(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 327 672 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
09.04.2025 Bulletin 2025/15

(21) Application number: **22865875.3**

(22) Date of filing: **23.06.2022**

(51) International Patent Classification (IPC):
A24F 40/20 *(2020.01)* ***A24D 1/02*** *(2006.01)*
A24C 5/01 *(2020.01)* ***A24D 1/20*** *(2020.01)*
A24D 3/02 *(2006.01)* ***A24D 3/04*** *(2006.01)*
A24B 15/16 *(2020.01)*

(52) Cooperative Patent Classification (CPC):
A24D 1/20; A24B 15/16; A24C 5/01; A24D 3/048; A24D 3/0287

(86) International application number:
PCT/CN2022/100622

(87) International publication number:
WO 2023/245528 (28.12.2023 Gazette 2023/52)

(54) **PREPARATION METHOD FOR MULTI-SECTION AEROSOL GENERATING PRODUCT**

HERSTELLUNGSVERFAHREN FÜR EIN MEHRTEILIGES AEROSOLERZEUGENDES PRODUKT

PROCÉDÉ DE PRÉPARATION DE PRODUIT DE PRODUCTION D'AÉROSOL À PLUSIEURS SECTIONS

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **21.06.2022 CN 202210707595**

(43) Date of publication of application:
28.02.2024 Bulletin 2024/09

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(Cont. next page)

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Description

TECHNICAL FIELD

[0001] The present disclosure belongs to a heat-not-burn (HNB) cigarette field, and in particular, to a preparation method of multi-sectional aerosol generating products (see for example WO 2022/016714 A1).

BACKGROUND

[0002] With increasing attention of consumers to health and increasing demand for personalized experiences of cigarette products, the tobacco industry has continuously responded to upgrading of consumers' needs, various smoking products with tar reduction have been developed so as to bring less harm to consumers. Among which, because of different heating methods compared with traditional cigarette products, heating cigarettes can provide a healthier smoking experience while meeting consumers' sensory needs for cigarette products.

[0003] Aerosol generating matrix of granular heating cigarette is bulk aerosol generating granules, in the prior art, as bulk aerosol generating granules cannot be fixed, they must be filled into the outer tube by filling, besides, both sides of the aerosol generating granule section are sealed by sealing paper and plugging part to fix granules, while in order to gather aerosol and increase the amount of smoke, the downstream of the plugging part is usually a section of cavity (a cavity section) limited by the outer tube, and the downstream of the cavity section is a filtering section.

[0004] At present, the above aerosol generating products are prepared by filling, the production process order is as follows: one end of the tube is sealed, while aerosol generating matrix, the plugging part and the filtering part are sequentially filled from the other end, when filling the filtering part, a cavity distance between the filtering part and the plugging part is reserved, and the outer surface of the plugging part and the filtering part is not glued to the inner wall of the paper tube, after direct filling to a fixed position, they are fixed by friction with the inner wall of the paper tube.

[0005] Problem of the above filling method are as follows: 1. The tube is placed vertically during filling, and it is difficult to locate positions of the plugging part and the filtering part on both sides of the cavity, resulting in inconsistent axial lengths of the cavity section of different samples; 2. As the outer surface of the plugging part and filtering part and the inner wall of the paper tube are fixed only by friction, during transportation, the plugging part and filtering part are easy to move toward the cavity section, or the filtering part is partially sucked out of the outer tube during smoking; 3. The filling method is limited in that it can only be filled in batches for individual tubes, resulting in low production efficiency.

[0006] Therefore, efficient production of granular aerosol generating products with a cavity structure, while ensuring stability of the plugging and filtering parts without moving are key problems to be solved in production of granular aerosol generating products.

[0007] The present disclosure is proposed to solve the problems above.

SUMMARY

[0008] The present disclosure uses a rolling and compounding method to form each unit except the aerosol generating granule section, and a cavity for filling the aerosol generating material is reserved during compounding, cutting is carried out as needed after compounding, and the cut filter tip with an aerosol generating matrix accommodating cavity is placed vertically, then the aerosol generating material is filled into the aerosol generating matrix accommodating cavity, the method of compounding before filling of the present disclosure can greatly improve production efficiency, and ensure that the plugging part 2 and the filtering part 4 are stable without moving during smoking or transportation, and better maintain consistency of axial lengths of the cavity section of different samples.

[0009] The present disclosure provides a preparation method of multi-sectional aerosol generating products, including the following steps:

Step 1, preparation of filter-tip rod:

A composite tube 1 is used to wrap a plugging part 2 and a filtering part 4, a first axial length of the interval between the plugging part 2 and the filtering part 4, the length is a cavity section 3 limited by the composite tube 1,

One end of plugging part 2 far away from the cavity section 3 is an aerosol generating matrix accommodating cavity 5 limited by the composite tube 1;

Step 2, filling of aerosol generating material:

The filter-tip rod is in a vertical state, that is, perpendicular to the horizontal plane, wherein, the aerosol generating matrix accommodating cavity 5 is vertically upward, and the flowing aerosol generating material is squeezed into the aerosol generating matrix accommodating cavity 5;

Step 3, forming of aerosol generating rod 6:

Rotate the filter-tip rod filled with aerosol generating material by 180° , so that the aerosol generating matrix accommodating cavity 5 is vertically downward, place it on the plane to dry and expand at a certain temperature, so that the aerosol generating material is solidified to form a fixed aerosol generating rod 6 in the aerosol generating matrix accommodating cavity 5.

[0010] In step 2, the flowing aerosol generating mate-

rial can be filled into the aerosol generating matrix accommodating 5 in any way, e.g., squeezing;

In step 1, preparation of the filter-tip rod can be in a horizontal, vertical or any state between the two, as long as the filter-tip rod is placed in a vertical state during filling of aerosol generating materials in step 2, so as to facilitate quantitative squeezing of the flowing aerosol generating material.

[0011] The purpose of drying and expanding at a certain temperature on the plane after inversion is to make the end face of the aerosol generating rod 6 far away from the filtering part even.

[0012] Preferably, in step 1, the filter-tip rod can be cut into a plurality of filter tips, and the plurality of filter tips are connected by the filtering part 4 and / or the aerosol generating matrix accommodating cavity 5; at this time, there is also a cutting step between step 1 and step 2, which is to cut at the connected filtering part 4 and / or the connected aerosol generating matrix accommodating cavity 5, to cut the filter-tip rod into a plurality of filter tips.

[0013] That is to say, the filter-tip rod in step 1 can be a separate filter tip, that is, the composite tube 1 includes a plugging part 2, a cavity section 3, a filtering part 4 and an aerosol generating matrix accommodating cavity 5; in this case, when step 2 is carried out, it is only necessary to place the aerosol generating matrix accommodating cavity 5 vertically upward.

[0014] Certainly, the filter-tip rod in step 1 can be cut into a plurality of filter tips, that is, the composite tube 1 includes a plugging part 2, a cavity section 3, a filtering part 4 and an aerosol generating matrix accommodating cavity 5, and the plurality of filter tips are connected by the filtering part 4 and / or the aerosol generating matrix accommodating cavity 5, the junction has twice the axial length of the filtering part 4 or the aerosol generating matrix accommodating cavity 5, in this case, when step 2 is carried out, it is also necessary to cut the filter-tip rod into a plurality of filter tips, and place the aerosol generating matrix accommodating cavity 5 vertically upward.

[0015] That is to say, the axial length of the filtering part at the junction is twice that of the filtering part in a single filter tip; similarly, the axial length of the aerosol generating matrix accommodating cavity reserved at the junction is twice that of the aerosol generating matrix accommodating cavity in a single filter tip, so that each filter tip has a complete filtering part and an aerosol generating matrix accommodating cavity after cutting.

[0016] Preferably, in step 2, the flowing aerosol generating material includes smoking raw materials, smoking agents and solvents, the smoking raw materials are crushed in advance and passed through a 40-200 mesh sieve, the smoking raw materials after sieving are mixed separately with smoking agents and solvents in a certain proportion to form a flowing aerosol generating material like plaster;

[0017] Preferably, in step 2, the filling amount of the flowing aerosol generating material is 50-95 % of volume of the aerosol generating matrix accommodating cavity 5, more preferably, 90%.

[0018] Preferably, in step 2, there is a binder in the flowing aerosol generating material, the flowing aerosol generating material is bonded to the inner wall of the composite tube 1 with its own binder during drying and expansion. The binder is selected from chitosan, ethyl cellulose with hydroxyethylation compound modification, guar gum, carboxymethyl cellulose, starch, modified starch, plant cellulose, microcrystalline cellulose, hydroxyethyl cellulose, hydroxyethyl methyl cellulose.

[0019] Preferably, in step 2, the flowing aerosol generating material is squeezed into the aerosol generating matrix accommodating cavity 5 while cleaving to the inner surface of the composite tube 1, and the squeezed flowing aerosol generating material forms a central cavity, the center is the volume reserved for expansion of aerosol generating materials; or,

[0020] The flowing aerosol generating material is filled into the aerosol generating matrix accommodating cavity 5 in two parts, wherein, a first part of the aerosol generating material is squeezed into the aerosol generating matrix accommodating cavity 5 while cleaving to the inner surface of the composite tube 1, the first part of the squeezed aerosol generating material forms a central cavity, and a second part of the aerosol generating material is squeezed into the central cavity, there is a gap between the first part of the aerosol generating material and the second part of the aerosol generating material, the gap is the volume reserved for expansion of aerosol generating materials.

[0021] Preferably, there is also a sealing step after step 2 to make the aerosol generating matrix accommodating cavity 5 filled with the aerosol generating matrix 6 far away from the end surface of the filtering section to form a sealing film. In actual production processes, determine whether the sealing film is needed according to conditions of the aerosol generating matrix 6.

[0022] Preferably, in step 3, drying temperature in step 3 depends on the solvent in the aerosol generating material, i.e., in case the solvent is ethanol, the drying temperature is 50-60 °C , with drying time of 0.5-1h; in case the solvent is water, the drying temperature is 60-70°C, with drying time of 1-2h.

[0023] Preferably, the cavity section 3 also includes functional materials; and / or, the cavity section 3 also includes an empty-tube fitting, the wall of the empty-tube fitting 32 is made of paper, silica gel, cellulose acetate, polylactic acid and non-woven fabric. Functional materials can be any form of material with cooling and flavoring function in the prior art.

[0024] Preferably, the air vent 31 is provided on the composite tube 1 in the cavity section 3 that radially penetrates through the composite tube 1. In case the empty-tube fitting is provided within the cavity section, the air vent 31 penetrates through the composite tube 1 and the empty-tube fitting at the same time. The air vent 31 is to introduce air into the cavity section, so as to reduce aerosol temperature and suction resistance, thus,

to determine whether the vent 31 is needed according to actual aerosol temperatures and suction resistance. In case the air vent 31 is needed, preferably, perforating is used to form the air vent, certainly, it is also possible to use permeable paper as a composite tube or an empty-paper pipe in the cavity section without perforating, as long as air can be introduced into the cavity section.

[0025] Preferably, there is a binder between the outer surface of the plugging part 2 and the inner surface of the composite tube 1, and there is a binder between the outer surface of the filtering part 4 and the inner surface of the composite tube 1. The binder is selected from ordinary lap adhesive.

[0026] Preferably, the composite tube 1 is made of paper and a non-woven fabric. The anti-seepage / heat-conduction layer with anti-seepage or heat-conduction function on the composite tube 1 (especially when the composite tube 1 is made of non-woven fabric), the anti-seepage / heat-conduction layer includes a water-proof layer and / or an oil-proof layer and / or a heat-conduction layer;

[0027] The water-proof layer is made of alkyl ketene dimer (AKD), cationic rosin gum, non-iron aluminum sulfate mix or paraffin material; the oil-proof layer is made of fluorocarbon organic matter, modified starch, AKD and paraffin mixture, AKD and modified starch mixture material. The heat-conduction layer is selected from but not limited to an aluminum foil layer, which is added to the inner wall of the cigarette paper tube by paste; the aluminum foil layer can play the role of water-proof and / or oil-proof, while conducting and preserving heat, so that the smoking material in the inner wall of the cigarette is evenly heated.

[0028] Preferably, the water-proof layer and / or oil-proof layer are coated on the inner wall of the cigarette paper tube by spraying.

[0029] As moisture in the smoking material during cigarette storage seeps to the outside of the cigarette paper tube and results in yellow spots, it is necessary to add a water-proof layer to the inner wall of the cigarette paper tube filled with smoking material. The water-proof layer is made of alkyl ketene dimer (AKD), cationic rosin gum or non-iron aluminum sulfate mix and paraffin material, so as to prevent moisture in the smoking material from seeping to the outside of the cigarette paper tube.

[0030] Similarly, smoking agents, flavors and fragrances are added to smoking materials, during long-term placement, smoking agents in the smoking materials may carry flavors and fragrances to seep to the outside of the paper tube, resulting in yellow spots and affecting appearances of paper tubes, as smoking agents are oily, it is necessary to add an oil-proof layer to the inner wall of the cigarette paper tube filled with smoking materials. The oil-proof layer is made of fluorocarbon organic matter, modified starch, AKD and paraffin mixture, AKD and modified starch mixture, so as to prevent smoking agents in smoking material carrying flavors and fragrances to seep to the outside of the paper tube and occurrence of yellow spots.

[0031] The plugging part can be in any form, as long as blocking aerosol generating matrix (6) from moving downstream.

[0032] Compared with the prior art, the present disclosure has the following beneficial effects:

1. The present disclosure uses a rolling and compounding method to form each unit except the aerosol generating granule section, and a cavity for filling the aerosol generating material is reserved during compounding, cutting is carried out as needed after compounding, and the cut filter tip with an aerosol generating matrix accommodating cavity 5 is placed vertically, then the aerosol generating material is filled into the aerosol generating matrix accommodating cavity 5, as the plugging part 2 and the filtering part 4 are formed by compounding and rolling, it is easier to locate the plugging part 2 and the filtering part 4 in axial positions, to better ensure consistency of axial lengths of the cavity section 3 of different samples.

As the plugging part 2 and the filtering part 4 are formed by compounding and rolling, it is more convenient to apply a binder between the outer surface of the plugging part 2 and the filtering part 4 and the inner surface of the paper tube, so as to ensure that no displacement occurs at both ends during smoking or transportation.

2. The present disclosure uses the method of compounding and then filling to prepare aerosol generating products, which can simultaneously compound a plurality of filter tips, then cut and fill the aerosol generating material, as other units are compounded except the aerosol generating material, efficiency of each unit is greatly improved compared with separate filling.

3. In the present disclosure, the flowing aerosol generating material is filled by squeezing, places the aerosol generating matrix accommodating cavity 5 vertically downward on the plane to dry and expand at a certain temperature, so that the aerosol generating material is solidify to form a fixed aerosol generating rod 6 located in the aerosol generating matrix accommodating cavity 5, production efficiency is higher by squeezing, and the aerosol generating rod 6 obtained after drying and expanding has a pore structure, which can facilitate release and circulation of aerosol. The purpose of drying and expanding at a certain temperature on the plane after inversion is to make the end face of the aerosol generating rod 6 far away from the filtering part even.

DRAWINGS OF THE DESCRIPTION

[0033]

FIG.1 is a structural schematic view of a filter-tip rod

with two filter tips before cutting in Embodiment 1, the dotted line in the figure is the cutting position.

FIG.2 is a structural schematic view of a filter-tip rod with three filter tips before cutting in Embodiment 1, the dotted line in the figure is the cutting position.

FIG.3 is a structural schematic view of the aerosol generating products obtained.

[0034] List of the reference signs of figures in the description of figures: 1. Composite tube, 2. Plugging part, 3. Cavity section, 4. Filtering part, 5. Aerosol generating matrix accommodating cavity, 6. Aerosol generating rod, 31. Air vent.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0035] The present disclosure is further illustrated through specific embodiments.

[0036] It is understood by those skilled in the art that, the following embodiments are only for illustrating the present disclosure and should not be interpreted as limiting the scope of the present disclosure. In case no specific technique or condition is indicated in the embodiment, the technique or condition described in the literature in the field or the product specification is based on. In case the materials or equipment used are not indicated with manufacturers, they are all ordinary products that can be obtained through purchase.

[0037] It can be understood by those skilled in the art that, the singular forms "a", "an" and "the" used herein can include the plural forms as well, unless expressly stated otherwise. It should be further understood that "including" used in the description of the present disclosure means that the features, integers, steps, operations, elements and/or components exist; however, the existence or addition of one or more other features, integers, steps, operations, elements, components and/or groups thereof is not excluded. It should be understood that, when an element is referred to be "connected" to another one, it may be directly connected to another element, or there may be intermediate elements as well. Moreover, "connection" as used herein may include wireless connections.

[0038] In the description of the present disclosure, unless otherwise stated, "a plurality of" means two or more. The orientation or state relationship indicated by the terms "inside", "above", "below", etc. is based on that shown in the figures, which is only for convenience of describing the present disclosure and simplifying description, rather than indicating or implying that the device or element must have a particular orientation, or must be constructed and operated in a particular orientation, and thus should not be interpreted as limitations of the present disclosure.

[0039] In the description of the present disclosure, it should be noted that, the terms "mount", "connect" and "provided with" should be interpreted broadly unless otherwise expressly specified and defined, such as fixed connection, detachable connection, or integral connection; either mechanical connection or electrical connection; direct connection or indirect connection through intermediate media. The specific meanings of the terms above in the present disclosure can be understood by persons skilled in the art in actual conditions.

[0040] It is understood by those skilled in the art that, unless otherwise defined, all terms including technical and scientific terms used herein have the same meanings as commonly understood by the ordinary persons skilled in the art to the technical field to which the present disclosure belongs. It should also be understood that terms such as those defined in the general dictionary should be understood to have meanings consistent with those in the context of the prior art; moreover, unless defined as herein, the terms may not be explained with idealized or overly formal senses.

Embodiment 1

[0041] The embodiment provides a preparation method of multi-sectional aerosol generating products, including the following steps:

Step 1, preparation of filter-tip rod:

A composite tube 1 is used to wrap a plugging part 2 and a filtering part 4, there is a first axial length of the interval between the plugging part 2 and the filtering part 4, the length is a cavity section 3 limited by the composite tube 1,

One end of plugging part 2 far away from the cavity section 3 is an aerosol generating matrix accommodating cavity 5 limited by the composite tube 1;

Step 2, filling of aerosol generating material:

The filter-tip rod is in a vertical state, that is, perpendicular to the horizontal plane, wherein, the aerosol generating matrix accommodating cavity 5 is vertically upward, and the flowing aerosol generating material is squeezed into the aerosol generating matrix accommodating cavity 5;

Step 3, forming of aerosol generating rod 6:

Rotate the filter-tip rod filled with aerosol generating material by 180° , so that the aerosol generating matrix accommodating cavity 5 is vertically downward, place it on the plane to dry and expand at a certain temperature, so that the aerosol generating material is solidified to form a fixed aerosol generating rod 6 in the aerosol generating matrix accommodating cavity 5.

[0042] In step 2, the flowing aerosol generating material is filled into the aerosol generating matrix accommodating cavity 5 by squeezing; in step 1, preparation of filter-tip rod is in a horizontal state by existing compounding machines.

[0043] In step 1, the filter-tip rod can be cut into two filter tips, and the two filter tips are connected by aerosol generating matrix accommodating cavity 5; at this time, there is also a cutting step between step 1 and step 2, which is to cut at the connected aerosol generating matrix accommodating cavity 5, so as to cut the filter-tip rod into two filter tips. The joint has twice the axial length of the aerosol generating matrix accommodating cavity 5, so that each filter-tip rod has a complete aerosol generating matrix accommodating cavity after cutting.

[0044] In step 2, the flowing aerosol generating material includes smoking raw materials, smoking agents and solvents, the smoking raw materials are crushed in advance and passed through a 40-200 mesh sieve, the smoking raw materials after sieving are mixed separately with smoking agents and solvents in a certain proportion to form a flowing aerosol generating material like plaster; In step 2, the filling amount of the flowing aerosol generating material is 90% of volume of the aerosol generating matrix accommodating cavity 5.

[0045] In step 2, there is a binder in the flowing aerosol generating material, the flowing aerosol generating material is bonded to the inner wall of the composite tube 1 with its own binder during drying and expansion. The binder is selected from carboxymethyl cellulose.

[0046] In step 2, the flowing aerosol generating material is squeezed into the aerosol generating matrix accommodating cavity 5 while cleaving to the inner surface of the composite tube 1, and the squeezed flowing aerosol generating material forms a central cavity, the center is the volume reserved for expansion of aerosol generating materials.

[0047] In step 3, the drying temperature depends on the solvent in the aerosol generating material, in the embodiment, the solvent is water, the drying temperature is 60 °C with drying time of 1h.

[0048] The cavity section 3 also includes an empty-tube fitting, the empty-tube fitting can be empty paper tube. The composite tube 1 in the cavity section 3 has an air vent 31 that penetrates radially through the composite tube 1. In case an empty-tube fitting is provided in the cavity section 3, the air vent 31 runs through the composite tube 1 and the empty-tube fitting at the same time.

[0049] There is a binder between the outer surface of the plugging part 2 and the inner surface of the composite tube 1, and there is a binder between the outer surface of the filtering part 4 and the inner surface of the composite tube 1.

[0050] The composite tube 1 is made of paper.

Embodiment 2

[0051] The differences between embodiment 2 and embodiment 1 are that, 1. In step 1, the filter-tip rod can be cut into four filter tips, and the four filter tips are connected by the filtering part 4 and the aerosol generating matrix accommodating cavity 5; at this time, there is also a cutting step between step 1 and step 2, which is to cut at the connected filtering part 4 and the connected aerosol generating matrix accommodating cavity 5, so as to cut the filter-tip rod into 4 filter tips. The axial length of the filtering part at the junction is twice that of the filtering part in a single filter-tip; similarly, the axial length of the aerosol generating matrix accommodating cavity reserved at the junction is twice that of the aerosol generating matrix accommodating cavity in a single filter-tip, so that each filter rod has a complete filtering part and an aerosol generating matrix accommodating cavity after cutting. 2. In step 2, the flowing aerosol generating material is filled into the aerosol generating matrix accommodating cavity 5 in two parts, wherein, a first part of the aerosol generating material is squeezed into the aerosol generating matrix accommodating cavity 5 while cleaving to the inner surface of the composite tube 1, the first part of the squeezed aerosol generating material forms a central cavity, and a second part of the aerosol generating material is squeezed into the central cavity, there is a gap between the first part of the aerosol generating material and the second part of the aerosol generating material, the gap is the volume reserved for expansion of aerosol generating materials.

Claims

1. A preparation method of multi-sectional aerosol generating products, wherein, the method comprises the following steps:

Step 1, preparation of filter-tip rod:

A composite tube (1) is used to wrap a plugging part (2) and a filtering part (4), there is a first axial length of the interval between the plugging part (2) and the filtering part (4), the length is a cavity section (3) limited by the composite tube (1),
One end of plugging part (2) far away from the cavity section (3) is an aerosol generating matrix accommodating cavity (5) limited by the composite tube (1);

Step 2, filling of an aerosol generating material:
The filter-tip rod is in a vertical state, wherein the aerosol generating matrix accommodating cavity (5) is vertically upward, and the flowing aerosol generating material is filled into the aerosol generating matrix accommodating cavity (5);
Step 3, forming of an aerosol generating rod (6):
Rotate the filter-tip rod filled with aerosol generating material by 180° , so that the aerosol generating matrix accommodating cavity (5) is vertically downward, place it on the plane to dry and expand at a certain temperature, so that the aerosol generating material is solidified to form a fixed aerosol generating rod (6) in the aerosol

generating matrix accommodating cavity (5).

2. The preparation method of claim 1, wherein, in step 1, the filter-tip rod can be cut into a plurality of filter tips, and the plurality of filter tips are connected by the filtering part (4) and or the aerosol generating matrix accommodating cavity (5).
At this time, there is also a cutting step between step 1 and step 2, which is to cut at the connected filtering part (4) and / or the connected aerosol generating matrix accommodating cavity (5), to cut the filter-tip rod into a plurality of filter tips.

3. The preparation method of claim 1, wherein, in step 2, the flowing aerosol generating material comprises smoking raw materials, smoking agents and solvents, the smoking raw materials are crushed in advance and passed through a 40-200 mesh sieve, the smoking raw materials after sieving are mixed separately with smoking agents and solvents in a certain proportion to form a flowing aerosol generating material.
The filling amount of the flowing aerosol generating material is 50-95 % of volume of the aerosol generating matrix accommodating cavity (5).

4. The preparation method of claim 3, wherein, in step 2, there is a binder in the flowing aerosol generating material, the flowing aerosol generating material is bonded to the inner wall of the composite tube (1) with its own binder during drying and expansion.

5. The preparation method of claim 1, wherein, in step 2, the flowing aerosol generating material is squeezed into the aerosol generating matrix accommodating cavity (5) while cleaving to the inner surface of the composite tube (1), and the squeezed flowing aerosol generating material forms a central cavity; or,
The flowing aerosol generating material is filled into the aerosol generating matrix accommodating cavity (5) in two parts, wherein, a first part of the aerosol generating material is squeezed into the aerosol generating matrix accommodating cavity (5) while cleaving to the inner surface of the composite tube (1), the first part of the squeezed aerosol generating material forms a central cavity, and a second part of the aerosol generating material is squeezed into the central cavity, there is a gap between the first part of the aerosol generating material and the second part of the aerosol generating material.

6. The preparation method of claim 1, wherein, after step 2, there is also a sealing step to make the aerosol generating matrix accommodating cavity (5) filled with the aerosol generating matrix (6) far away from the end surface of the filtering section to form a sealing film.

7. The preparation method of claim 1, wherein, drying temperature in step 3 depends on the solvent in the aerosol generating material, i.e., in case the solvent is ethanol, the drying temperature is 50-60°C, with drying time of 0.5-1h; in case the solvent is water, the drying temperature is 60-70°C, with the drying time of 1-2h.

8. The method of claim 1, wherein, the cavity section (3) also comprises functional materials; and / or,
The cavity section (3) also comprises an empty-tube fitting.

9. The method of claim 1, wherein, the composite tube (1) in the cavity section (3) has an air vent (31) that penetrates radially through the composite tube (1).

10. The preparation method of claim 1, wherein, there is a binder between the outer surface of the plugging part (2) and the inner surface of the composite tube (1), and there is a binder between the outer surface of the filtering part (4) and the inner surface of the composite tube (1).

Patentansprüche

1. Ein Herstellungsverfahren von mehrteiligen Aerosol erzeugenden Produkten, wobei das Verfahren die folgenden Schritte umfasst:

Schritt 1, Herstellung eines Filterspitzenstabs:

Ein Verbundrohr (1) wird verwendet, um ein Stopfenteil (2) und ein Filterteil (4) zu umhüllen, es gibt eine erste axiale Länge des Intervalls zwischen dem Stopfenteil (2) und dem Filterteil (4), die Länge ist ein Hohlraumabschnitt (3), der durch das Verbundrohr (1) begrenzt ist,
Ein Ende des Stopfenteils (2), das weit von dem Hohlraumabschnitt (3) entfernt ist, ist ein Hohlraum (5) zur Aufnahme einer aerosolerzeugenden Matrix, der durch das Verbundrohr (1) begrenzt ist;

Schritt 2, Einfüllen eines aerosolerzeugenden Materials:
Der Filterspitzenstab ist in einem vertikalen Zustand, wobei der Hohlraum (5) zur Aufnahme der aerosolerzeugenden Matrix vertikal nach oben gerichtet ist, und das fließende aerosolerzeugende Material in den Hohlraum (5) zur Aufnahme der aerosolerzeugenden Matrix gefüllt wird;
Schritt 3, Bilden eines aerosolerzeugenden Stabes (6):
Den mit aerosolerzeugendem Material gefüllten

Filterspitzenstab um 180° drehen, so dass der Hohlraum (5) zur Aufnahme der aerosolerzeugenden Matrix vertikal nach unten gerichtet ist, ihn auf der Ebene platzieren, um ihn bei einer bestimmten Temperatur zu trocknen und zu expandieren, so dass das aerosolerzeugende Material verfestigt wird, um einen festen aerosolerzeugenden Stab (6) in dem Hohlraum (5) zur Aufnahme der aerosolerzeugenden Matrix zu bilden.

2. Das Herstellungsverfahren nach Anspruch 1, wobei in Schritt 1 der Filterspitzenstab in eine Vielzahl von Filterspitzen zerschnitten werden kann und die Vielzahl von Filterspitzen durch das Filterteil (4) und / oder den Hohlraum (5) zur Aufnahme der aerosolerzeugenden Matrix verbunden sind.
Zu diesem Zeitpunkt gibt es auch einen Schneideschritt zwischen Schritt 1 und Schritt 2, der darin besteht, an dem verbundenen Filterteil (4) und/oder dem verbundenen Hohlraum (5) zur Aufnahme der aerosolerzeugenden Matrix zu schneiden, um den Filterspitzenstab in eine Vielzahl von Filterspitzen zu zerschneiden.

3. Das Herstellungsverfahren nach Anspruch 1, wobei in Schritt 2 das fließende aerosolerzeugende Material Rauchrohstoffe, Rauchmittel und Lösungsmittel umfasst, die Rauchrohstoffe vorab zerkleinert werden und ein Sieb mit 40-200 Mesh passieren, die Rauchrohstoffe nach dem Sieben separat mit Rauchmitteln und Lösungsmitteln in einem bestimmten Verhältnis gemischt werden, um ein fließendes aerosolerzeugendes Material zu bilden.
Die Füllmenge des fließenden aerosolerzeugenden Materials beträgt 50-95 % eines Volumens des Hohlraums (5) zur Aufnahme der aerosolerzeugenden Matrix.

4. Das Herstellungsverfahren nach Anspruch 3, wobei in Schritt 2 ein Bindemittel in dem fließenden aerosolerzeugenden Material vorhanden ist und das fließende aerosolerzeugende Material während des Trocknens und der Expansion mit seinem eigenen Bindemittel an die Innenwand des Verbundrohrs (1) gebunden wird.

5. Das Herstellungsverfahren nach Anspruch 1, wobei in Schritt 2 das fließende aerosolerzeugende Material in den Hohlraum (5) zur Aufnahme der aerosolerzeugenden Matrix gepresst wird, während es an der Innenfläche des Verbundrohrs (1) klebt, und das gepresste fließende aerosolerzeugende Material bildet einen zentralen Hohlraum; oder,
Das fließende aerosolerzeugende Material in den Hohlraum (5) zur Aufnahme der aerosolerzeugenden Matrix in zwei Teilen eingefüllt wird, wobei ein erster Teil des aerosolerzeugenden Materials in den Hohlraum (5) zur Aufnahme der aerosolerzeugenden Matrix gepresst wird, während es an der Innenfläche des Verbundrohrs (1) klebt, der erste Teil des gepressten aerosolerzeugenden Materials bildet einen zentralen Hohlraum, und ein zweiter Teil des aerosolerzeugenden Materials wird in den zentralen Hohlraum gepresst, es gibt einen Spalt zwischen dem ersten Teil des aerosolerzeugenden Materials und dem zweiten Teil des aerosolerzeugenden Materials.

6. Das Herstellungsverfahren nach Anspruch 1, wobei nach Schritt 2 auch ein Versiegelungsschritt erfolgt, um den mit der aerosolerzeugenden Matrix (6) gefüllten Hohlraum (5) zur Aufnahme der aerosolerzeugenden Matrix von der Endfläche des filternden Abschnitts weit weg zu bringen, um einen Versiegelungsfilm zu bilden.

7. Das Herstellungsverfahren nach Anspruch 1, wobei eine Trocknungstemperatur in Schritt 3 von dem Lösungsmittel in dem aerosolerzeugenden Material abhängt, d. h. wenn das Lösungsmittel Ethanol ist, beträgt die Trocknungstemperatur 50-60°C, mit einer Trocknungszeit von 0,5-1h; wenn das Lösungsmittel Wasser ist, beträgt die Trocknungstemperatur 60-70°C, mit der Trocknungszeit von 1-2h.

8. Das Herstellungsverfahren nach Anspruch 1, wobei der Hohlraumabschnitt (3) auch funktionelle Materialien umfasst; und / oder,
der Hohlraumabschnitt (3) auch ein Leerrohrformstück umfasst.

9. Das Herstellungsverfahren nach Anspruch 1, wobei das Verbundrohr (1) im Hohlraumabschnitt (3) eine Lüftungsöffnung (31) aufweist, die radial durch das Verbundrohr (1) hindurchgeht.

10. Das Herstellungsverfahren nach Anspruch 1, wobei es zwischen der Außenfläche des Stopfenteils (2) und der Innenfläche des Verbundrohrs (1) ein Bindemittel gibt und es zwischen der Außenfläche des Filterteils (4) und der Innenfläche des Verbundrohrs (1) ein Bindemittel gibt.

Revendications

1. Méthode de préparation de produits générateurs d'aérosols multisectoriels, dans laquelle la méthode comprend les étapes suivantes :

Étape 1, préparation de tige de l'embout de filtrage :

Un tube composite (1) est utilisé pour envelopper une partie de bouchage (2) et une

partie de filtrage (4), il y a une première longueur axiale de l'intervalle entre la partie de bouchage (2) et la partie de filtrage (4), la longueur est une section de cavité (3) limitée par le tube composite (1),
Une extrémité de la partie de bouchage (2) très éloignée de la section de cavité (3) est une cavité de logement de matrice génératrice d'aérosol (5) limitée par le tube composite (1) ;

Étape 2, remplissage d'un matériau générateur d'aérosol :
La tige de l'embout de filtrage est dans un état vertical, dans lequel la cavité de logement de matrice génératrice d'aérosol (5) est verticalement vers le haut, et le matériau générateur d'aérosol coulant est rempli dans la cavité de logement de matrice génératrice d'aérosol (5) ;
Étape 3, formation d'une tige génératrice d'aérosol (6) :
Faire pivoter la tige de l'embout de filtrage remplie de matériau générateur d'aérosol de 180°, de sorte que la cavité de logement de matrice génératrice d'aérosol (5) est verticalement vers le bas, la placer sur le plan pour qu'elle sèche et se dilate à une certaine température, de sorte que le matériau générateur d'aérosol est solidifié pour former une tige génératrice d'aérosol (6) fixe dans la cavité de logement de matrice génératrice d'aérosol (5).

2. La méthode de préparation de la revendication 1, dans laquelle, à l'étape 1, la tige de l'embout de filtrage peut être coupée en une pluralité d'embouts de filtrage, et la pluralité d'embouts de filtrage est reliée par la partie de filtrage (4) et / ou la cavité de logement de matrice génératrice d'aérosol (5).
À ce moment, entre l'étape 1 et l'étape 2, il y a également une étape de découpe qui consiste à découper à la partie de filtrage (4) reliée et / ou la cavité de logement de matrice génératrice d'aérosol (5) reliée, afin de découper la tige de l'embout de filtrage en une pluralité d'embouts de filtrage.

3. La méthode de préparation de la revendication 1, dans laquelle, à l'étape 2, le matériau générateur d'aérosol coulant comprend des matières premières de fumage, des agents de fumage et des solvants, les matières premières de fumage sont préalablement broyées et passées à travers un tamis de 40-200 mesh, les matières premières de fumage après le tamisage sont mélangées séparément avec des agents de fumage et des solvants dans une certaine proportion pour former un matériau générateur d'aérosol coulant.
La quantité de remplissage du matériau générateur d'aérosol coulant est de 50 à 95 % du volume de la cavité de logement de matrice génératrice d'aérosol (5).

4. La méthode de préparation de la revendication 3, dans laquelle, à l'étape 2, il y a un liant dans le matériau générateur d'aérosol coulant, le matériau générateur d'aérosol coulant est lié à la paroi interne du tube composite (1) avec son propre liant pendant le séchage et l'expansion.

5. La méthode de préparation de la revendication 1, dans laquelle, à l'étape 2, le matériau générateur d'aérosol coulant est pressé dans la cavité de logement de matrice génératrice d'aérosol (5) tout en clivant à la surface intérieure du tube composite (1), et le matériau générateur d'aérosol coulant pressé forme une cavité centrale ; ou,
Le matériau générateur d'aérosol coulant est rempli dans la cavité de logement de matrice génératrice d'aérosol (5) en deux parties, dans lesquelles une première partie du matériau générateur d'aérosol est pressée dans la cavité de logement de matrice génératrice d'aérosol (5) tout en clivant à la surface intérieure du tube composite (1), la première partie du matériau générateur d'aérosol pressé forme une cavité centrale, et une deuxième partie du matériau générateur d'aérosol est pressée dans la cavité centrale, il y a un espace entre la première partie du matériau générateur d'aérosol et la deuxième partie du matériau générateur d'aérosol.

6. La méthode de préparation de la revendication 1, dans laquelle, après l'étape 2, il y a également une étape de scellement pour faire la cavité de logement de matrice génératrice d'aérosol (5) remplie de la matrice génératrice d'aérosol (6) très éloignée de la surface d'extrémité de la section de filtrage pour former un film de scellement.

7. La méthode de préparation selon la revendication 1, dans laquelle la température de séchage à l'étape 3 dépend du solvant contenu dans le matériau générateur d'aérosol, c'est-à-dire que si le solvant est l'éthanol, la température de séchage est de 50-60°C, avec un temps de séchage de 0,5-1h ; si le solvant est l'eau, la température de séchage est de 60-70°C, avec le temps de séchage de 1-2h.

8. La méthode de la revendication 1, dans laquelle la section de cavité (3) comprend également des matériaux fonctionnels ; et / ou,
La section de cavité (3) comprend également un raccord à tube vide.

9. La méthode de la revendication 1, dans laquelle le tube composite (1) dans la section de cavité (3) a un évent d'air (31) qui pénètre radialement à travers le tube composite (1).

10. La méthode de préparation selon la revendication 1, dans laquelle il y a un liant entre la surface extérieure de la partie de bouchage (2) et la surface intérieure du tube composite (1), et il y a un liant entre la surface extérieure de la partie de filtrage (4) et la surface intérieure du tube composite (1).

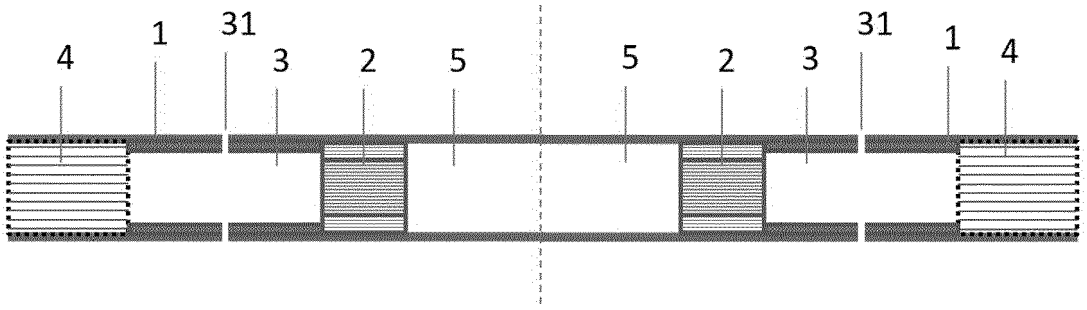

FIG.1

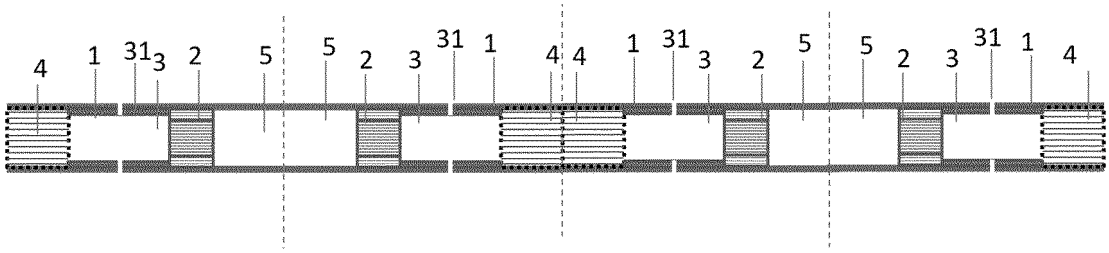

FIG.2

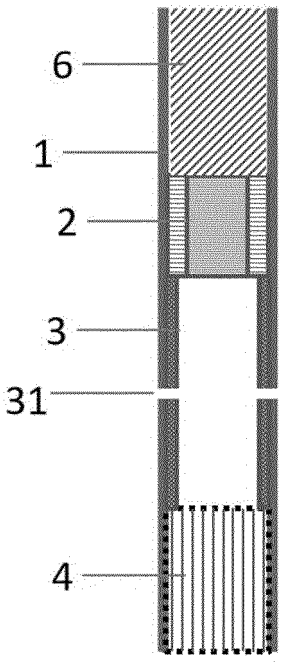

FIG.3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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