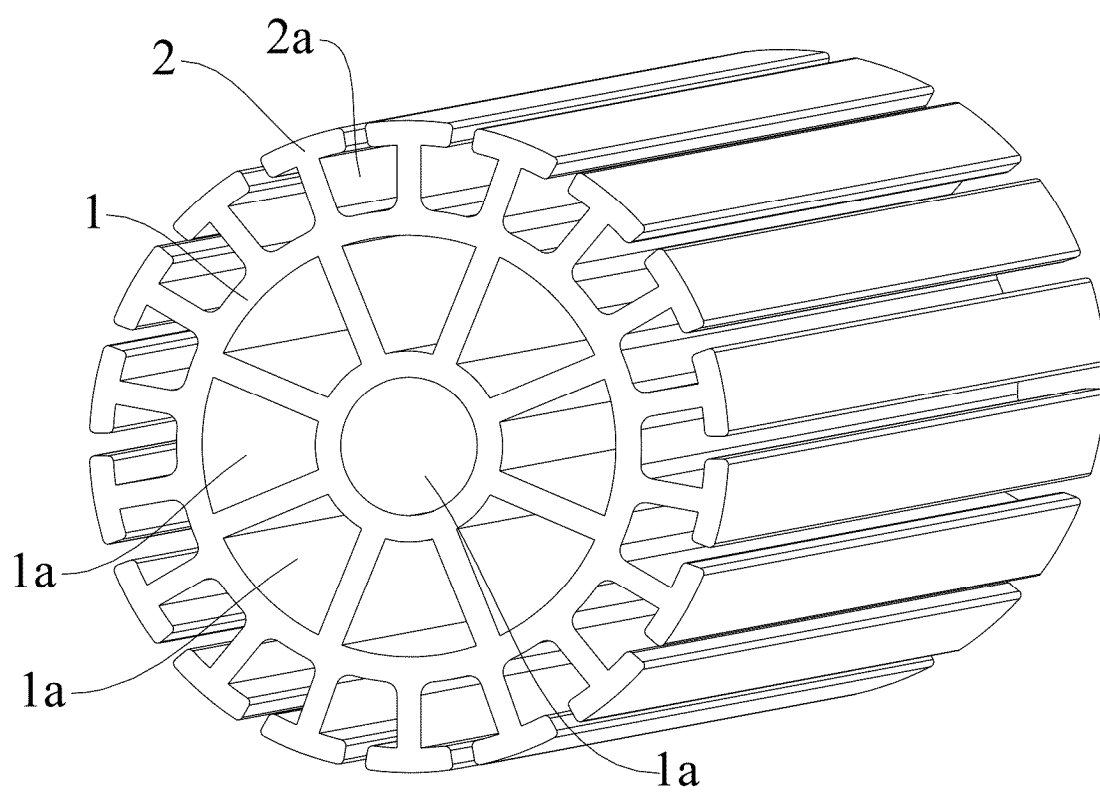


FIG. 3

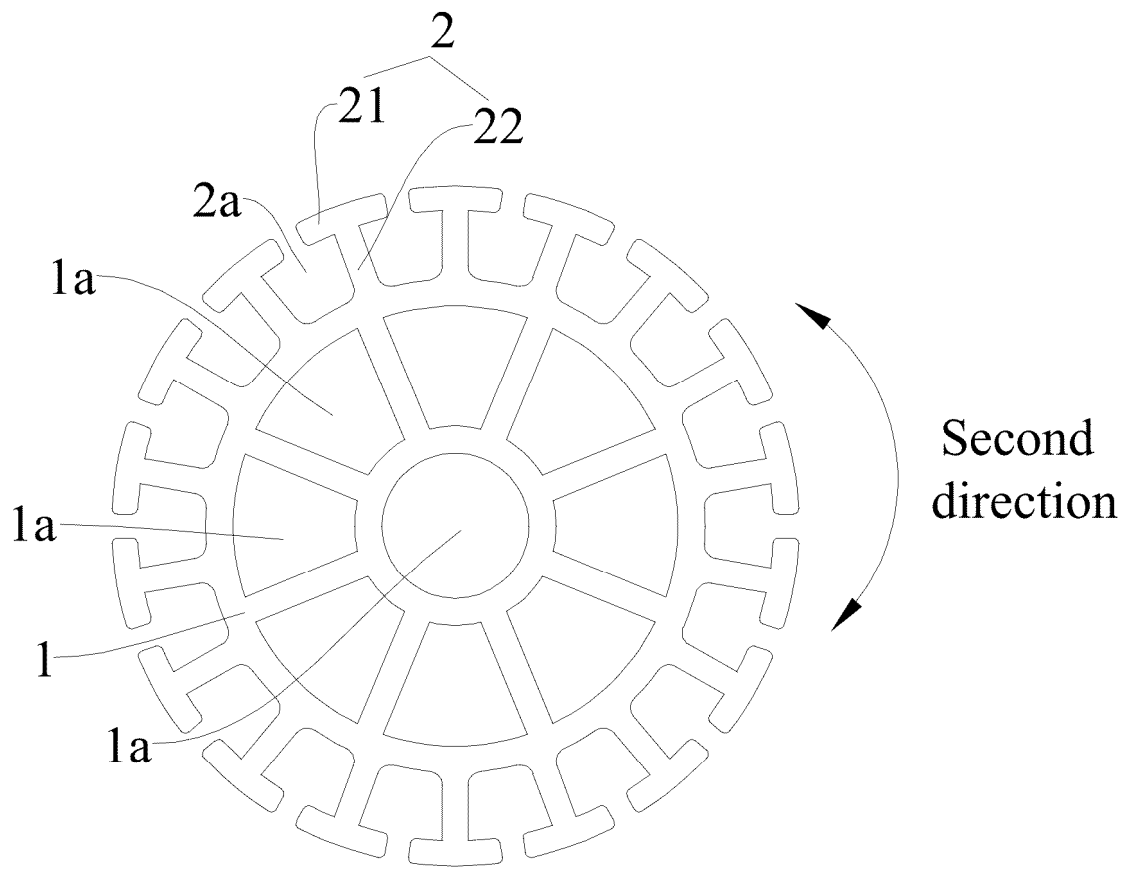


FIG. 4

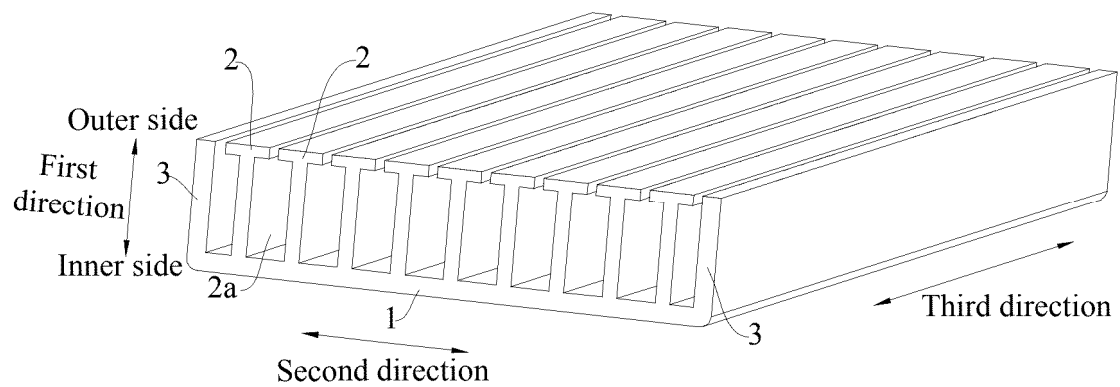


FIG. 5

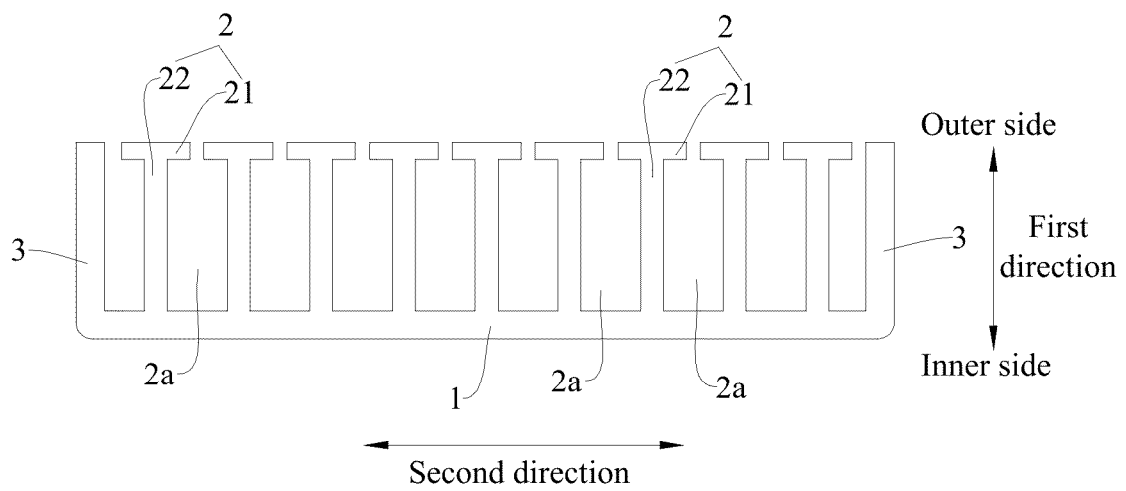


FIG. 6

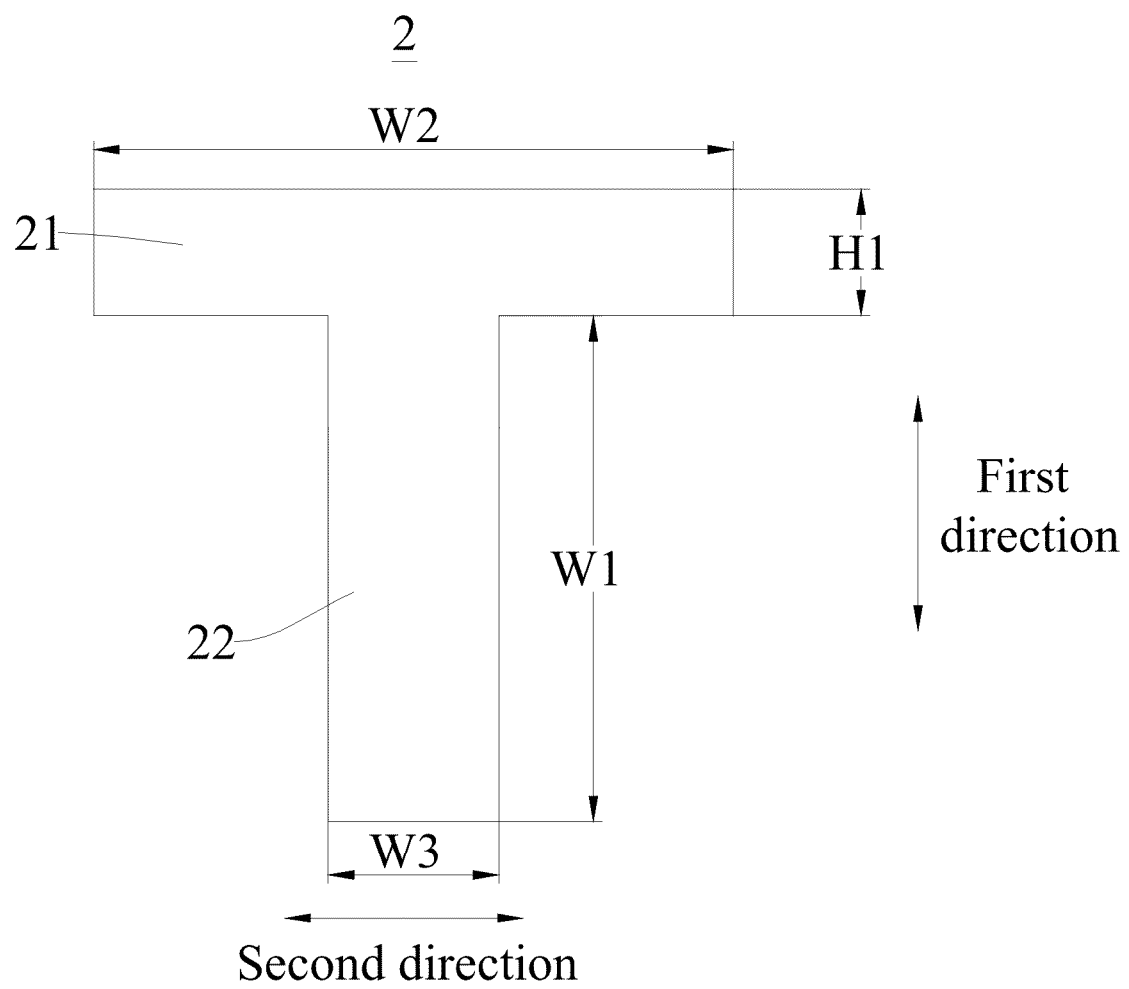


FIG. 7

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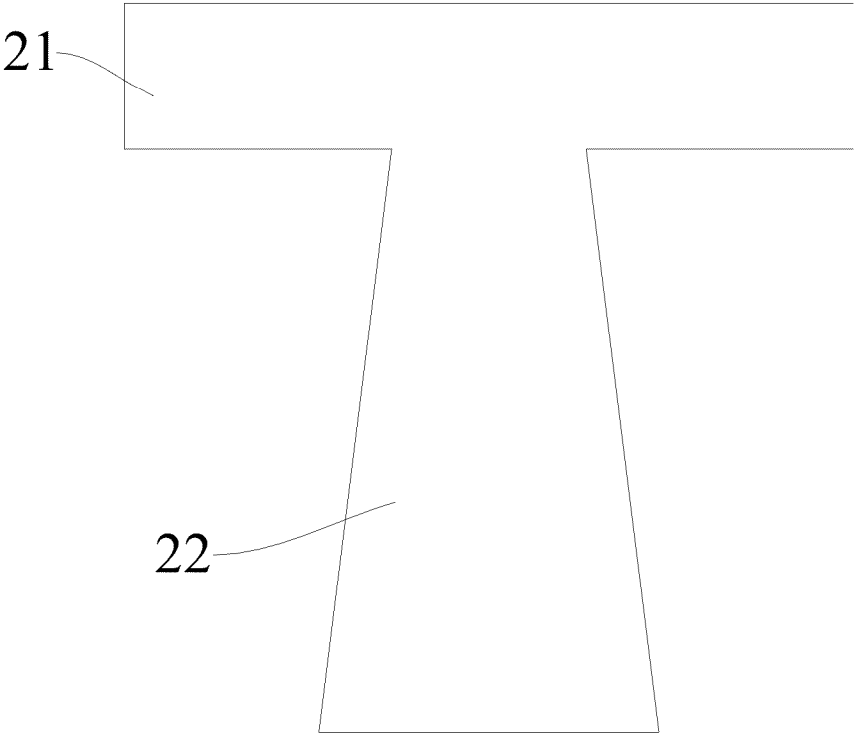


FIG. 8

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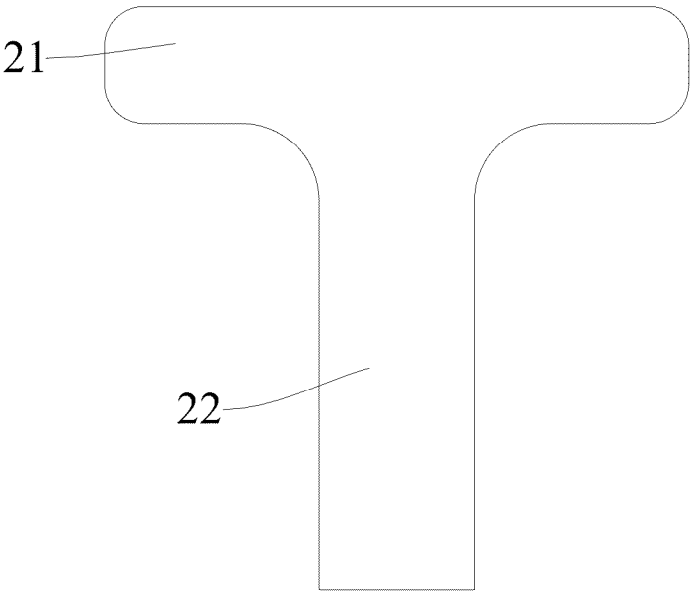


FIG. 9

2

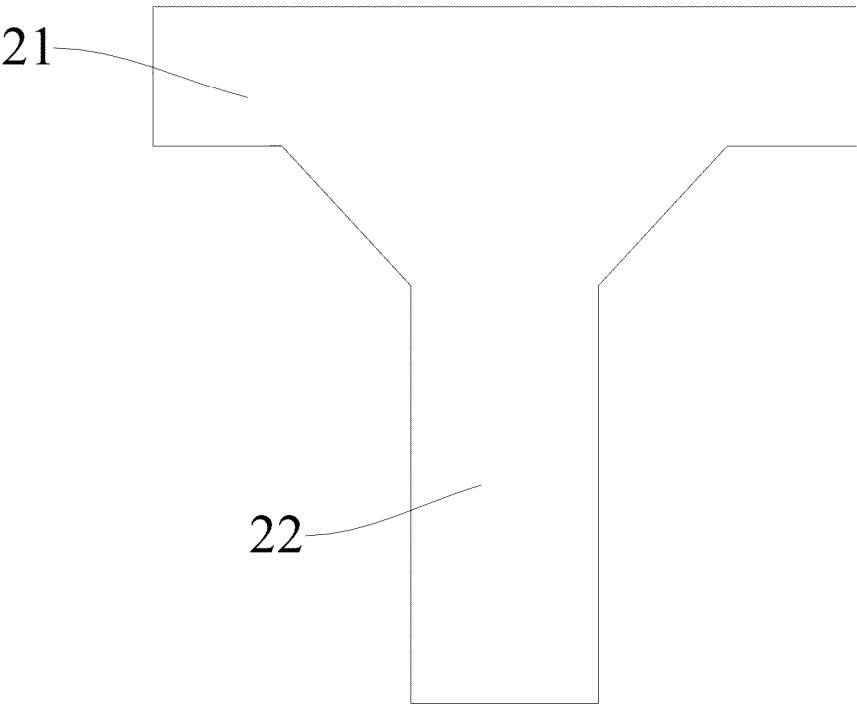


FIG. 10

2

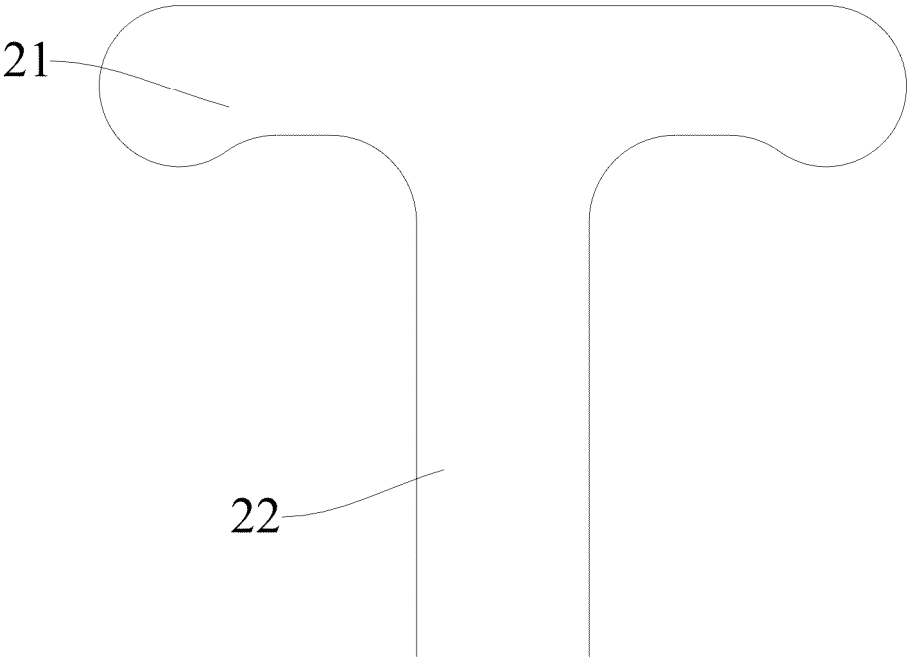


FIG. 11

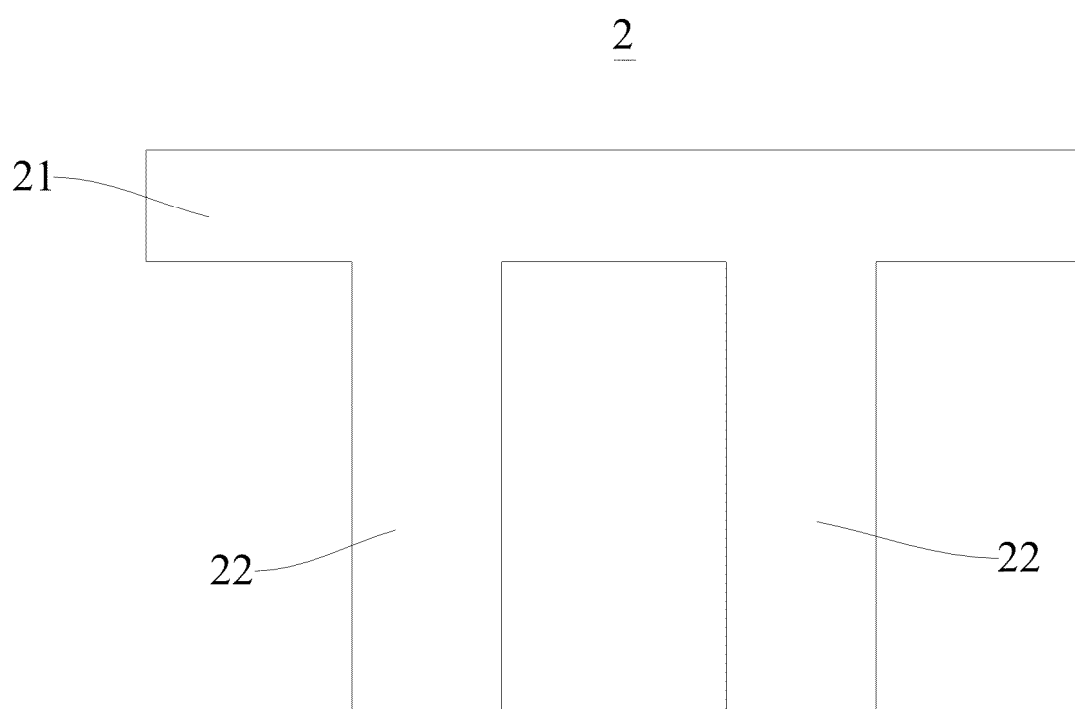


FIG. 12

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2024/099768

A. CLASSIFICATION OF SUBJECT MATTER

A24F40/40(2020.01)i; A24F40/20(2020.01)i; A24D1/20(2020.01)i

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A24

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, ENTXTC, DWPI, CNKI: 思摩尔, 麦克韦尔, 气溶胶, 烟, 基质, 介质, 材料, 制品, 基材, 芯材, 凹, 槽, 沟, 通道, 流道, 气道, 流通, 表面, 圆周, 外周, 周向, 径向, 激光, 加热, aerosol, atomiz+, vapor+, cigaret+, substrate, matrix, groove, protrude, convex, concave, surround+, radial, circumferen+, surface, channel, flow, laser, heat+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 110292208 A (YUNNAN ENDIAN TECHNOLOGY INDUSTRIAL DEVELOPMENT CO., LTD.) 01 October 2019 (2019-10-01) description, paragraphs [0007]-[0030], and figures 1 and 2	1-2, 4-20
Y	CN 110292208 A (YUNNAN ENDIAN TECHNOLOGY INDUSTRIAL DEVELOPMENT CO., LTD.) 01 October 2019 (2019-10-01) description, paragraphs [0007]-[0030], and figures 1 and 2	21
X	CN 113966175 A (JT INTERNATIONAL S.A.) 21 January 2022 (2022-01-21) description, paragraphs [0056]-[0069], and figures 6, 9 and 10	1, 8-13, 16-20
Y	CN 113966175 A (JT INTERNATIONAL S.A.) 21 January 2022 (2022-01-21) description, paragraphs [0056]-[0069], and figures 6, 9 and 10	21
X	CN 110870587 A (SHANGHAI NEW TOBACCO PRODUCT RESEARCH INSTITUTE CO., LTD. et al.) 10 March 2020 (2020-03-10) description, paragraphs [0031]-[0053], and figures 1-6	1-2, 4-13, 16-18
Y	CN 115515445 A (KT&G CORP.) 23 December 2022 (2022-12-23) description, paragraph [0056], and figures 1-3	21

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

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"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"D" document cited by the applicant in the international application	"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
"E" earlier application or patent but published on or after the international filing date	"&" document member of the same patent family
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 16 August 2024	Date of mailing of the international search report 22 August 2024
Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2024/099768

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 102946747 A (R.J. REYNOLDS TOBACCO COMPANY) 27 February 2013 (2013-02-27) description, paragraphs [0041], [0090] and [0094], and figures 1 and 6	1-2, 4-19
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E	CN 118370401 A (SMOORE INTERNATIONAL HOLDINGS LIMITED) 23 July 2024 (2024-07-23) description, paragraphs [0055]-[0126], and figures 1-3, 5 and 10	1, 8-10, 13-21
E	CN 118370412 A (SMOORE INTERNATIONAL HOLDINGS LIMITED) 23 July 2024 (2024-07-23) description, paragraphs [0051]-[0101], and figures 1-3 and 8-14	1, 8, 10, 13-21
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A	KR 20210084014 A (KT & G CORP.) 07 July 2021 (2021-07-07) entire document	1-21

INTERNATIONAL SEARCH REPORT
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PCT/CN2024/099768

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				KR	20220013383	A	04 February 2022
				EA	202193242	A1	18 March 2022
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REFERENCES CITED IN THE DESCRIPTION

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