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(54) AEROSOL GENERATING PRODUCT WITH DENSE SEGMENT

(57) An aerosol generating product with a dense segment (1), including a dense segment (1), an aerosol generating substrate segment (2), an airway segment (3), and a filter segment (4). The dense segment (1) is located at the end of the aerosol generating substrate segment (2) away from the filter segment (4). The axial air permeability of the dense segment (1) is less than the axial air permeability of the aerosol generating substrate segment (2). The dense segment (1) can reduce and prevent cold air from entering the aerosol generating substrate segment (2) through the dense segment (1), thereby preventing a small part of aerosol atomized in the aerosol generating substrate segment (2) from being condensed by the cold air and then flowing out from an end surface of the aerosol generating substrate segment (2). When suction is stopped, the dense segment (1) can prevent the aerosol from flowing out from the end surface after flowing back to the aerosol generating substrate segment (2) and being condensed, thereby solving the problem of the aerosol condensate flowing out from the end surface of the aerosol generating substrate segment (2) to pollute the device.

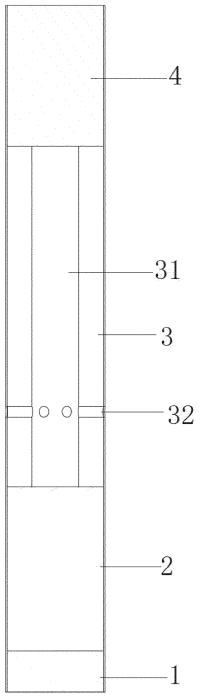

FIG. 1

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to the technical field of low-temperature heat-not-burn products, and particularly relates to an aerosol generating product with a dense segment.

BACKGROUND

[0002] The heating temperature for heating a heat-not-burn aerosol generating substrate is usually 250-350°C. Compared with common burning cigarettes, heat-not-burn aerosol generating products can greatly reduce harmful substances in the aerosol generating substrate to smokers while reserving the taste of conventional cigarettes, without a high-temperature burning pyrolysis process, so that the release amount of tar and other harmful substances in the aerosol generating substrate is reduced, and thus, the harm of second hand smoking can be greatly reduced.

[0003] At present, the heating technology for heating the aerosol generating product usually includes resistance heating or magnetic heating. Moreover, forms of a heating element usually include a tubular heating tube for heating around the aerosol generating product and/or a heating sheet/heating needle inserted into the aerosol generating product for heating. For a resistance heating element, it heats the aerosol generating product by heat generated by a resistance circuit on the heating element energized. For an electromagnetic heating element, it generates a current and heat by an induced magnetic field to heat the aerosol generating product. An existing heat-not-burn aerosol generating product usually includes a filter segment through which a user inhales by mouth and an aerosol generating substrate segment away from the filter segment. Air may enter the aerosol generating product from the end surface of the aerosol generating substrate segment and flows out from the end surface of the filter segment. The problem brought about by this is as follows: regardless of heating the aerosol generating substrate with the heating tube or the heating sheet/heating needle, on one hand, when the user does not inhale, there is still a small amount of cold air enters the aerosol generating substrate through the end surface of the aerosol generating substrate segment, a small part of atomized aerosol in the aerosol generating substrate segment encounters the cold air and is condensed to form a liquid, and the liquid flows out from the end surface of the aerosol generating substrate to pollute the device; and on the other hand, when the user inhales, the negative pressure of the aerosol generating substrate segment is low, which makes the aerosol flow to the filter segment, and when the user does not inhale, without the inhaling of the user, under the action of the negative pressure, the small part of aerosol flows from the filter segment to the aerosol generating substrate segment and forms the liquid when being condensed, and the liquid flows out from the end surface of the aerosol generating substrate segment to pollute the device.

[0004] Therefore, to prevent the atomized aerosol from being condensed again is an important method for preventing the device from being polluted. In order to solve the above technical problems, the present disclosure is provided.

SUMMARY

[0005] The present disclosure provides an aerosol generating product with a dense segment, including a dense segment 1, an aerosol generating substrate segment 2, an airway segment 3, and a filter segment 4, .

where the airway segment 3 is located between the aerosol generating substrate segment 2 and the filter segment 4;

the dense segment 1 is located at the end of the aerosol generating substrate segment 2 away from the filter segment 4;

the airway segment 3 has an airflow channel 31 axially penetrating the airway segment 3; and

the axial air permeability of the dense segment 1 is less than the axial air permeability of the aerosol generating substrate segment 2.

[0006] Preferably, the axial air permeability of the dense segment 1 is 0, that is, the gas is not allowed to pass through axially. It should be noted here that when the dense segment 1 is selected from an airdense material, the axial air permeability of the prepared dense segment 1 is 0. That is, the gas is not allowed to pass through axially, so as to play a role of preventing the gas from entering the aerosol generating substrate segment 2 via the dense segment 1. When the dense segment 1 is selected from a non-airdense material such as an aerosol generating substrate material mentioned below, the density of the dense segment 1 is higher than that of the aerosol generating substrate segment 2, that is, the axial air permeability of the dense segment 1 is less than that of the aerosol generating substrate segment 2, so as to play a role of reducing the gas entering the aerosol generating substrate segment 2 via the dense segment 1. The above preventing and reducing effects both may realize beneficial effects of the present disclosure.

[0007] The dense segment 1, the aerosol generating substrate segment 2, the airway segment 3, and the filter segment 4 are segments coiled and formed in the aerosol generating product by a wrapper, or segments filled and formed in the aerosol generating product by being filled into an integrally formed pipe fitting.

[0008] Preferably, the dense segment 1 is selected from a non-aerosol-generating material, and is selected

from, but is not limited to, a carbon fiber material, a metal membrane, a ceramic or a high molecular material. The high molecular material is selected from, but is not limited to, polyethylene, polypropylene, polyvinyl chloride, polyethylene glycol terephthalate or polylactic acid.

[0009] Preferably, the dense segment 1 is selected from an aerosol generating material, the bulk density of the dense segment 1 is higher than that of the aerosol generating substrate segment 2, so as to guarantee that the axial air permeability of the dense segment 1 is less than that of the aerosol generating substrate segment 2. That is, the material of the dense segment 1 is consistent with that of the aerosol generating substrate segment 2 in this case and both the materials are the aerosol generating material. The degrees of compaction at both ends are completely inconsistent. The density of the dense segment 1 is higher than that of the aerosol generating substrate segment 2. The axial air permeability of the dense segment 1 is less than that of the aerosol generating substrate segment 2. When the dense segment 1 is the aerosol generating material, it may be integrally formed with the aerosol generating substrate segment 2 in an aerosol generating substrate manufacturing process, and a high density aerosol generating substrate segment is formed by a compaction process as the dense segment 1, which is easy to manufacture.

[0010] Preferably, the airway segment 3 is hollow and is provided with a side wall and a hollow cavity, and the hollow cavity is the airflow channel 31 axially penetrating the airway segment 3.

[0011] Preferably, a side flow hole 32 penetrating the side wall is further formed in the side wall of the airway segment 3.

[0012] Preferably, an axial position of the side flow hole 32 is close to one end of the aerosol generating substrate segment 2 and is away from one end of the filter segment 4. The reason why the axial position of the side flow hole is closer to one end of the aerosol generating substrate segment 2 is that the closer the axial position of the side flow hole 32 is to the aerosol generating substrate segment 2, the easier it is to extract the aerosol from the aerosol generating substrate segment 2.

[0013] Preferably, the number of the side flow holes 32 may be, but is not limited to, 6-8.

[0014] Preferably, the airway segment 3 includes a first airway segment 33 close to the aerosol generating substrate segment 2 and a second airway segment 34 close to the filter segment 4. The first airway segment 33 and the second airway segment 34 may be either integrated or separated.

[0015] Preferably, the cross sectional area of the airflow channel 31 of the first airway segment 33 is smaller than or equal to or greater than that of the airflow channel 31 of the second airway segment 34. When the airway segment 3 is hollow, it is provided with a side wall and a hollow cavity, and the hollow cavity is the airflow channel 31 axially penetrating the airway segment 3. The inner diameter of the hollow cavity of the first airway segment 33 is less than or equal to or greater than the inner diameter of the hollow cavity of the second airway segment 34. In this case, a connection therebetween may be either a conical bevel or a vertical section, and either a flat angle structure or a chamfered structure. When the inner diameter of the hollow cavity of the first airway segment 33 is greater than the inner diameter of the hollow cavity of the second airway segment 34, more air is introduced by the first airway segment 33, so that the extraction effect on the aerosol is better, and the amount of the aerosol is greater. When the inner diameter of the hollow cavity of the first airway segment 33 is less than the inner diameter of the hollow cavity of the second airway segment 34, more aerosols may be gathered in the second airway segment 34, so that the condensation effect on the aerosol is better, the cooling effect on the aerosol is better, and the aerosol is more suitable to inhale.

[0016] Preferably, the airway segment 3 is cylindrical and is prepared from, but is not limited to, a cellulose acetate fiber material and a high molecular material.

[0017] The aerosol generating substrate segment 2 contains the aerosol generating material, and the aerosol generating material is an aerosol generating material in the form of particles or filaments. Here, the forms of the aerosol generating material are only illustrated but are not limited to the above several forms actually, and aerosol generating media capable of generating the aerosol are applicable.

[0018] The total length of the aerosol generating product in the present disclosure may be 30-80 mm, where the range of the dense segment is 2-10 mm, preferably 5 mm; the length of the aerosol generating substrate segment 2 is 8-25 mm, preferably 12 mm; the length of the airway segment 3 is 10-20 mm, preferably 15 mm; and the length of the filter segment 4 is 8-15 mm, preferably 10 mm.

[0019] Compared with the prior art, the present disclosure has the following beneficial effects:

1. Because the dense segment 1 is arranged at the end of the aerosol generating substrate segment 2 away from the filter segment 4 and the axial air permeability of the dense segment 1 is less than that of the aerosol generating substrate segment 2, the probability that the air enters the aerosol generating substrate segment 2 from the dense segment 1 can be reduced and prevented, and thus a situation that the cold air enters the aerosol generating substrate segment from the end surface of the aerosol generating substrate segment, a small part of aerosol atomized in the aerosol generating substrate segment encounters the cold air and is condensed to form the liquid, and the liquid flows out from the end surface of the aerosol generating substrate segment can be prevented.

2. In the prior art, gas passes through the end of the aerosol generating substrate segment in the inhaling

process. The aerosol generating substrate segment is in the negative pressure state in the inhaling process, and therefore, at the moment of stopping inhaling, there will be problem that the aerosol which is not inhaled flows to the aerosol generating substrate segment back from the filter segment.

[0020] However, after the dense segment is added in front of the aerosol generating substrate segment, in the inhaling process of the user, because the external gas can hardly be supplemented by the dense segment to enter the aerosol substrate segment, the negative pressure of the aerosol substrate segment will not increase, and thus the aerosol can be prevented from flowing back to the aerosol substrate segment and flowing out from the end surface of the aerosol generating substrate segment when inhaling is stop, so as to further solve the problem that the aerosol condensate flows out from the end surface of the aerosol generating substrate segment to pollute the device.

[0021] 3. In a preferred implementation, the dense segment 1 is selected from the non-aerosol-generating material, but is not limited to a carbon fiber material, a metal membrane, a ceramic or a high molecular material, or the dense segment 1 is selected from the aerosol generating material, the density of the dense segment 1 is higher than that of the aerosol generating substrate segment 2, and the material selection range is wide. Besides, when the dense segment 1 is the aerosol generating material, it may be integrally formed with the aerosol generating substrate segment 2 in an aerosol generating substrate manufacturing process, and a high density aerosol generating substrate segment is formed by a compaction process as the dense segment 1, which is easy to manufacture.

[0022] 4. In a preferred implementation, the side flow hole 32 penetrating the side wall is further formed in the side wall of the airway segment 3. The side flow hole is formed to facilitate inhaling of the aerosol, so as to reduce the inhaling resistance during inhaling.

[0023] 5. In a preferred implementation, the axial position of the side flow hole 32 is close to one end of the aerosol generating substrate segment 2 and is away from one end of the filter segment 4. The air introduced from the side flow hole plays a role of extracting the aerosol generated by the aerosol generating substrate segment 2.

[0024] 6. In a preferred implementation, the airway segment 3 includes the first airway segment 33 close to the aerosol generating substrate segment 2 and the second airway segment 34 close to the filter segment 4. The cross sectional area of the airflow channel 31 of the first airway segment 33 is smaller than or equal to or greater than that of the airflow channel 31 of the second airway segment 34. When the airway segment 3 is hollow, it is provided with a side wall and a hollow cavity, and the hollow cavity is the airflow channel 31 axially penetrating the airway segment 3. The inner diameter of the hollow cavity of the first airway segment 33 is less than or equal to or greater than the inner diameter of the hollow cavity of the second airway segment 34.

[0025] When the inner diameter of the hollow cavity of the first airway segment 33 is greater than the inner diameter of the hollow cavity of the second airway segment 34, more air is introduced by the first airway segment 33, so that the extraction effect on the aerosol is better, and the amount of the aerosol is greater.

[0026] When the inner diameter of the hollow cavity of the first airway segment 33 is less than the inner diameter of the hollow cavity of the second airway segment 34, more aerosols may be gathered in the second airway segment 34, so that the condensation effect on the aerosol is better, the cooling effect on the aerosol is better, and the aerosol is more suitable to inhale.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027]

FIG. 1 is a schematic structural diagram of an aerosol generating product with a dense segment in Embodiment 1;

FIG. 2 is a schematic structural diagram of an aerosol generating product with a dense segment in Embodiment 2;

FIG. 3 is a schematic structural diagram of an aerosol generating product with a dense segment in Embodiment 3;

FIG. 4 is a schematic structural diagram of an aerosol generating product with a dense segment in Embodiment 4;

List of numerals: 1-dense segment; 2-aerosol generating substrate segment; 3-airway segment; 4-filter segment; 31-airflow channel; 32-side flow hole; 33-first airway segment; and 34-second airway segment.

DETAILED DESCRIPTION

[0028] The present disclosure will be further described in detail below with reference to embodiments.

[0029] Persons skilled in the art will understand that the embodiments below are merely used for explaining the present disclosure and are not to limit the scope of the present disclosure. The embodiments without specific technologies or conditions indicated are carried out according to technologies or conditions described by literature in the art or description of a product. The used materials or devices not indicated by manufacturers are conventional products which can be purchased.

[0030] Persons skilled in the art may understand that unless otherwise specified, the singular forms "a", "an",

"the" and "this" used herein may also include plural forms. It should be further understood that the expression "include" used in the description of the present disclosure refers to the existence of the characteristics, integers, steps, operations, components and/or assemblies, but not excludes the existence or addition of one or more other characteristics, integers, steps, operations, components, assemblies and/or their groups. It should be understood that when a component is referred to as being "connected to" another component, it may be directly connected to the another component or there may be an intermediate component. In addition, "connection" used herein may include wireless connection.

[0031] In the description of the present disclosure, unless otherwise specified, "a plurality of" means two or more than two. Orientation or position relationships indicated by the terms such as "inside", "up", "down" and the like are based on orientation or position relationships shown in the drawings, and are used only for ease and brevity of illustration and description of the present disclosure, rather than indicating or implying that the mentioned apparatus or component must have a particular orientation or must be constructed and operated in a particular orientation. Therefore, such terms should not be construed as limiting of the present disclosure.

[0032] In the description of the present disclosure, it should be noted that unless otherwise explicitly specified and limited, the terms "mount", "connect", "connection", and "provided with" should be understood in a broad sense. For example, the connection may be fixed connection, detachable connection, or integral connection; or the connection may be mechanical connection or electrical connection; or the connection may be direct connection, or indirect connection through an intermediate. Persons of ordinary skill in the art may understand the specific meanings of the foregoing terms in the present disclosure according to specific situations.

[0033] Persons skilled in the art may understand that unless otherwise defined, all terms used herein including technical terms and scientific terms have the same meanings as those commonly understood by persons of ordinary skill in the art. It should be further understood that those terms defined in a general dictionary should be understood as having meanings consistent with the meanings in the context in the prior art. Unless otherwise defined herein, those terms will not be explained by idealized or too formal implications.

EMBODIMENT 1

[0034] In the embodiment, the total length of an aerosol generating product may be 42 mm, where the length of the dense segment is 5 mm, the length of the aerosol generating substrate segment 2 is 12 mm, the length of the airway segment 3 is 15 mm, and the length of the filter segment 4 is 10 mm.

[0035] The aerosol generating product with a dense segment shown in FIG. 1 includes a dense segment 1, an aerosol generating substrate segment 2, an airway segment 3, and a filter segment 4,

where the airway segment 3 is located between the aerosol generating substrate segment 2 and the filter segment 4;

the dense segment 1 is located at one end of the aerosol generating substrate segment 2 away from the filter segment 4;

the airway segment 3 has an airflow channel 31 axially penetrating the airway segment 3; and

the axial air permeability of the dense segment 1 is less than that of the aerosol generating substrate segment 2.

[0036] The dense segment 1 is selected from a non-aerosol-generating material such as a carbon fiber material.

[0037] The airway segment 3 is hollow and is provided with a side wall and a hollow cavity, and the hollow cavity is the airflow channel 31 axially penetrating the airway segment 3.

[0038] A side flow hole 32 penetrating the side wall is further formed in the side wall of the airway segment 3.

[0039] An axial position of the side flow hole 32 is close to one end of the aerosol generating substrate segment 2 and is away from one end of the filter segment 4.

[0040] The number of the side flow holes 32 is 6.

[0041] The airway segment 3 is cylindrical and is prepared from a cellulose acetate fiber material.

EMBODIMENT 2

[0042] The structure of the aerosol generating product with a dense segment shown in FIG. 2 is similar to that in Embodiment 1. The difference is as follows: the airway segment 3 includes a first airway segment 33 close to the aerosol generating substrate segment 2 and a second airway segment 34 close to the filter segment 4. The first airway segment 33 and the second airway segment 34 are two separable segments.

[0043] The cross sectional area of the airflow channel 31 of the first airway segment 33 is smaller than or that of the airflow channel 31 of the second airway segment 34. When the airway segment 3 is hollow, it is provided with a side wall and a hollow cavity, and the hollow cavity is the airflow channel 31 axially penetrating the airway segment 3. The inner diameter of the hollow cavity of the first airway segment 33 is less than the inner diameter of the hollow cavity of the second airway segment 34, and in this case, the connection therebetween may be a conical bevel.

[0044] When the inner diameter of the hollow cavity of the first airway segment 33 is less than the inner diameter of the hollow cavity of the second airway segment 34,

more aerosols may be gathered in the second airway segment 34, so that the condensation effect on the aerosol is better, the cooling effect on the aerosol is better, and the aerosol is more suitable to suck.

EMBODIMENT 3

[0045] The structure of the aerosol generating product with a dense segment shown in FIG. 3 is similar to that in Embodiment 1. The difference is as follows: the airway segment 3 includes a first airway segment 33 close to the aerosol generating substrate segment 2 and a second airway segment 34 close to the filter segment 4. The first airway segment 33 and the second airway segment 34 are two separable segments.

[0046] The cross sectional area of the airflow channel 31 of the first airway segment 33 is greater than that of the airflow channel 31 of the second airway segment 34. When the airway segment 3 is hollow, it is provided with a side wall and a hollow cavity, and the hollow cavity is the airflow channel 31 axially penetrating the airway segment 3. The inner diameter of the hollow cavity of the first airway segment 33 is greater than the inner diameter of the hollow cavity of the second airway segment 34, and in this case, the connection therebetween may be a conical bevel.

[0047] When the inner diameter of the hollow cavity of the first airway segment 33 is greater than the inner diameter of the hollow cavity of the second airway segment 34, more air is introduced by the first airway segment 33, so that the extraction effect on the aerosol is better, and the amount of the aerosol is greater.

EMBODIMENT 4

[0048] The structure of the aerosol generating product with a dense segment shown in FIG. 4 is similar to that in Embodiment 1. The difference is as follows: the material of the dense segment 1 is selected from an aerosol generating material and the density of the dense segment 1 is higher than that of the aerosol generating substrate segment 2. That is, the material of the dense segment 1 is consistent with that of the aerosol generating substrate segment 2 in this case and both the materials are the aerosol generating material. The degrees of compaction at both ends are completely inconsistent. The density of the dense segment 1 is higher than that of the aerosol generating substrate segment 2. The axial air permeability of the dense segment 1 is less than that of the aerosol generating substrate segment 2.

[0049] The dense segment 1 may be integrally formed with the aerosol generating substrate segment 2 in an aerosol generating substrate manufacturing process, and a high density aerosol generating substrate segment is formed by a compaction process as the dense segment 1, which is easy to manufacture.

Claims

1. An aerosol generating product with a dense segment, comprising:

   a dense segment (1);
   an aerosol generating substrate segment (2);
   an airway segment (3); and
   a filter segment (4),
   wherein the airway segment (3) is located between the aerosol generating substrate segment (2) and the filter segment (4),
   wherein the dense segment (1) is located at an end of the aerosol generating substrate segment (2) away from the filter segment (4),
   wherein the airway segment (3) has an airflow channel (31) axially penetrating the airway segment (3), and
   wherein an axial air permeability of the dense segment (1) is less than an axial air permeability of the aerosol generating substrate segment (2).

2. The aerosol generating product with a dense segment of claim 1, wherein the axial air permeability of the dense segment (1) is 0.

3. The aerosol generating product with a dense segment of claim 1, wherein the dense segment (1) is selected from a non-aerosol-generating material such as a carbon fiber material, a metal membrane, a ceramic, or a high molecular material.

4. The aerosol generating product with a dense segment of claim 1, wherein a material of the dense segment (1) is a same material as a material of the aerosol generating substrate segment (2), and both materials are selected from an aerosol generating material, and
   wherein the bulk density of the dense segment (1) is higher than the bulk density of the aerosol generating substrate segment (2).

5. The aerosol generating product with a dense segment of claim 1, wherein the airway segment (3) is hollow and is provided with a side wall and a hollow cavity, and
   wherein the hollow cavity is the airflow channel (31) axially penetrating the airway segment (3).

6. The aerosol generating product with a dense segment of claim 5, wherein a side flow hole (32) penetrating the side wall is formed in the side wall of the airway segment (3).

7. The aerosol generating product with a dense segment of claim 6, wherein an axial position of the side flow hole (32) is close to one end of the aerosol generating substrate segment (2) and is away from one

end of the filter segment (4).

8. The aerosol generating product with a dense segment of claim 1, wherein the airway segment (3) comprises a first airway segment (33) close to the aerosol generating substrate segment (2) and a second airway segment (34) close to the filter segment (4).

9. The aerosol generating product with a dense segment of claim 8, wherein a cross sectional area of the airflow channel (31) of the first airway segment (33) is smaller than or equal to or greater than a cross sectional area of the airflow channel (31) of the second airway segment (34).

10. The aerosol generating product with a dense segment of claim 1, wherein the airway segment (3) is cylindrical.

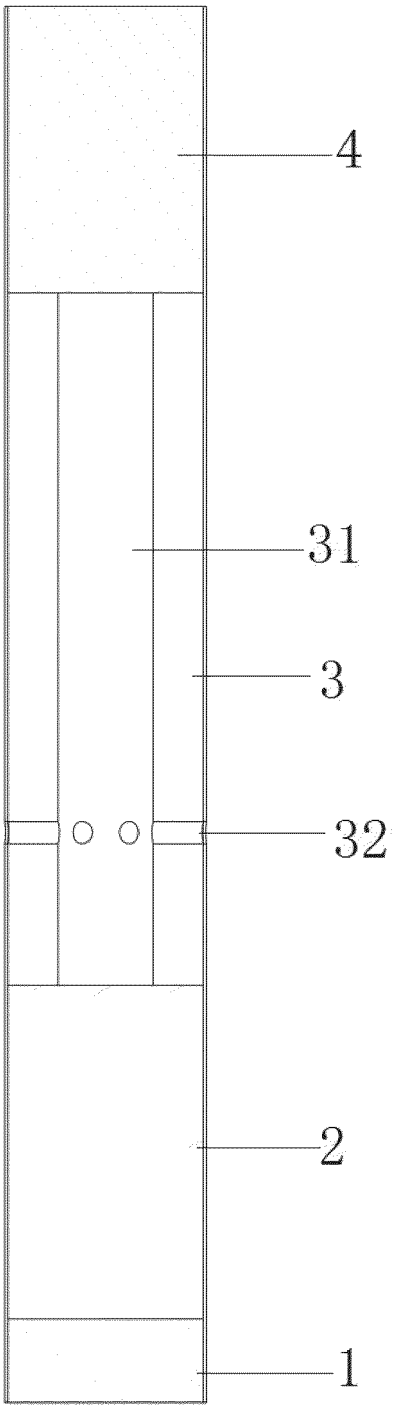

FIG. 1

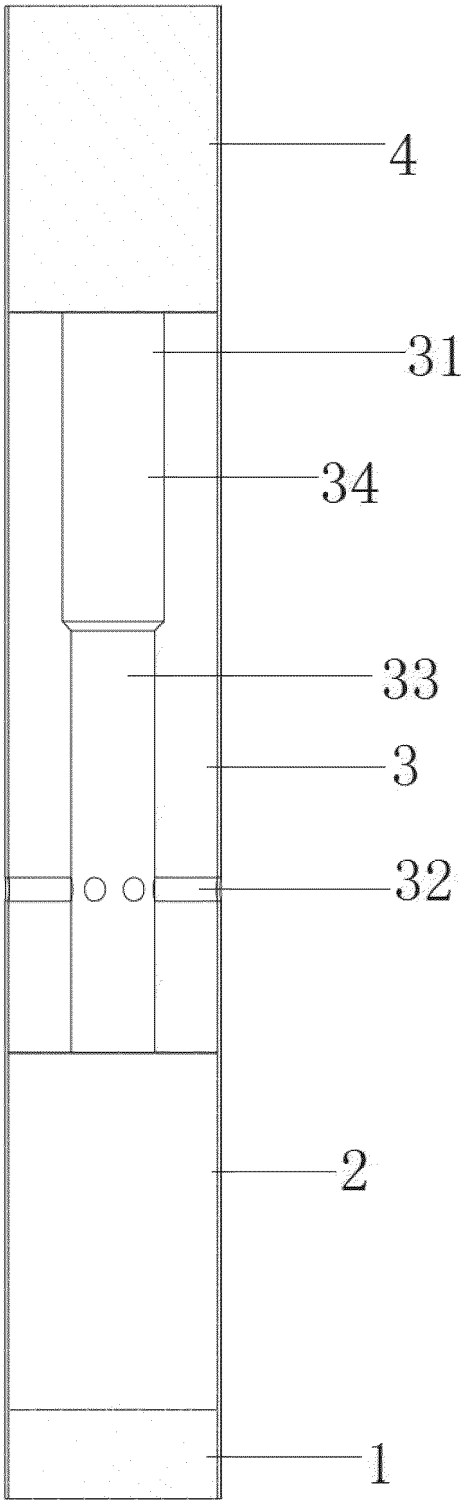

FIG. 2

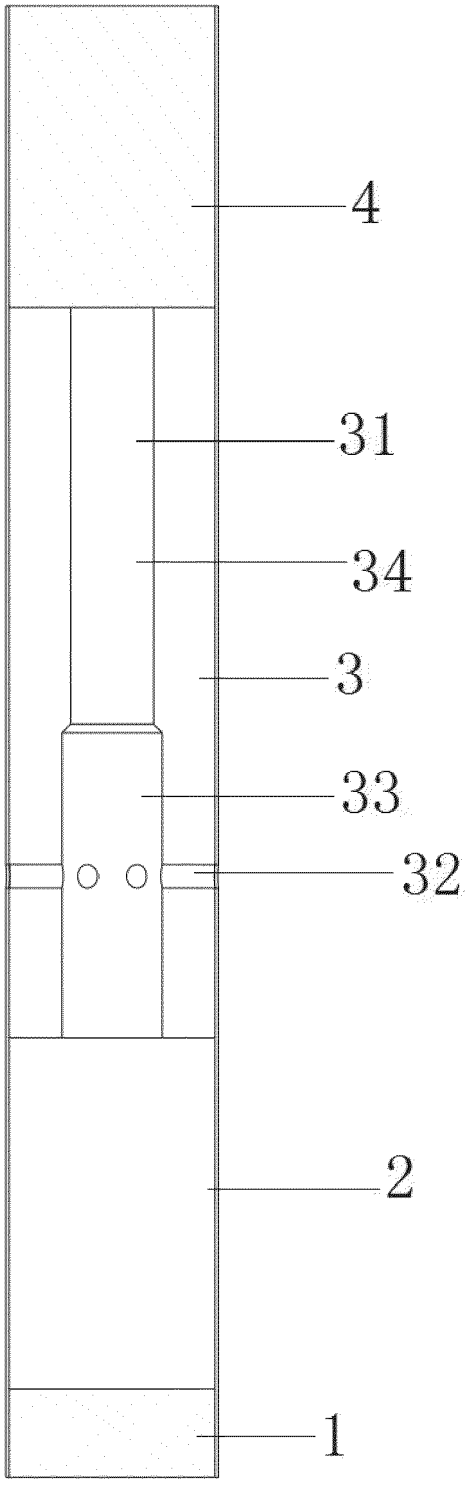

FIG. 3

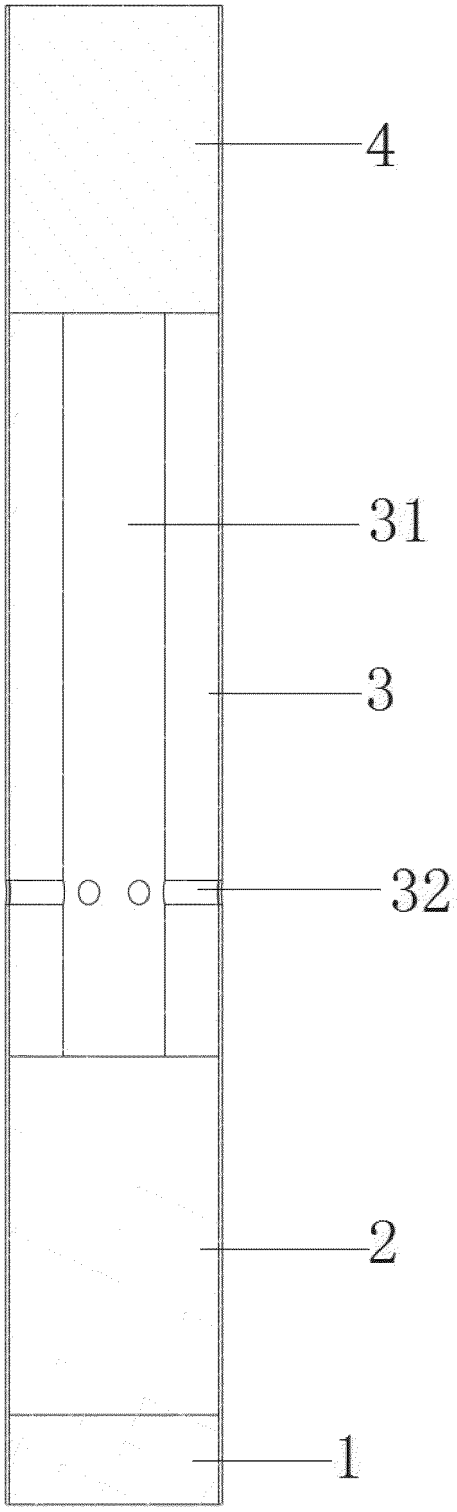

FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2022/129910

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/40(2020.01)i; A24F 40/46(2020.01)i; A24F 47/00(2020.01)i

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A24F; A24D

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; CNKI; WPABSC; ENTXTC; WPABS; ENTXT: 麦时, 烟草, 加热, 封闭, 封口, 封堵, 密封, 透气度, 低温, 污染, 不燃烧, 非燃烧, 中空, 气溶胶, 密度, aerosol, seal, air permeability, density

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 217218163 U (SHENZHEN MAISHI TECHNOLOGY CO., LTD.) 19 August 2022 (2022-08-19) claims 1-10	1-10
PX	CN 217218164 U (SHENZHEN MAISHI TECHNOLOGY CO., LTD.) 19 August 2022 (2022-08-19) description, paragraphs [0020]-[0036], and figures 1-7	1-10
X	CN 212414700 U (CHINA TOBACCO YUNNAN INDUSTRIAL CO., LTD. et al.) 29 January 2021 (2021-01-29) description, paragraphs [0005]-[0030], and figure 1	1-3, 5-10
Y	CN 212414700 U (CHINA TOBACCO YUNNAN INDUSTRIAL CO., LTD. et al.) 29 January 2021 (2021-01-29) description, paragraphs [0005]-[0030], and figure 1	4
Y	CN 111343874 A (PHILIP MORRIS PRODUCTS S.A.) 26 June 2020 (2020-06-26) description, paragraphs [0079]-[0086], and figures 1-4	4
X	CN 111567863 A (CHINA TOBACCO YUNNAN INDUSTRIAL CO., LTD. et al.) 25 August 2020 (2020-08-25) description, paragraphs [0005]-[0035], and figure 1	1-3, 5-10

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

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search	Date of mailing of the international search report
30 December 2022	**17 January 2023**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
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