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(71) Applicant: **Smoore International Holdings Limited
Grand Cayman, KY1-1111 (KY)**

(72) Inventors:
• **NI, Jun**
Shenzhen, Guangdong 518102 (CN)

- **ZHOU, Yong**
Shenzhen, Guangdong 518102 (CN)
- **WEI, Mingwen**
Shenzhen, Guangdong 518102 (CN)
- **TANG, Jianguo**
Shenzhen, Guangdong 518102 (CN)
- **JIN, Zutao**
Shenzhen, Guangdong 518102 (CN)
- **HU, Mengyang**
Shenzhen, Guangdong 518102 (CN)

(74) Representative: **V.O.**
P.O. Box 87930
2508 DH Den Haag (NL)

(54) **AEROSOL-GENERATING PRODUCT AND AEROSOL-GENERATING SYSTEM**

(57) Provided in the embodiments of the present application are an aerosol-generating product and an aerosol-generating system. The aerosol-generating product comprises a substrate segment, a filter segment, a support segment, a cooling segment and a stopper; the substrate segment is an integrated structure and has a first end and a second end which are opposite to each other in the length direction; the filter segment is arranged close to the second end of the substrate segment; the support segment and the cooling segment are arranged between the filter segment and the substrate segment; the stopper is arranged close to the first end of the substrate segment and is in stop fit with the substrate

segment. The aerosol-generating product provided in the embodiments of the present application limits the substrate segment to a space between the support segment and the stopper or a space between the cooling segment and the stopper, such that the position of the substrate segment falling off is relatively stable, thereby reducing the probability of the substrate segment falling off under the action of gravity due to heating, shrinkage, deformation, etc., and the probability of the substrate segment coming out due to the vibration of the aerosol-generating product during transport and use processes, and improving the structural stability of the aerosol-generating product.

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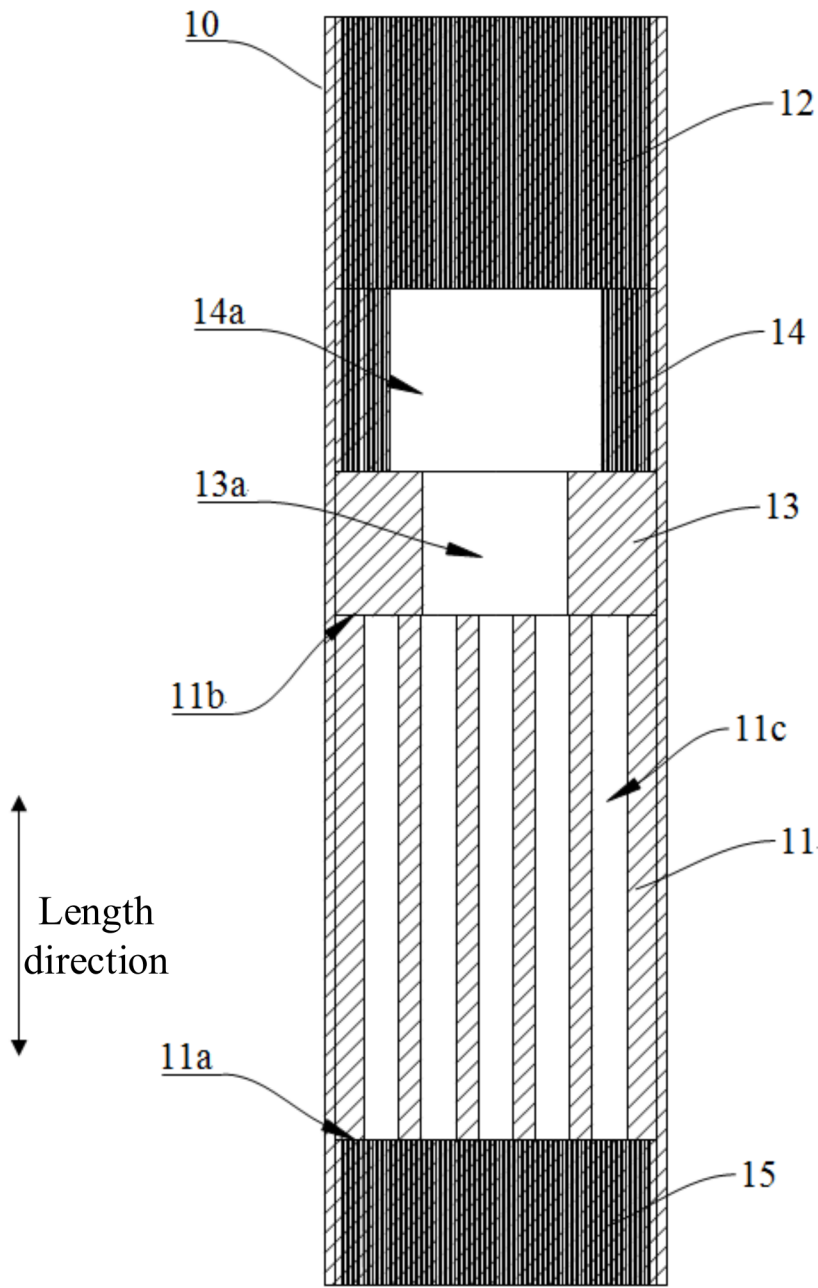


FIG. 2

Description

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application is based on and claims priority to Chinese Patent Application No. 202310929487.0 filed on July 26, 2023, which is incorporated by reference in its entirety.

TECHNICAL FIELD

[0002] The present disclosure relates to the technical field of atomization of aerosol, and in particular to an aerosol generating article and an aerosol generating system.

BACKGROUND

[0003] In recent years, with the advancement of the global tobacco control campaign, new types of tobacco articles represented by heat-not-burn tobacco articles have become more and more popular among users.

[0004] A heat-non-burn tobacco article, also known as an aerosol generating article, is provided with a substrate segment made of an aerosol generating substrate inside. The aerosol generating article is typically used in conjunction with an aerosol generating device. A heating component of the aerosol generating device may heat the substrate segment to a temperature high enough to atomize and generate the aerosol without burning, and the aerosol is discharged from the aerosol generating device for inhalation by a user.

[0005] In the related technologies, during usage and transportation, the substrate segment may be deformed and fall off due to the influence of factors such as a temperature change and an external vibration.

SUMMARY

[0006] In view of above, the embodiments of the present disclosure are expected to provide an aerosol generating article and an aerosol generating system that can decrease the probability of the substrate segment falling off.

[0007] The embodiments of the present disclosure provide an aerosol generating article, which includes a substrate segment, a filtering segment, a supporting segment, a cooling segment, and a stopper.

[0008] The substrate segment is configured for generating aerosol, where the substrate segment is an integrated structure, and the substrate segment has a first end and a second end that are opposite along a length direction;

The filtering segment is disposed approximate to the second end of the substrate segment;

The supporting segment and the cooling segment are disposed between the filtering segment and the

substrate segment; and

The stopper is disposed approximate to the first end of the substrate segment and configured for abutting engagement with the substrate segment.

[0009] In some embodiments, the aerosol generating article further includes a wrapping layer, and the wrapping layer is wrapped on circumferential outer surfaces of at least part of the stopper, the substrate segment, the supporting segment, the cooling segment, and at least part of the filtering segment.

[0010] In some embodiments, the substrate segment includes an airway hole passing at least through one end of the substrate segment along the length direction.

[0011] In some embodiments, the stopper is one of the following: a membrane structure with a gas permeability function, a mesh structure, a hollow tubular structure, or a structure formed by disposing a separator within a hollow tubular structure.

[0012] In some embodiments, the stopper is an integrated structure, the stopper is internally provided with one or more perforations, and the one or more perforations pass through two opposite ends of the stopper along the length direction.

[0013] In some embodiments, the stopper is a solid acetate fiber structure or a hollow tubular acetate fiber structure.

[0014] In some embodiments, the supporting segment is a solid acetate fiber structure.

[0015] Alternatively, the supporting segment includes a first hollow structure, a first through hole is formed by a hollow region of the first hollow structure, and the first through hole passes through two opposite ends of the supporting segment.

[0016] In some embodiments, the first hollow structure is a hollow paper tube structure, or a hollow acetate fiber structure, or a hollow aluminum foil tube structure.

[0017] In some embodiments, the supporting segment includes a spacer rib, and the spacer rib is disposed in the first through hole and connected to the first hollow structure.

[0018] In some embodiments, the cooling segment includes a second hollow structure, a second through hole is formed by a hollow region of the second hollow structure, and the second through hole passes through two opposite ends of the cooling segment.

[0019] In some embodiments, the second hollow structure is a hollow paper tube structure, or a hollow acetate fiber structure.

[0020] In some embodiments, a tube wall of the second hollow structure is internally provided with a groove channel, and the groove channel passes through at least one end of the cooling segment along an axial direction.

[0021] In some embodiments, the stopper, the substrate segment, the supporting segment, the cooling segment and the filtering segment have a same cross-sectional shape and a same cross-sectional dimension; and/or, the aerosol generating article has a columnar

structure.

[0022] In some embodiments, the stopper, the substrate segment, the supporting segment, the cooling segment and the filtering segment are cylindrical and disposed coaxially, and the length direction is the axial direction of the stopper, the substrate segment, the supporting segment, the cooling segment and the filtering segment.

[0023] The embodiments of the present disclosure provide an aerosol generating system, which includes:

an aerosol generating device; and
the aerosol generating article of any one of the foregoing embodiments of the present disclosure.

[0024] Herein, the aerosol generating device includes a heating component, and the heating component is configured for heating the substrate segment to generate the aerosol.

[0025] In the aerosol generating article according to the embodiments of the present disclosure, the abutting engagement is made between the substrate segment and the stopper, and the substrate segment is confined in the space between the supporting segment and the stopper or in the space between the cooling segment and the stopper. As such, the position of the substrate segment is relatively stable, the probability of the substrate segment falling off under gravity due to factors such as heating shrinkage and deformation can be decreased, and the probability of the substrate segment coming out due to shaking of the aerosol generating article during transportation and use can also be decreased, which can enhance the structural stability of the aerosol generating article. In addition, the stopper can also adjust the inhalation resistance, decrease the probability of the condensates generated after the aerosol condensation flowing out of the aerosol generating article, and improve the user's experience feeling. The aerosol generated by the atomization of the substrate segment is cooled by the cooling segment, to enable the use temperature of the aerosol to be suitable; and the filtering segment filters impurities carried in the aerosol, and the user's experience feeling can be improved. The supporting segment connects the structure located at two ends of the supporting segment, to enable the structural arrangement of the aerosol generating article to be more reasonable and reliable. Thereby, the overall reliability of the aerosol generating article is high.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026]

FIG. 1 is a schematic structural diagram of an aerosol generating article according to a first embodiment of the present disclosure.

FIG. 2 is a schematic cross-sectional diagram of the structure shown in FIG. 1.

FIG. 3 is a schematic cross-sectional diagram of an aerosol generating article according to a second embodiment of the present disclosure.

FIG. 4 is a schematic cross-sectional diagram of an aerosol generating article according to a third embodiment of the present disclosure.

FIG. 5 is a schematic structural diagram of the cooling segment shown in FIG. 4.

FIG. 6 is a schematic cross-sectional diagram of an aerosol generating article according to a fourth embodiment of the present disclosure.

FIG. 7 is a schematic cross-sectional diagram of an aerosol generating article according to a fifth embodiment of the present disclosure.

FIG. 8 is a schematic structural diagram of the supporting segment shown in FIG. 7.

FIG. 9 is a schematic cross-sectional diagram of an aerosol generating article according to a sixth embodiment of the present disclosure.

FIG. 10 is a schematic cross-sectional diagram of an aerosol generating article according to a seventh embodiment of the present disclosure.

FIG. 11 is a schematic structural diagram of the stopper shown in FIG. 10.

FIG. 12 is a schematic cross-sectional diagram of an aerosol generating article according to an eighth embodiment of the present disclosure. Here, the dashed arrow in the drawing indicates the flow direction of the airflow.

FIG. 13 is a schematic cross-sectional diagram of an aerosol generating article according to a ninth embodiment of the present disclosure.

FIG. 14 is a schematic cross-sectional diagram of an aerosol generating article according to a tenth embodiment of the present disclosure.

DETAILED DESCRIPTION

[0027] It should be noted that, when not conflicting, the embodiments and the technical features of the embodiments in the present disclosure may be combined with one other. The detailed description in the specific implementations should be understood as an illustrative explanation of the present disclosure, and should not be construed as any undue limitation on the present disclosure.

[0028] In the description of the embodiments of the present disclosure, the terms "inside/inner" and "outside/outer" and other indication of orientation or positional relationship are based on the orientation or positional relationship shown in the drawings. Such terms are intended only for the convenience of describing and simplifying the description of the embodiments of the present disclosure, and do not indicate or imply that the referred device or element must have a specific orientation, or be constructed and operated in a specific orientation. Therefore, such terms cannot be understood as any limitation on the embodiments of the present disclosure.

[0029] The embodiments of the present disclosure provide an aerosol generating article 1. As shown in FIGS. 1 to 14, the aerosol generating article 1 includes a substrate segment 11, a filtering segment 12, a supporting segment 13, a cooling segment 14, and a stopper 15.

[0030] The embodiments of the present disclosure provide an aerosol generating system, which includes an aerosol generating device and an aerosol generating article 1 according to any embodiment of the present disclosure. A plugged and unplugged engagement may be made between the aerosol generating article 1 and the aerosol generating device. The aerosol generating device includes a heating component for heating the substrate segment 11 to generate aerosol, and the aerosol may be discharged from the aerosol generating device for the inhalation by the user.

[0031] The substrate segment 11 is configured to generate the aerosol, that is, at least part of the substrate segment 11 is composed of an aerosol generating substrate, so that the substrate segment 11 can be used to generate the aerosol for use by the user.

[0032] The specific form of the heating component is not limited. The heating component may be a resistance heating film, an electromagnetic induction heating element, an infrared heating coating, a laser heating component, or the like, which is not limited herein.

[0033] The substrate segment 11 is an integrated structure, that is, the substrate segment 11 is integrally formed, for example, by integrated extrusion molding, integrated injection molding, integrated die casting, or the like.

[0034] The substrate segment 11 has a first end 11a and a second end 11b that are opposite along a length direction. The filtering segment 12 is disposed approximate to the second end 11b of the substrate segment 11, and the supporting segment 13 and the cooling segment 14 are disposed between the filtering segment 12 and the substrate segment 11.

[0035] It can be understood that the air from the external environment needs to pass through the substrate segment 11 to carry away the generated aerosol. In the embodiment, the air from the external environment can carry the aerosol to pass through the second end 11b of the substrate segment 11, the supporting segment 13 and the cooling segment 14 to flow to the filtering segment 12, for use by the user. The filtering segment 12 can absorb large particle droplets or other impurities generated by atomization, which can enable the user to have a better experience feeling.

[0036] The specific manner in which the air from the external environment passes through the substrate segment 11 is not limited.

[0037] For example, in some embodiments, referring to FIGS. 2 and 12, an air inlet end of the substrate segment 11 is the first end 11a of the substrate segment 11, and an air outlet end of the substrate segment 11 is the second end 11b of the substrate segment 11. In such way,

the air from the external environment can enter from the first end 11a of the substrate segment 11, and further carry the aerosol to pass through the second end 11b of the substrate segment 11, the supporting segment 13, the cooling segment 14, and the filtering segment 12, for inhalation by the user.

[0038] It can be understood that the inlet end of the substrate segment 11 is the upstream end of the substrate segment 11 approximate to the airflow direction, and the air outlet end of the substrate segment 11 is the downstream end of the substrate segment 11 approximate to the airflow direction.

[0039] In some other embodiments, the substrate segment 11 is provided with a plurality of air inlets and a plurality of air outlets, the plurality of air inlets are all located on the side perpendicular to the length direction thereof, and the plurality of air outlets are located at the second end 11b of the substrate segment 11. As such, the air from the external environment can enter the substrate segment 11 from the plurality of air inlets, and further carry the aerosol through the second end 11b of the substrate segment 11, the supporting segment 13, the cooling segment 14, and the filtering segment 12, for inhalation by the user.

[0040] In some other embodiments, the air inlet end and the air outlet end of the substrate segment 11 are both provided at the second end 11b of the substrate segment 11. That is, the air from the external environment can enter the substrate segment 11 through the second end 11b of the substrate segment 11 to carry the aerosol, and further pass through the second end 11b of the substrate segment 11, the supporting segment 13, the cooling segment 14 and the filtering segment 12, for inhalation by the user.

[0041] It should be noted that, in the embodiments of the present disclosure, the length direction does not specifically indicate that the direction in which the profile contour of the substrate segment 11 is the longest. The arrangement direction and length direction of the filtering segment 12, the supporting segment 13, the cooling segment 14 and the stopper 15 are consistent. The direction in which the aerosol generating article 1 is inserted into the aerosol generating device and the direction in which the aerosol generating article 1 is removed from the aerosol generating device are both parallel to the length direction. The dimension of the substrate segment 11 along the length direction may be longer than, shorter than, or the same as dimensions of the substrate segment 11 along other directions.

[0042] Exemplarily, in some examples, when the profile contour of the substrate segment 11 is cylindrical, the length direction is the axial direction of the substrate segment 11. It should be noted that, even when the axial dimension of the substrate segment 11 is smaller than the diameter of the substrate segment 11, the length direction of the substrate segment 11 remains the axial direction.

[0043] In some other examples, when the profile contour of the substrate segment 11 is a cuboid, the length

direction is still the direction defined above, that is, the arrangement direction of the filtering segment 12, the supporting segment 13, the cooling segment 14, and the stopper 15. Alternatively, the direction in which the aerosol generating article 1 is taken and placed, and the length direction of the substrate segment 11 may be any direction of the length, width, and height of the cuboid.

[0044] The setting positions of the supporting segment 13 and the cooling segment 14 are not limited.

[0045] In some examples, referring to FIGS. 2, 3, 4, 6, 7, 9, 10, 12 and 13, the supporting segment 13 is disposed between the cooling segment 14 and the substrate segment 11, that is, the aerosol generated by the substrate segment flows out through the supporting segment 13, the cooling segment 14, and the filtering segment 12 in sequence for inhalation by the user. The supporting segment 13 can connect and support the substrate segment 11 and the cooling segment 14 that are located at the two ends of the supporting segment 13; and the cooling segment 14 is configured to lower the temperature of the aerosol, so that the temperature of the aerosol flowing out of the filtering segment 12 can be appropriate for better use by the user.

[0046] In some other examples, referring to FIG. 14, the cooling segment 14 is disposed between the supporting segment 13 and the substrate segment 11, that is, the aerosol flows out through the cooling segment 14, the supporting segment 13, and the filtering segment 12 in sequence for inhalation by the user. The supporting segment 13 can connect and support the cooling segment 14 and the filtering segment 12 that are located at the two ends of the supporting segment 13; and the cooling segment 14 is configured to lower the temperature of the aerosol, so that the temperature of the aerosol flowing out of the filtering segment 12 can be appropriate for better use by the user.

[0047] The stopper 15 is configured for abutting engagement with the first end 11a of the substrate segment 11. That is, the stopper 15 may be abutted against the first end 11a of the substrate segment 11, to prevent the substrate segment 11 from moving in a direction away from the filtering segment 12. Specifically, referring to FIGS. 2, 3, 4, 6, 7, 9, 10, 12 and 13, when the supporting segment 13 is disposed between the cooling segment 14 and the substrate segment 11, the stopper 15 may confine the substrate segment 11 in the space between the supporting segment 13 and the stopper 15, so that the substrate segment 11 does not fall off. Referring to FIG. 14, when the cooling segment 14 is disposed between the supporting segment 13 and the substrate segment 11, the stopper 15 may confine the substrate segment 11 in the space between the cooling segment 14 and the stopper 15, so that the substrate segment 11 does not fall off.

[0048] It can be understood that the stopper 15 can be connected to the supporting segment 13 or the cooling segment 14 to acquire the force-bearing support, thereby

the abutting engagement is made between the stopper 15 and the first end 11a of the substrate segment 11.

[0049] It can be understood that the manner of abutting engagement between the stopper 15 and the substrate segment 11 is not limited to the foregoing manners. In other embodiments, the stopper 15 may also abut engagement with the side surface of the substrate segment 11.

[0050] It should be noted that the abutting engagement between the stopper 15 and the first end 11a of the substrate segment 11 may be that: the substrate segment 11 and the stopper 15 are arranged at intervals, and when the substrate segment 11 moves away from the filtering segment 12 for a certain distance, the stopper 15 is abutted against the first end 11a of the substrate segment 11. Additionally, the abutting engagement between the stopper 15 and the first end 11a of the substrate segment 11 may also be that: the stopper 15 remains being abutted against the first end 11a of the substrate segment 11.

[0051] It can be understood that, in some examples, the air from the external environment may also enter the substrate segment 11 from the stopper 15. That is, the stopper 15 is a structure through which the airflow can pass, and the air from the external environment may directly pass through the stopper 15 to enter the substrate segment 11. For example, referring to FIG. 12, the air from the external environment may pass through the stopper 15 and enter the substrate segment 11 through the first end 11a of the substrate segment 11, and further carry the aerosol generated by atomization to pass through the second end 11b of the substrate segment 11, the supporting segment 13 and the cooling segment 14 to the filtering segment 12.

[0052] Therefore, in the aerosol generating article 1 according to the embodiments of the present disclosure, the abutting engagement is made between the substrate segment 11 and the stopper 15, and the substrate segment 11 is confined in the space between the supporting segment 13 and the stopper 15 or in the space between the cooling segment 14 and the stopper 15. As such, the position of the substrate segment 11 is relatively stable, the probability of the substrate segment 11 falling off under gravity factors such as heating shrinkage deformation can be decreased, and the probability of the substrate segment 11 coming out due to the shaking of the aerosol generating article 1 during transportation and usage can also be decreased, which can enhance the structural stability of the aerosol generating article 1. In addition, the stopper 15 can also adjust the inhalation resistance, decrease the probability of the condensate generated after the aerosol condensation flowing out of the aerosol generating article 1, and improve the user's experience feeling. The aerosol generated by the atomization of the substrate segment 11 is cooled by the cooling segment 14, to enable the usage temperature of the aerosol to be suitable. The filtering segment 12 filters impurities carried in the aerosol, and the user's experience feeling can be improved. The supporting

segment 13 connects and supports the structures located at two ends of the supporting segment, to enable the structural arrangement of the aerosol generating article 1 to be more reasonable and reliable. Thereby, the overall reliability of the aerosol generating article 1 is high.

[0053] In some embodiments, referring to FIGS. 1 to 14, the aerosol generating article 1 further includes a wrapping layer 10, and the wrapping layer 10 is wrapped on circumferential outer surfaces of at least part of the stopper 15, the substrate segment 11, the supporting segment 13, the cooling segment 14, and at least part of the filtering segment 12.

[0054] Specifically, during the manufacturing process, the wrapping layer 10 may be directly wrapped on the circumferential outer surfaces of at least part of the stopper 15, the substrate segment 11, the supporting segment 13, the cooling segment 14, and at least part of the filtering segment 12 by a rolling process, to integrate the substrate segment 11, the filtering segment 12, the supporting segment 13, the cooling segment 14, and the stopper 15 together. Thereby, the overall structural strength of the aerosol generating article 1 can be improved, the probability of failure due to separation of various parts of the aerosol generating article 1 during transportation and use can be decreased, and the use reliability of the aerosol generating article 1 can be enhanced.

[0055] It can be appreciated that the wrapping layer 10 has the structural strength to decrease the probability of deformation of the aerosol generating article 1 during the use process due to airflow pressure. The wrapping layer 10 may be an integrated structure or a combined structure.

[0056] The specific material of the wrapping layer 10 is not limited, for example, one or more or a combination of materials such as: fiber paper, metal foil, metal foil composite fiber paper, Polyethylene (PE), Polyethylene composite fiber paper, Poly (butyleneadipate-co-terephthalate (PBAT)), and the like.

[0057] It should be noted that, when the wrapping layer 10 is wrapped on the entire circumferential outer surface of the filtering segment 12, the user may directly inhale the aerosol by holding the wrapping layer 10 in the user's mouth; and when the wrapping layer 10 is wrapped on the partial circumferential outer surface of the filtering segment 12, the user may directly inhale the aerosol by holding the portion of the filtering segment 12 exposed outside the wrapping layer 10 in the user's mouth. Of course, the user may also install an inhalation nozzle outside the filtering segment 12 and inhale the aerosol through the inhalation nozzle.

[0058] It can be understood that the manner of the engagement between the stopper 15 and the wrapping layer 10 is not limited. For example, in some embodiments, the engagement between the stopper 15 and the wrapping layer 10 may be formed by an interference fit. In some other embodiments, the engagement between the

stopper 15 and the wrapping layer 10 may also be formed by bonding, clamping, etc. As such, the stopper 15 can be better fixed on the wrapping layer 10, and the wrapping layer 10 can provide the force-bearing support for the stopper 15, which can be conducive for the abutting engagement between the stopper 15 and the substrate segment 11. Of course, there may also be a gap between the wrapping layer 10 and the stopper 15, through which the air from the external environment can enter the substrate segment 11.

[0059] It can be understood that there is the force between the substrate segment 11 and the wrapping layer 10, to suppress the tendency of the substrate segment 11 to move. For example, the outer circumferential surface of the substrate segment 11 is bonded to the wrapping layer 10, and the position of the substrate segment 11 is fixed by the frictional force between the outer circumferential surface of the substrate segment 11 and the wrapping layer 10. There is the interference fit or transition fit between the outer circumferential surface of the substrate segment 11 and the wrapping layer 10, so that the friction force is increased by extrusion between the outer circumferential surface of the substrate segment 11 and the wrapping layer 10.

[0060] In the related technologies, the substrate segment is prone to movement due to the shaking of the aerosol generating article during the transportation and use process, and the substrate segment is prone to shrinkage and deformation during the heating process, thereby falling out from the wrapping layer under the action of gravity, affecting the structural reliability of the aerosol generating article.

[0061] In the embodiment, by setting the wrapping layer 10, the substrate segment 11, the filtering segment 12, the supporting segment 13, the cooling segment 14 and the stopper 15 are integrated together to improve the overall structural strength of the aerosol generating article 1. The abutting engagement is made between the substrate segment 11 and the stopper 15 to restrict the movement range of the substrate segment 11 in the wrapping layer 10, so that the position of the substrate segment 11 in the wrapping layer 10 is stable. As such, the probability of the substrate segment 11 coming out of the wrapping layer 10 due to the shaking of the aerosol generating article 1 during the transportation and use process can be decreased; at the same time, the probability of the shrinkage and deformation of the substrate segment 11 due to heating and falling out from the wrapping layer 10 due to factors such as gravity can be also decreased.

[0062] The specific ingredient of the aerosol generating substrate is not limited herein. Exemplarily, the aerosol generating substrate may include a plant ingredient, an auxiliary ingredient, an aerosol former ingredient, a binder ingredient, etc.

[0063] In some embodiments, the plant ingredient is one or more or a combination of several kinds of powder formed by performing crushing treatment on tobacco raw

materials, tobacco fragments, tobacco stems, tobacco powder, fragrant plants, etc. The plant ingredient is the core source of the fragrance of the article. Endogenous substances in the plant ingredient, such as nicotine, enter the human bloodstream through atomization, which promotes the pituitary gland to produce dopamine, thus achieving physiological satisfaction.

[0064] In some embodiments, the auxiliary ingredient may be one or more or a combination of several materials of an inorganic filler, a lubricating agent and an emulsifying agent. The inorganic filler includes one or more or a combination of several materials of heavy calcium carbonate, light calcium carbonate, zeolite, attapulgite, talcum powder and diatomite. The inorganic filler may provide a skeleton supporting effect for the plant component, at the same time, the inorganic filler also has micro holes, and the wall material porosity after the plant ingredient is formed may be improved, so that the aerosol release rate may be improved.

[0065] The lubricating agent includes one or more or a combination of several materials of candelilla wax, Brazil wax, shell-lac, helianthus annuus wax, rice bran, beeswax, stearic acid and palmitic acid. The lubricating agent may increase the mobility of granules, decrease the friction among the granules, enable the integral granule distribution density to be uniform, reduce the pressure required for mold forming, and reduce the mold abrasion.

[0066] The emulsifying agent includes one or more or a combination of several materials of polyglycerol fatty acid ester, Tween-80 and polyvinyl alcohol. The emulsifying agent (also referred to as a surfactant) can reduce the interfacial tension between water-soluble and water-insoluble components in the mixed system, and further form a robust film on a droplet surface or form a double electric layer on the droplet surface due to the charge(s) given by the emulsifier, which can prevent the droplet coalescence and maintain a uniform emulsion. Emulsification and homogenization of two immiscible components can improve the consistency of article quality.

[0067] The aerosol former ingredient has a function of generating a great amount of steam when being heated, so that the aerosol volume of the smoke generating article is improved. In one embodiment, the aerosol former may include one or a combination of several materials of monohydric alcohol (such as menthol); polyhydric alcohol (such as propylene glycol, triethylene glycol, 1,3-butanediol, and glycerol); ester of polyhydric alcohol (such as glycerol monoacetate, diacetin, or glyceryl triacetate); monocarboxylic acid; and polybasic carboxylic acid (such as lauric acid, and myristic acid) or aliphatic ester of polybasic carboxylic acid (such as dimethyl dodecanedioate, dimethyl tetradecanedioate, erythritol, 1,3-butanediol, tetraethylene glycol, triethyl citrate, propylene carbonate, ethyl laurate, Triactin, meso-erythritol, a diacetin mixture, diethyl suberate, triethyl citrate, benzyl benzoate, benzyl phenylacetate, ethyl vanillate, glycerin tributyrates, and lauryl acetate).

[0068] In some embodiments, the binder ingredient is

extracted from natural plants, and is non-ionized modified viscous polysaccharide including one or a combination of several materials of tamarind polysaccharide, Pullulan, algal polysaccharide, locust bean gum, guar gum, and xyloglucan. The binder is in close contact with the interface of the ingredient material of the article by wetting, resulting in intermolecular attraction, thereby playing the role of binding the powder, liquid, etc. of the ingredient material. At the same time, the natural plants may be selected. In addition, the extraction and non-ionization of the binder can prevent the release of harmful substances such as methanol, formaldehyde, and acrolein caused by colloid modification, which can improve the safety of articles.

[0069] In some embodiments, referring to FIGS. 2 to 4, 6, 7, 9, 10 and 12 to 14, the substrate segment 11 has an airway hole 11c passing at least through one end of the substrate segment 11 along the length direction.

[0070] In such way, the aerosol generated by the heating and atomization of the substrate segment 11 can be directly released from the airway hole 11c, and there is sufficient space for releasing the aerosol, so that the utilization rate of the aerosol can be improved.

[0071] It can be understood that the substrate segment 11 having the airway hole 11c that passes at least through one end of the substrate segment 11 in the length direction may include a variety of cases.

[0072] In a first case, the airway hole 11c only passes through one end of the substrate segment 11 facing towards the stopper 15, that is, the airway hole 11c is formed as a blind hole, where one end is open and the other end is closed. The air from the external environment may enter the airway hole 11c to carry away the aerosol generated by atomization to flow to the filtering segment 12.

[0073] In a second case, the airway hole 11c only passes through one end of the substrate segment 11 facing towards the filtering segment 12, that is, the airway hole 11c is formed as a blind hole, where one end is open and the other end is closed. From the airway hole 11c, the air from the external environment may carry the aerosol and flow out directly from the substrate segment 11 to the filtering segment 12. In a third case, the airway hole 11c passes through both ends of the substrate segment 11 along the length direction, that is, the airway hole 11c passes through both the end of the substrate segment 11 facing towards the stopper 15 and the end of the substrate segment 11 facing towards the filtering segment 12. In other words, both ends of the airway hole 11c are open, and the air from the external environment enters the airway hole 11c, to carry away the aerosol directly to flow to the filtering segment 12; and thus, the aerosol utilization rate is high.

[0074] The number of the airway holes 11c is not limited, and there may be one, or two or more airway holes.

[0075] It can be understood that micro holes are formed in the substrate segment 11, and the micro holes

are connected with each other to form micro airways. A part of the micro holes are connected with the airway holes 11c, and another part of the micro airways directly pass through the air inlet end and the air outlet end of the substrate segment 11. In such way, the aerosol can be discharged from the substrate segment 11 in various manners. For example, the aerosol generated by heating the substrate segment 11 may directly enter the airway hole 11c, and further be carried by the air from the external environment to be discharged. Alternatively, the air from the external environment may directly enter the micro airway, and further carry and discharge the aerosol in the micro airway. Alternatively, the aerosol may enter the airway hole 11c through the micro airway.

[0076] It can be understood that the connection between the micro holes may be that: some of the micro holes are connected with each other and some of the micro holes are not connected with each other; or, all of the micro holes are connected with each other. For example, in the embodiment in which the substrate segment 11 is a combination of particles, the gaps between the particles constitute the micro holes, where the dimension of the micro holes is determined by the gaps between the particles of the substrate segment 11.

[0077] It should be noted that the airway hole 11c is a hole in a macroscopic sense and can be recognized by the naked eyes; and the micro hole is a hole in a spectral sense and cannot be recognized by the naked eyes.

[0078] The airway hole 11c and the micro hole can increase the surface area of the substrate segment 11, which can facilitate heat transfer, and improve heating efficiency. The aerosol generating substrate in the substrate segment 11 is heated to release the aerosol, and the aerosol is transported to the filtering segment 12 under the action of negative pressure generated by the user's inhalation. The airway hole 11c and the micro hole can reduce the resistance to draw of the user's inhalation, improve the user's experience feeling, and also reduce the adverse effects of the condensed aerosol remaining in the substrate segment 11 and affecting the airflow.

[0079] With reference to the implementation shown in FIG. 2, the stopper 15 is a solid acetate fiber structure filled with acetate fiber tows, and there are gaps between the acetate fiber tows to form airflow channels. When the aerosol generating article 1 is heated, the external airflow, such as air, can enter the interior of the substrate segment 11 through the airflow channels in the stopper 15 for diffusion. The substrate segment 11 is internally provided with micro holes, and the micro holes are at least partially connected with each other as well as connected to the airway hole 11c. The aerosol generated by the substrate of the substrate segment 11 surrounding the airway hole 11c (i.e., the part of the substrate segment 11 that is exposed to the airway hole 11c) directly enters the airway hole 11c, and the aerosol generated by other parts of the substrate segment 11 (i.e., the parts of the substrate segment 11 that are not exposed to the airway hole 11c) may be accumulated into the airway hole 11c

through the micro holes. In such way, during the inhalation process, the air entering from the airflow channel of the stopper 15 can carry the aerosol accumulated in the airway hole 11c to a first through hole 13a of the supporting segment 13 and a second through hole 14a of the cooling segment 14 for cooling, and finally enter the user's mouth after being filtered by the filtering segment 12.

[0080] The specific structure of the stopper 15 is not limited.

[0081] In some examples, the stopper 15 is one of the following: a membrane structure with a gas permeability function, a mesh structure, a hollow tubular structure, or a structure formed by disposing a separator within a hollow tubular structure.

[0082] When the stopper 15 is the membrane structure with the permeability function, referring to FIG. 13, the membrane structure is provided with many micro holes, and the air from the external environment may pass through the stopper 15 via the micro holes to enter the substrate segment 11. On the one hand, it can decrease the probability of the substrate segment 11 falling out from the wrapping layer 10 after heating, adsorb the condensates formed by the condensation of the aerosol towards the first end 11a of the substrate segment 11, and decrease the probability of the condensates falling out from the wrapping layer 10 and contaminating the aerosol generating device. On the other hand, the dimension of the aerosol generating article 1 along the length direction can be reduced to enable the structure of the aerosol generating article 1 to be more compact; or, the length of the substrate segment 11 can be increased without changing the length of the aerosol generating article 1, thereby increasing the aerosol content.

[0083] It can be understood that the micro hole is a hole in a microscopic sense, and cannot be directly recognized by the naked eyes.

[0084] When the stopper 15 is the mesh structure, referring to FIG. 14, the dimension of the stopper 15 along the length direction is very small, and the stopper 15 may be composed by several crisscrossing filamentous structures interwoven. The air from the external environment may enter the substrate segment 11 from the gaps between the several filamentous structures. On the basis of realizing the abutting engagement between the stopper 15 and the substrate segment 11 that is heated and reduced, the overall dimension of the reduced aerosol generating article 1 can be effectively reduced, so that the structure is more compact.

[0085] When the stopper 15 is the hollow tubular structure, referring to FIG. 12, on the one hand, it can reduce the substrate segment 11 falling out from the wrapping layer 10 after heating and shrinking; and on the other hand, due to the hollow structure, enough air from the external environment can be stored in the stopper 15, which can be beneficial to the sufficient heating and releasing of the substrate segment 11 and also facilitate the extraction of the aerosol.

[0086] The hollow tubular structure may be a hollow paper tube, a hollow aluminum foil paper tube, or the like.

[0087] When the stopper 15 is the structure formed by disposing the separator within the hollow tubular structure, referring to FIGS. 10 and 11, the separator can further enhance the stopping capacity of the stopper 15 and provide sufficient support for the substrate segment 11.

[0088] In some embodiments, referring to FIG. 9, the stopper 15 is an integrated structure that is internally provided with one or more perforations 15a, and the one or more perforations 15a penetrate through two opposite ends of the stopper 15 along the length direction.

[0089] Referring to FIG. 9, the air from the external environment can enter the substrate segment 11 through the perforation(s) 15a, and the condensates formed by the condensation of the aerosol towards the first end 11a of the substrate segment 11 can also be absorbed by the stopper 15, thereby enhancing the stopping reliability of the stopper 15.

[0090] It can be appreciated that, in some examples, at least part of the perforations 15a are abutted on to the airway hole 11c, so that the air from the external environment, after entering through the perforation(s) 15a, can quickly flow into the airway hole 11c, thereby increasing the efficiency of the aerosol extraction.

[0091] In the embodiment, the integral molding manner of the stopper 15 is not limited. The stopper 15 may be an integrated extrusion molding structure; the stopper 15 may be an integrated injection molding structure; the stopper 15 may be an integrated die casting structure, or the like. The molding manner is simple and the molding speed is fast.

[0092] In some embodiments, referring to FIGS. 2 to 4, 6 and 7, the stopper 15 is a solid acetate fiber structure filled with acetate fiber tow. On the one hand, it can adsorb the condensates formed by the condensation of the aerosol towards the first end 11a of the substrate segment 11, and decrease the probability of the condensates being released from the aerosol generating article 1 and causing contamination to the aerosol generating device, to facilitate the cleaning of the aerosol generating device. On the other hand, it can increase the inhalation resistance, to enable the amount of the aerosol generated per unit of time to be more reasonable and further enhance the user's experience feeling.

[0093] Of course, in some other examples, the stopper 15 may also be a hollow tubular acetate structure, where the portion between the inner wall and the outer wall of the hollow tubular acetate structure is filled with acetate fiber tows.

[0094] It can be understood that the acetate fiber refers to cellulose acetate fiber, also known as acetyl cellulose or cellulose acetate. The acetate fiber is a chemically modified macromolecular compound obtained by esterifying hydroxyl groups in cellulose molecules with acetic acid, including diacetate fiber and triacetate fiber, which

have good acid and alkali resistance and organic solvent resistance.

[0095] It can be understood that, in some examples, the stopper 15 may further include an aerosol generating substrate, which can also participate in the heating process, provide the aerosol, and increase the aerosol content while preventing the substrate segment 11 from deforming and falling off due to the heating.

[0096] The specific structure of the filtering segment 12 is not limited.

[0097] In some examples, referring to FIGS. 2 to 4, 6, 7, 9, 10 and 12 to 14, the filtering segment 12 is a solid acetate fiber structure. On the one hand, the filtering segment 12 can filter the impurities contained in the aerosol, adsorb the condensates or large particle droplets formed by the condensation of the aerosol, to keep the aerosol dry and increase the user's experience feeling. On the other hand, the filtering segment 12 can also adjust the inhalation resistance to make the amount of the aerosol generated per unit of time more reasonable.

[0098] Of course, in some other examples, the filtering segment 12 may also be a porous structure by extrusion molding, or a porous structure by injection molding, or a porous structure by die casting, or the like.

[0099] The material of the filtering segment 12 is not limited. For example, the material of the filtering segment 12 includes, but is not limited to, one or more or a combination of materials such as: polyethylene (PE), Polylactic acid (PLA, also referred to as polylactide), Poly (butylene adipate-co-terephthalate (PBAT), Polypropylene (PP), acetate fiber, and propylene fiber.

[0100] In some other examples, referring to FIGS. 2 to 4, 6 to 7, 9, 10 and 12 to 14, the supporting segment 13 includes a first hollow structure. The first through hole 13a is formed by the hollow region of the first hollow structure, and the first through hole 13a passes through two opposite ends of the supporting segment 13. In such way, the aerosol can flow to the filtering segment 12 through the first through hole 13a, and the first through hole 13a can extend the flow path and the flow area of the aerosol. Thereby, the flow rate of the aerosol can be slowed down, which can realize the cooling effect, and make the use temperature of the aerosol more suitable.

[0101] It can be understood that the first through hole 13a passes through two opposite ends of the supporting segment 13 along the length direction. In the embodiments of the present disclosure, the length direction of the substrate segment 11, the length direction of the supporting segment 13, the length direction of the cooling segment 14, and the length direction of the filtering segment 12 are parallel to the length direction of the aerosol generating article 1.

[0102] The specific structure of the first hollow structure is not limited. For example, the first hollow structure may be a hollow paper tube structure or a hollow aluminum foil tube structure. The hollow paper tube structure and the hollow aluminum foil tube structure have good heat resistance, are not prone to deformation when

heated, and can still maintain the shapes after the heat conduction, which can enhance the structural stability of the aerosol generating article 1.

[0103] The first hollow structure may be a hollow acetate fiber structure, a hollow aluminum foil paper tube structure, a hollow silica gel structure, or the like, which is not limited thereto. For example, referring to FIG. 3, the first hollow structure is the hollow acetate fiber structure; and referring to FIG. 2, the first hollow structure is the hollow paper tube structure.

[0104] In some examples, referring to FIGS. 7 and 8, the supporting segment 13 includes a spacer rib 131, and the spacer rib 131 is disposed in the first through hole 13a and connected to the first hollow structure. In such way, the structural strength of the supporting segment 13 can be enhanced, which can facilitate the supporting segment 13 being connected with the structure that supports both ends of the supporting segment 13, and thus the overall stability of the aerosol generating article 1 can be enhanced.

[0105] The material of the supporting segment 13 is not limited. For example, the material of the filtering segment 12 includes, but is not limited to, one or more or a combination of materials such as: polyethylene (PE), Polylactic acid (PLA, also referred to as polylactide), Poly (butyleneadipate-co-terephthalate (PBAT), Polypropylene (PP), acetate fiber, and propylene fiber.

[0106] The specific structure of the cooling segment 14 is not limited.

[0107] In some embodiments, referring to FIGS. 2 to 4, 6, 7, 9, 10 and 12 to 14, the cooling segment 14 includes a second hollow structure. The second through hole 14a is formed by the hollow region of the second hollow structure, and the second through hole 14a passes through two opposite ends of the cooling segment 14. In such way, the aerosol can flow to the filtering segment 12 through the second through hole 14a, and the second through hole 14a can extend the flow path and the flow area of the aerosol. Thereby, the flow rate of the aerosol can be slowed down, which can realize the cooling effect, and make the use temperature of the aerosol more suitable.

[0108] The specific structure of the second hollow structure is not limited.

[0109] In some examples, the second hollow structure may be a hollow paper tube structure or a hollow acetate fiber structure, which is lightweight, and facilitates reducing the overall weight of the aerosol generating article 1. The hollow region of the second hollow structure can be used to reduce the temperature of the aerosol. For example, referring to FIG. 2, the second hollow structure may be the hollow acetate fiber structure; and referring to FIG. 3, the second hollow structure may be the hollow paper tube structure.

[0110] In some embodiments, referring to FIG. 4, a tube wall of the second hollow structure is internally provided with a groove channel 14b, and the groove channel 14b passes through at least one end of the

cooling segment 14 along the axial direction. The groove channel 14b can further reduce the temperature of the aerosol and improve the cooling effect of the cooling segment 14.

[0111] Referring to FIG. 5, the second hollow structure may be a hollow corrugated tube structure. The hollow corrugated tube has an inner wall and an outer wall, the inner wall defines a hollow space, the groove channel 14b is provided between the inner wall and the outer wall, and the cross-section of the region between the inner wall and the outer wall is substantially wavy.

[0112] In some embodiments, a fragrant substrate is disposed in the groove channel 14b. In such way, the flavor of the aerosol can be enriched and the user's experience feeling can be improved.

[0113] The material of the cooling segment 14 is not limited. For example, the material of the cooling segment 14 includes, but is not limited to, one or more or a combination of materials such as: polyethylene (PE), Polylactic acid (PLA, also referred to as polylactide), Poly (butyleneadipate-co-terephthalate (PBAT), Polypropylene (PP), acetate fiber, and propylene fiber.

[0114] It can be understood that the materials of the supporting segment 13, the cooling segment 14, and the filtering segment 12 may be the same or different.

[0115] In some embodiments, referring to FIGS. 2 to 14, the stopper 15, the substrate segment 11, the supporting segment 13, the cooling segment 14, and the filtering segment 12 may have the same cross-sections and the same cross-sectional dimensions. In such way, the installation engagement between the stopper 15, the substrate segment 11, the supporting segment 13, the cooling segment 14 and the filtering segment 12 can be facilitated, the requirement on the dimension of the wrapping layer 10 can be reduced, and the installation reliability of the aerosol generating article 1 can be increased.

[0116] The molding manner of the supporting segment 13, the cooling segment 14, and the filtering segment 12 is not limited. The supporting segment 13, the cooling segment 14, and the filtering segment 12 may be integrally formed by extrusion molding, injection molding, die casting, or the like.

[0117] In some embodiments, referring to FIGS. 2 to 14, the stopper 15, the substrate segment 11, the supporting segment 13, the cooling segment 14, and the filtering segment 12 are cylindrical and arranged coaxially. The length direction is the axial direction of the stopper 15, the substrate segment 11, the supporting segment 13, the cooling segment 14, and the filtering segment 12.

[0118] The stopper 15, the substrate segment 11, the supporting segment 13, the cooling segment 14 and the filtering segment 12 are abutted together along the axial direction, and the engagement between respective segments is simple. Thus, the difficulty of wrapping the wrapping layer 10 on the outside of the respective segments can be reduced, and the manufacturing difficulty of the aerosol generating article 1 can be also reduced.

[0119] The cross-sectional shape of the aerosol generating article 1 is not limited. In some examples, referring to FIGS. 1 to 14, the cross-sectional shape of the aerosol generating article 1 is substantially circular, i.e., the overcall structure of the aerosol generating article 1 is substantially columnar. In some other examples, the cross-section of the aerosol generating article 1 is substantially rectangular, i.e. the overcall structure of the aerosol generating article 1 is substantially rectangular cylindrical.

[0120] In the description of the present disclosure, a description with reference to the terms "one embodiment", "some embodiments", "example", "specific example" and "some examples" or the like means that a specific feature, structure, material, or characteristic described in conjunction with the embodiment or example is included in at least one embodiment or example of the embodiments of the present disclosure. In the present disclosure, the illustrative expression of the above terms is not necessarily directed to the same embodiment or example. Moreover, the specific feature, structure, material, or characteristic described may be combined 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 disclosure and features of different embodiments or examples without contradicting each other.

[0121] The foregoing is intended to illustrate merely preferred embodiments of the present disclosure, and is not intended to limit the present disclosure. Those skilled in the art can appreciate that various modifications and variations can be made to the present disclosure. Any modification, equivalent substitution, improvement, etc. made within the spirit and principle of the present disclosure shall be included within the scope of protection of the present disclosure.

Claims

1. An aerosol generating article, comprising:

a substrate segment, configured for generating aerosol, wherein the substrate segment is an integrated structure, and the substrate segment has a first end and a second end that are opposite along a length direction;
a filtering segment, disposed approximate to the second end of the substrate segment;
a supporting segment and a cooling segment, disposed between the filtering segment and the substrate segment; and
a stopper, disposed approximate to the first end of the substrate segment and configured for abutting engagement with the substrate segment.

2. The aerosol generating article of claim 1, further

comprising: a wrapping layer, wherein the wrapping layer is wrapped on circumferential outer surfaces of at least part of the stopper, the substrate segment, the supporting segment, the cooling segment, and at least part of the filtering segment.

3. The aerosol generating article of claim 1, wherein the substrate segment comprises an airway hole passing at least through one end of the substrate segment along the length direction.

4. The aerosol generating article of claim 1, wherein the stopper is one of the following: a membrane structure with a gas permeability function, a mesh structure, a hollow tubular structure, or a structure formed by disposing a separator within a hollow tubular structure.

5. The aerosol generating article of claim 1, wherein the stopper is an integrated structure, the stopper is internally provided with one or more perforations, and the one or more perforations pass through two opposite ends of the stopper along the length direction.

6. The aerosol generating article of claim 1, wherein the stopper is a solid acetate fiber structure or a hollow tubular acetate fiber structure.

7. The aerosol generating article of claim 1, wherein the supporting segment is a solid acetate fiber structure; or, the supporting segment comprises a first hollow structure, a first through hole is formed by a hollow region of the first hollow structure, and the first through hole passes through two opposite ends of the supporting segment.

8. The aerosol generating article of claim 7, wherein the first hollow structure is a hollow paper tube structure, or a hollow acetate fiber structure, or a hollow aluminum foil tube structure.

9. The aerosol generating article of claim 7, wherein the supporting segment comprises a spacer rib, and the spacer rib is disposed in the first through hole and connected to the first hollow structure.

10. The aerosol generating article of claim 1, wherein the cooling segment comprises a second hollow structure, a second through hole is formed by a hollow region of the second hollow structure, and the second through hole passes through two opposite ends of the cooling segment.

11. The aerosol generating article of claim 10, wherein the second hollow structure is a hollow paper tube structure, or a hollow acetate fiber structure.

12. The aerosol generating article of claim 10, wherein a tube wall of the second hollow structure is internally provided with a groove channel, and the groove channel passes through at least one end of the cooling segment along an axial direction. 5
13. The aerosol generating article of claim 1, wherein the stopper, the substrate segment, the supporting segment, the cooling segment and the filtering segment have a same cross-sectional shape and a same cross-sectional dimension; and/or, the aerosol generating article is in a columnar structure. 10
14. The aerosol generating article of claim 1, wherein the stopper, the substrate segment, the supporting segment, the cooling segment and the filtering segment are cylindrical and disposed coaxially, and the length direction is the axial direction of the stopper, the substrate segment, the supporting segment, the cooling segment and the filtering segment. 15
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15. An aerosol generating system, comprising:
- an aerosol generating device; and
the aerosol generating article of any one of claims 1 to 14; 25
wherein the aerosol generating device comprises a heating component, configured for heating the substrate segment to generate the aerosol. 30

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FIG. 1

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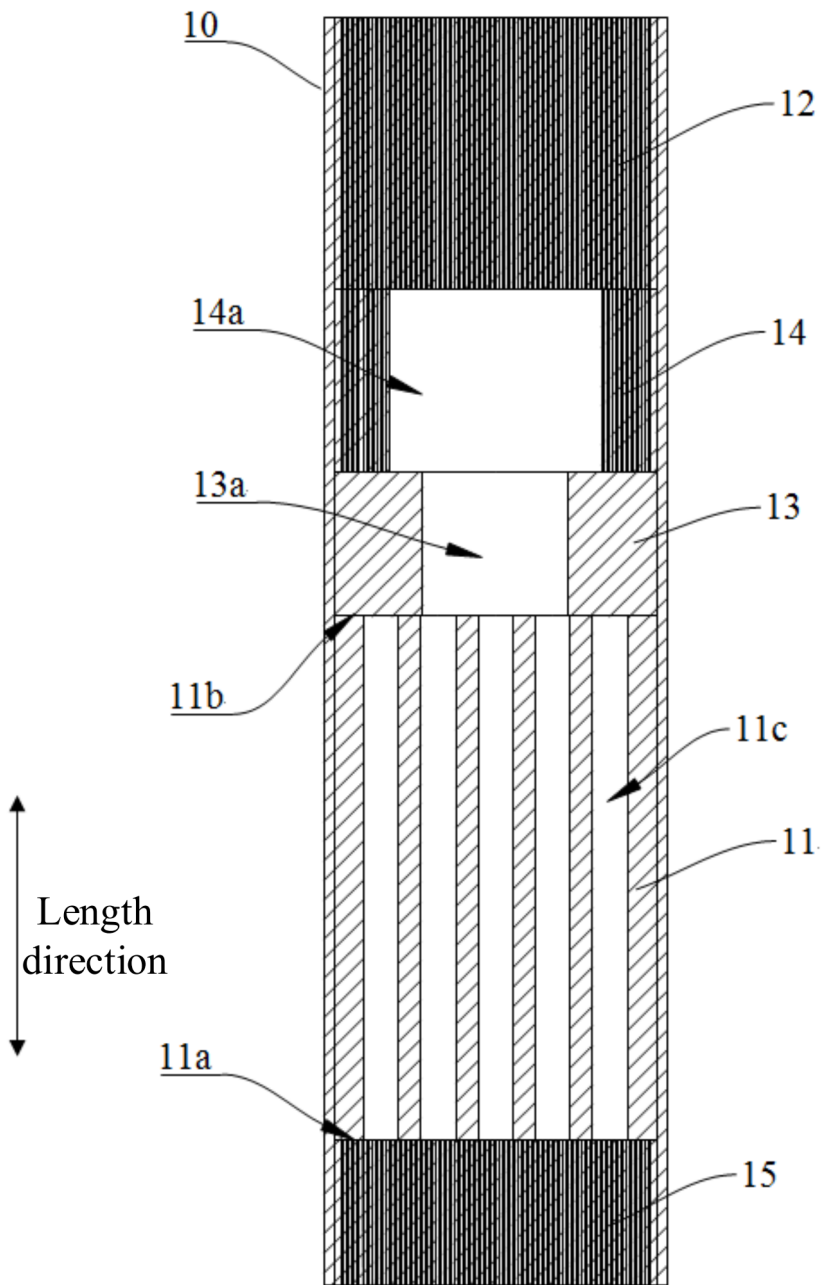


FIG. 2

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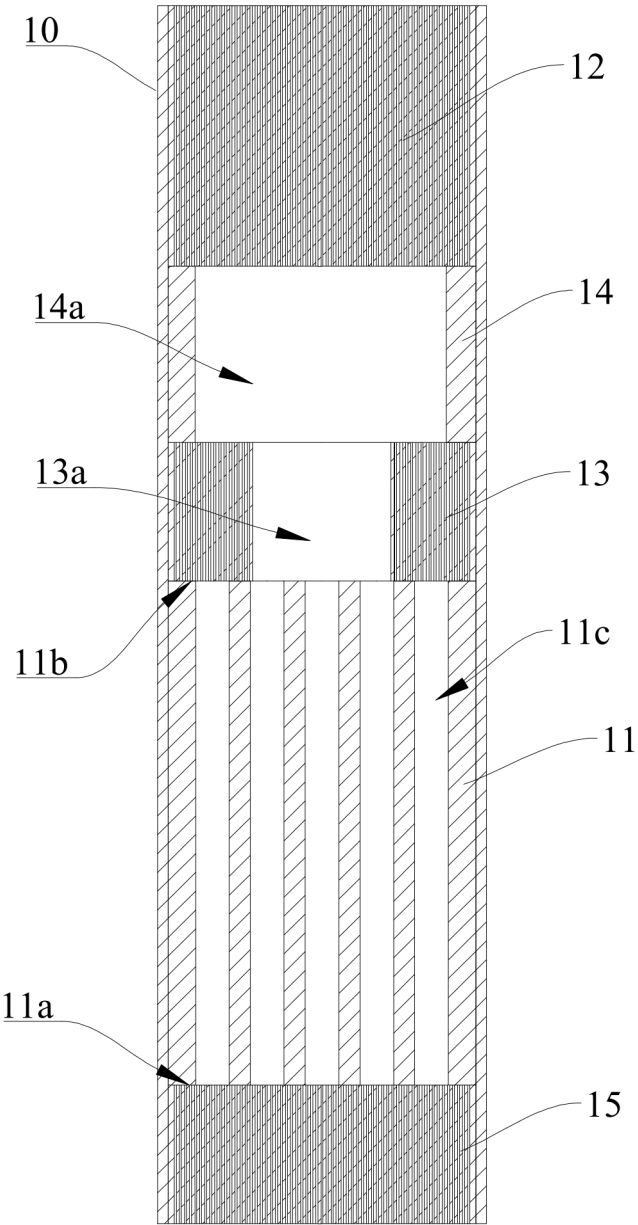


FIG. 3

1

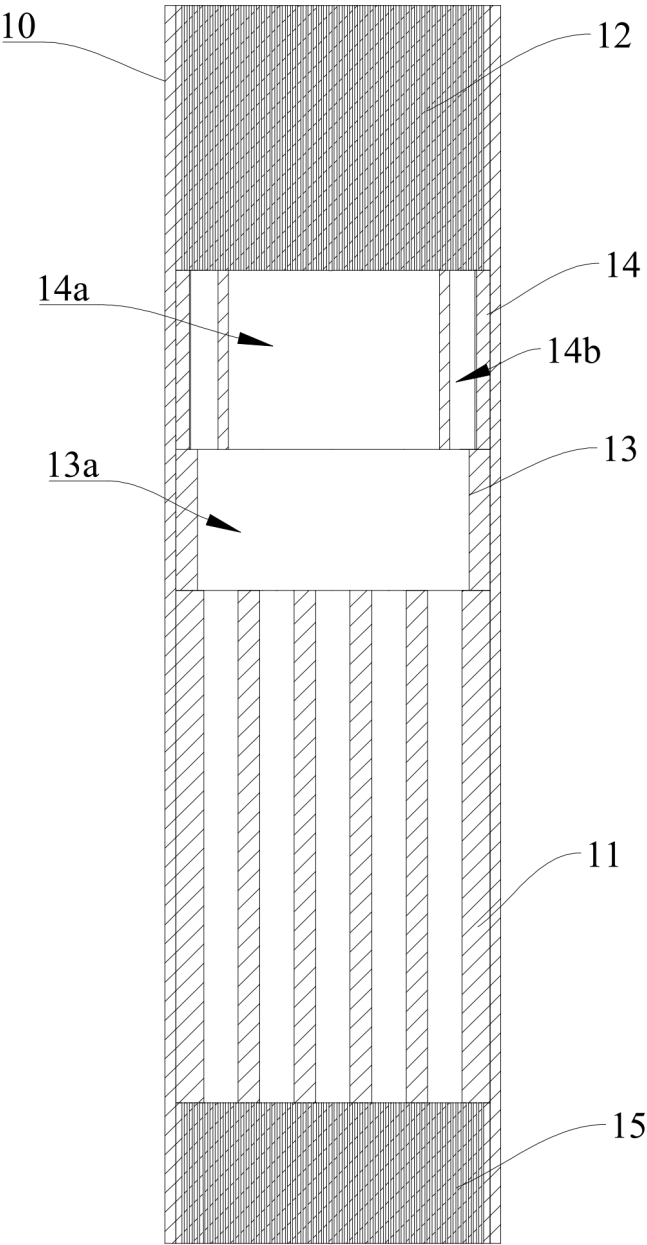


FIG. 4

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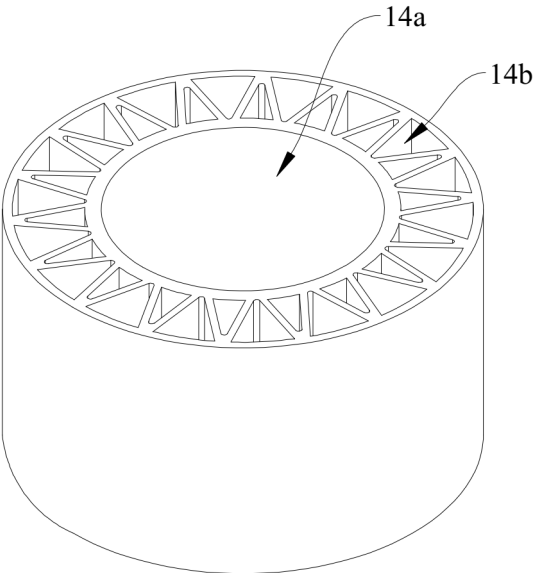


FIG. 5

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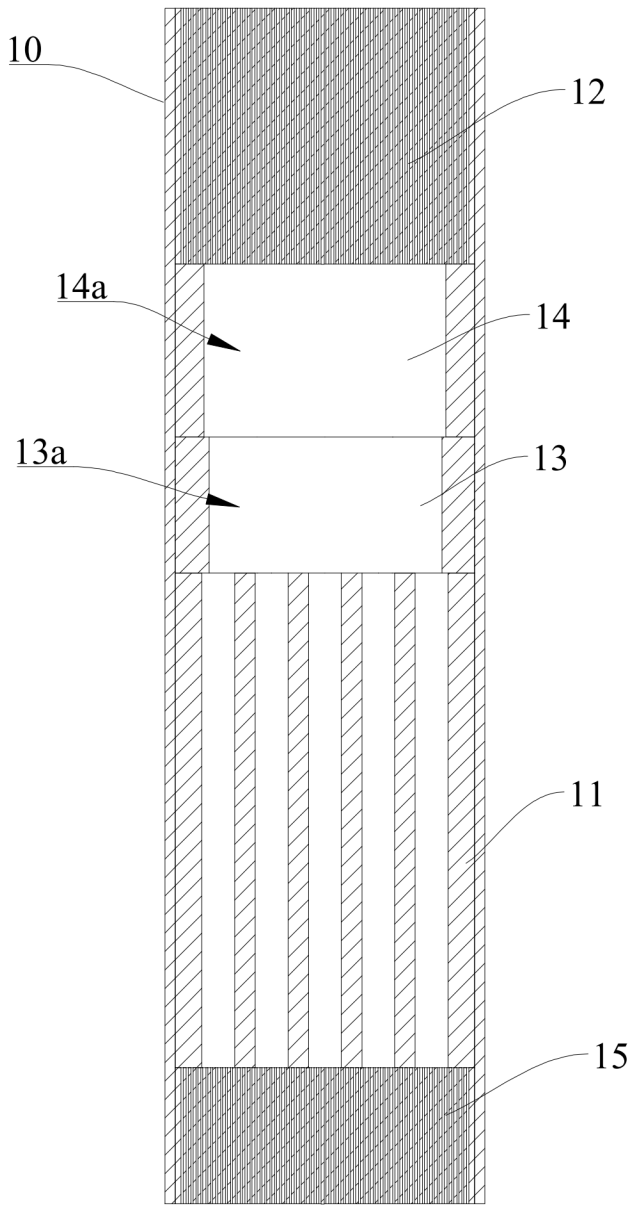


FIG. 6

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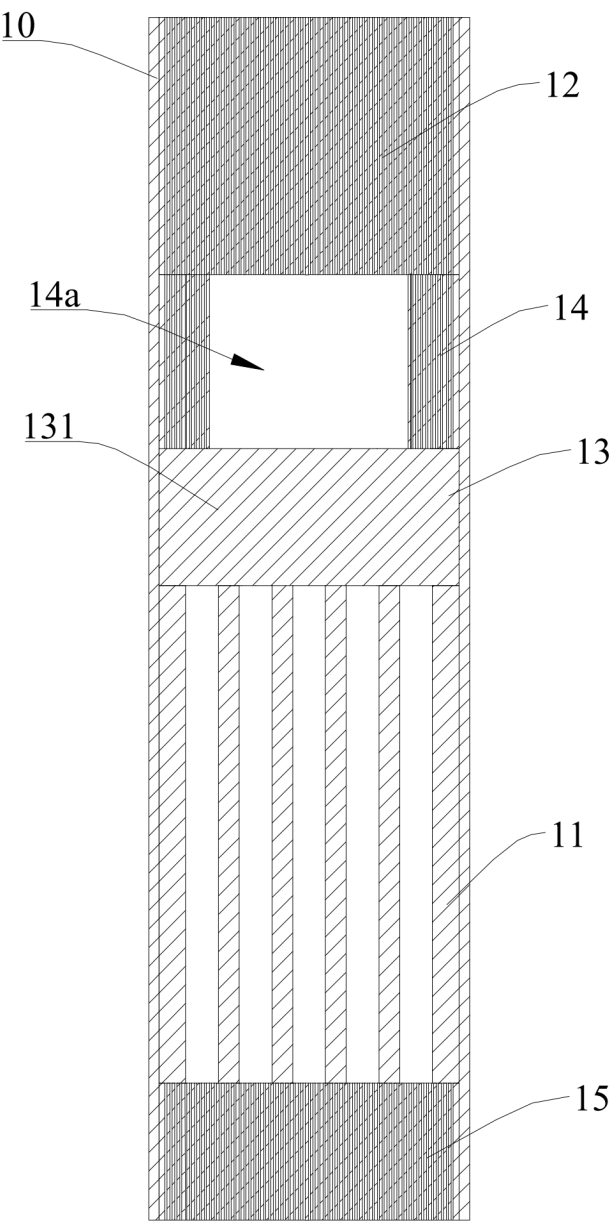


FIG. 7

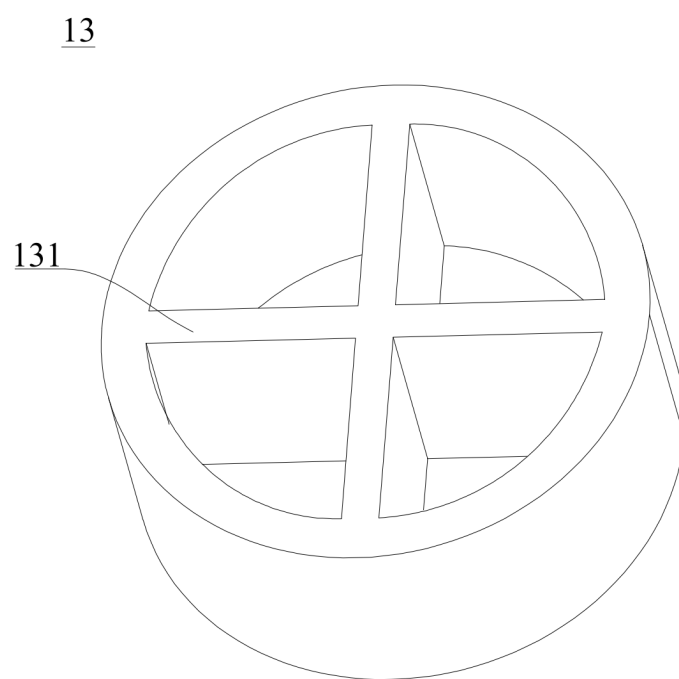


FIG. 8

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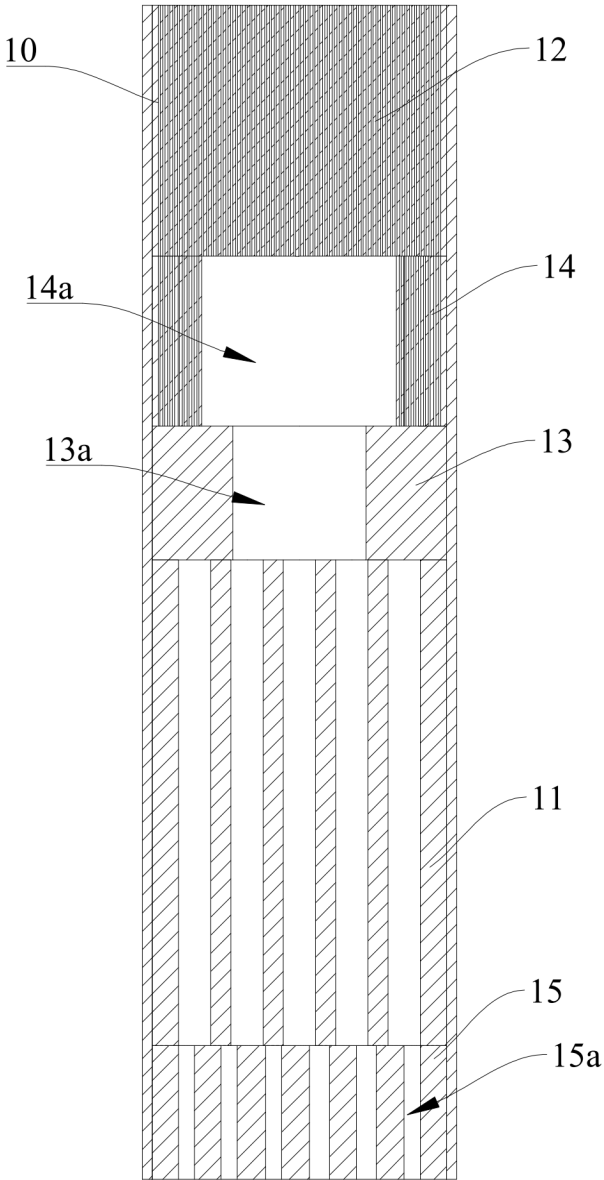


FIG. 9

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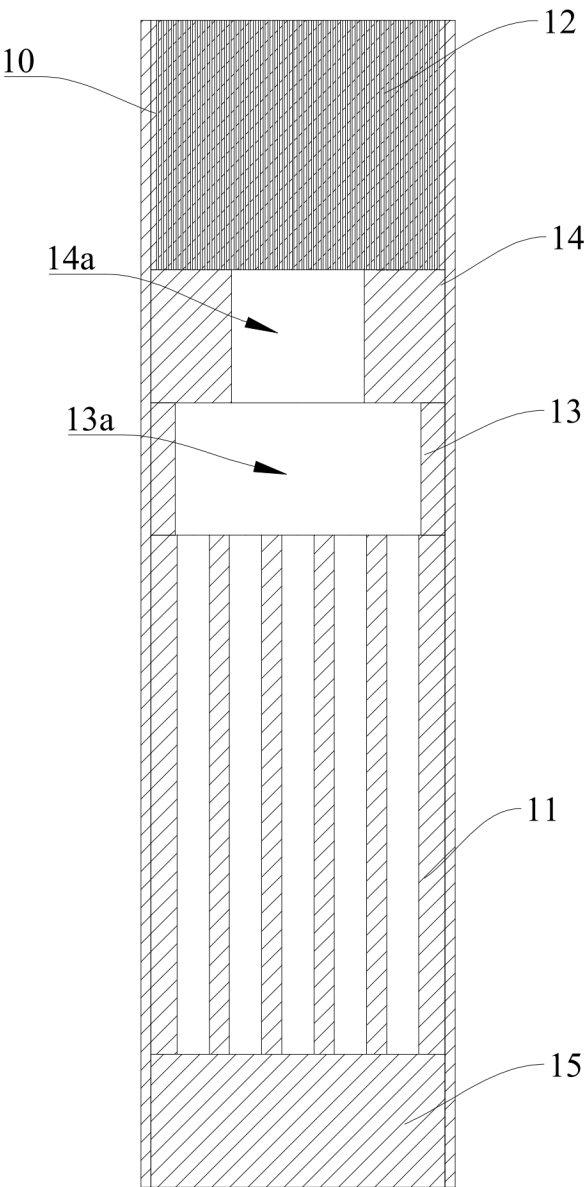


FIG. 10

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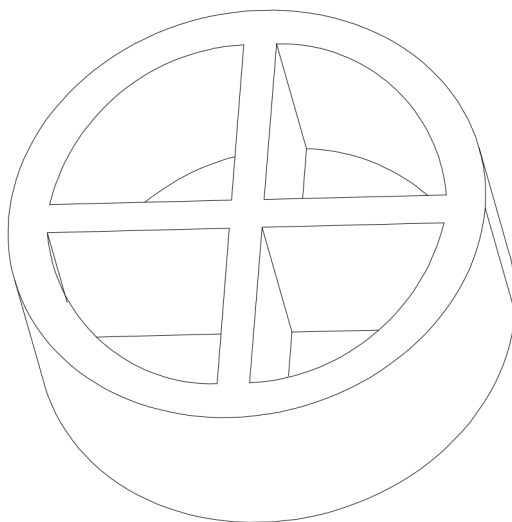


FIG. 11

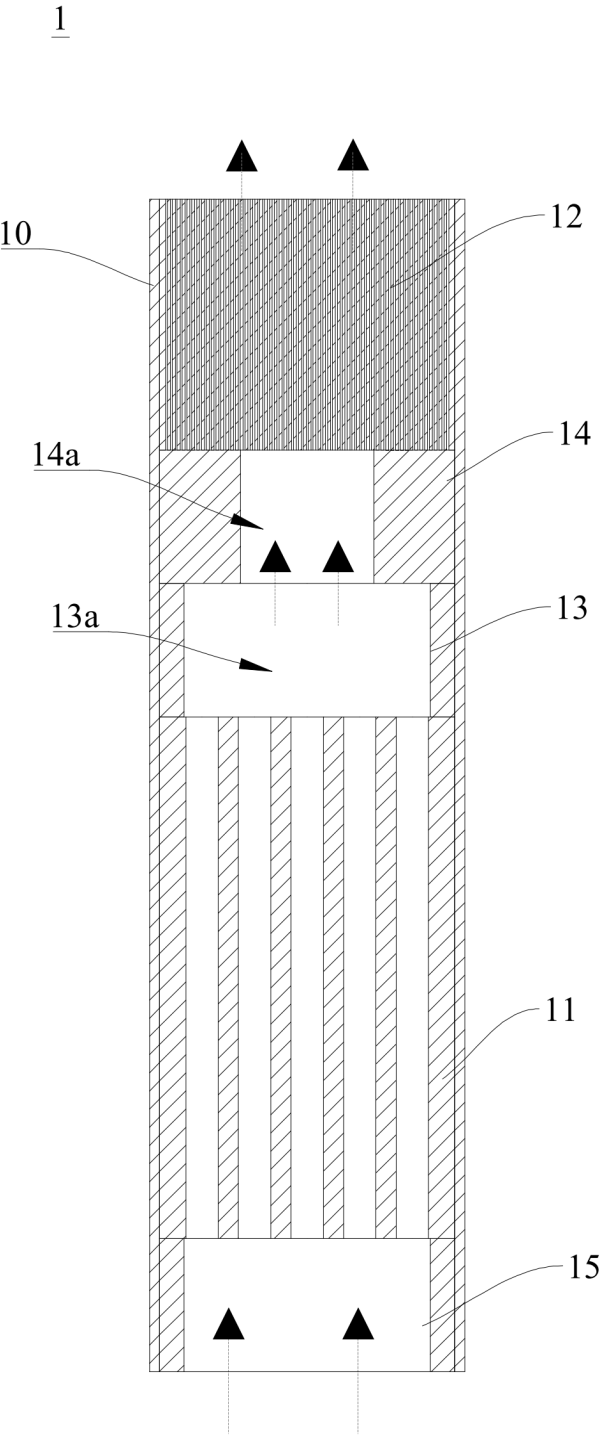


FIG. 12

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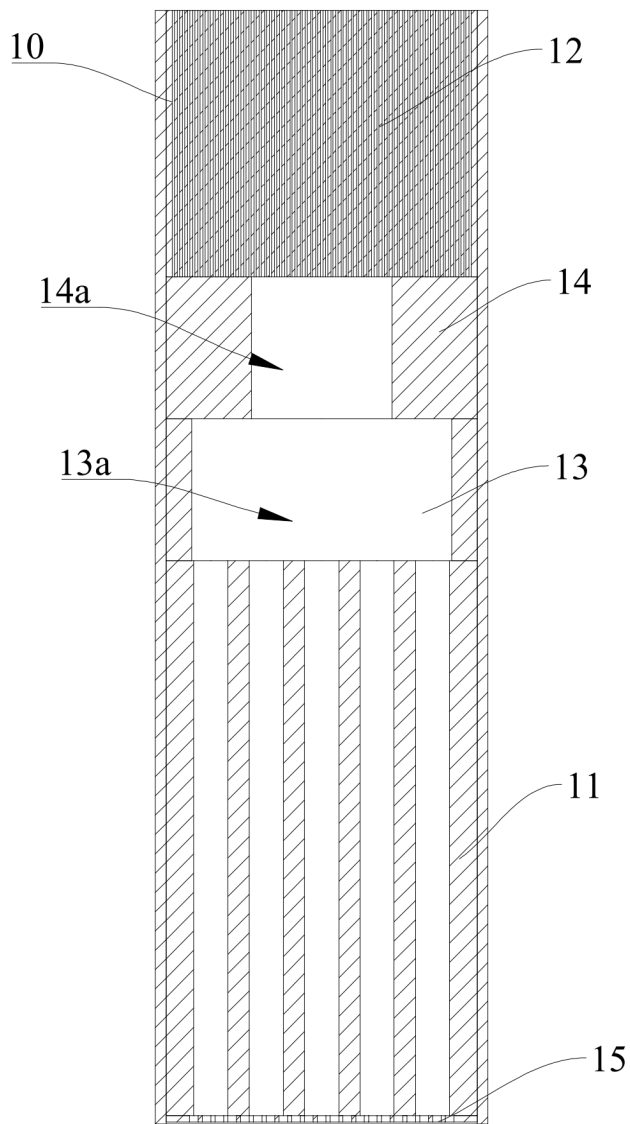


FIG. 13

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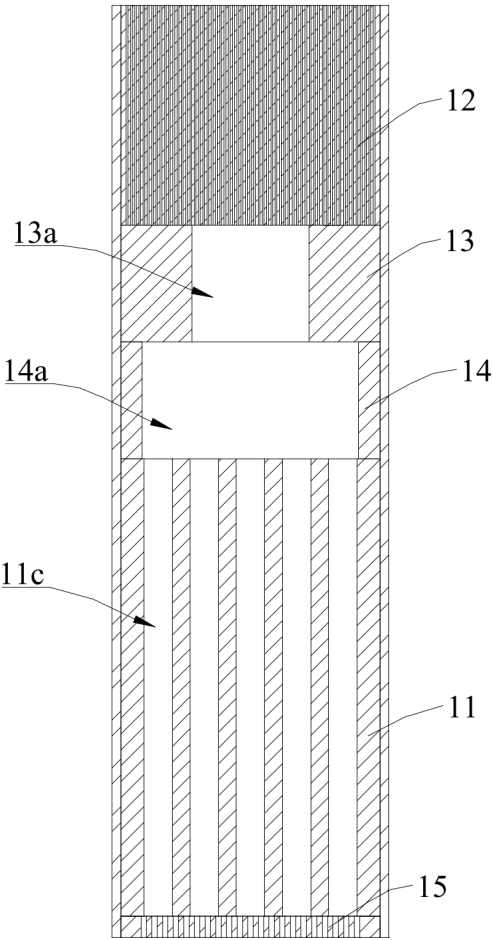


FIG. 14

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2024/101734

A. CLASSIFICATION OF SUBJECT MATTER

A24D1/20(2020.01)i; A24D1/00(2020.01)i; A24D1/04(2006.01)i; A24D3/17(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: A24D, 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)

CNXTX, CNKI, ENTXT, WPABSC, WPABS, DWPI: 思摩尔, 麦克韦尔, 麦时, 菲利普莫里斯, 气溶胶, 电子烟, 介质, 基质, 过滤, 支撑, 降温, 冷却, 止挡, 透气, 薄膜, 网筛, 中空, 管状, 圆柱, 柱状, 条, 段, 同轴, 通孔, 通道, 气孔, aerosol, cigarette, media, substrate, filtration, support, cool+, stopper, air permeable, film, mesh, hollow, tube, cylinder, column, rod, segment, coaxial, through, hole, channel, air

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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PX	CN 220756556 U (SMOORE INTERNATIONAL HOLDINGS LIMITED) 12 April 2024 (2024-04-12) claims 1-19, description, paragraphs [0005]-[0196], and figures 1-12	1-15
PX	CN 220875906 U (SMOORE INTERNATIONAL HOLDINGS LIMITED) 03 May 2024 (2024-05-03) claims 1-14, description, paragraphs [0005]-[0146], and figures 1-11	1-15
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☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"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

09 September 2024

Date of mailing of the international search report

25 September 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.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2024/101734

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2024/101734

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