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(54) **AEROSOL GENERATING PRODUCT APPLICABLE TO HEATERS HAVING DIFFERENT LENGTHS**

(57) The present invention discloses an aerosol generating product suitable for heaters with different lengths, including a smoke producing pipe; the smoke producing pipe includes a tobacco substance and/or a porous material, a fragrance enhancing substance and/or a smoke producing substance, a supporting fiber and an adhesive; and an aerosol generating apparatus matching with the aerosol generating product has a heater, and an axial length of the heater is less than or equal to an axial length of the smoke producing pipe. The aerosol generating

product of the present invention is suitable for the heaters with the different lengths, as in the smoke producing pipe of the present invention, the fragrance enhancing substance and/or the smoke producing substance are/is only adsorbed to the porous material, the fragrance enhancing substance and/or the smoke producing substance in a cigarette core stick in a region not covered with the heater can be released only through heat conducted by hot smoke, and thus the effects of fragrance enhancing and increasing the smoke volume are achieved.

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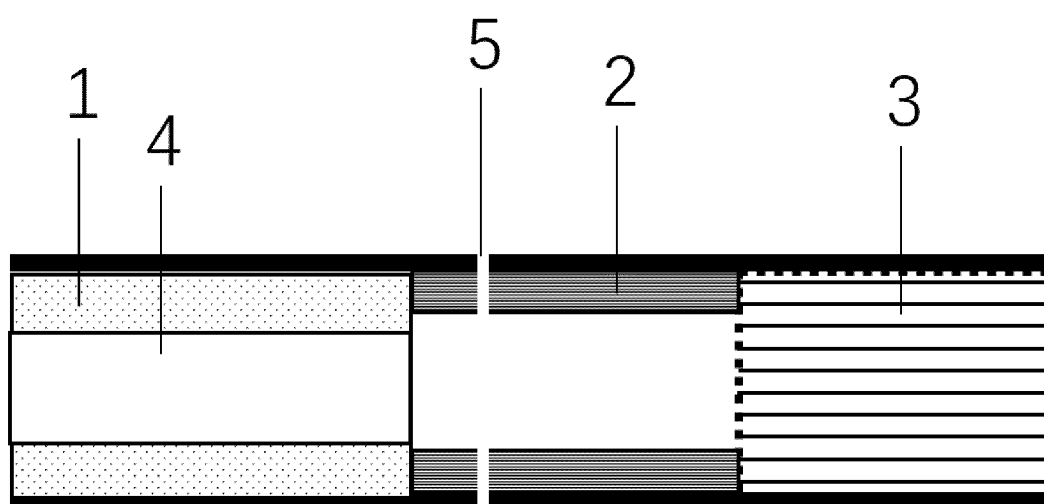


Fig. 1

Description

TECHNICAL FIELD

[0001] The present invention relates to the technical field of heat-not-burning cigarettes, in particular to an aerosol generating product suitable for heaters with different lengths.

BACKGROUND

[0002] With consumers' focus on the health issue and increasing demands for personalized experience in cigarette products, the tobacco industry has developed various smoking products with reduced tar and harm in continuous response to consumer demand upgrading. A heated cigarette is capable of providing healthier smoking experience while meeting consumers' sensory needs for cigarette products due to its different cigarette heating mode from a conventional cigarette product.

[0003] An existing integrated aerosol generating product includes an outer pipe and an aerosol generating matrix and other function units with cooling, fragrance enhancing or smoke producing functions which are filled in the outer pipe. Due to limit of a tobacco material, the tobacco material close to a heater is heated fully and generates smoke more easily during smoking, in order to guarantee that a tobacco stick is heated uniformly and completely, an existing aerosol generating product usually needs to match with a heater with an axial length which is consistent with the tobacco stick, so it can be guaranteed that the tobacco stick in any axial height can receive heat of the heater, but this case directly limits an axial length of the tobacco stick in a cigarette. For the purpose of increasing smoke volume and improving original fragrance of tobacco, some researchers arrange a tobacco sheet on the downstream of a tobacco section and tries to elute the tobacco sheet on the downstream through hot smoke generated by the tobacco section, so that smoke in the tobacco sheet is released. However, the present invention discovers that the method is only an ideal state, actually, arranging the tobacco sheet on the downstream of the tobacco section will decrease the smoke volume and reduce fragrance quality instead of increasing the smoke volume and improving the original fragrance of the tobacco. The reason is that the tobacco sheet can generate the smoke only in a case of direct heating, the tobacco sheet can hardly release the smoke only through afterheat of the tobacco section, or say, the smoke generated by the tobacco sheet at this moment is very little, and the smoke is held back by the added tobacco sheet instead, which leads to decrease of the smoke volume, namely, in this case, the tobacco sheet is mainly a material for holding back the smoke, which is totally unexpected by the present invention. Therefore, to design an aerosol generating product which can release smoke only through smoke afterheat to increase the smoke volume is what people want.

[0004] The aerosol generating matrix of the existing integrated aerosol generating product is usually formed by mixing tobacco powder or tobacco particles with a smoke producing agent and an adhesive to form a pulp, then obtaining a cigarette core long strip in an extruding or molding mode and then cutting the same into a plurality of cigarette core sticks. A problem lies in that in order to guarantee that a cigarette core stick at a cutting position does not deform and collapse during cutting, the cigarette core stick needs to have a certain hardness, but too hard cigarette core stick leads to too brittle cigarette core stick, and breaking is prone to occurring in a filling, packing or using process, and thus, there is a dilemma that cutting is not easy in the case of too small hardness and breaking is prone to occurring in the case of too large hardness. Besides, the tobacco powder or the tobacco particles of a smoking material need(s) a large quantity of adhesive in a forming process, and the adhesive becomes hard after being solidified, which is the reason why the entire cigarette core stick is too hard.

[0005] Therefore, how to develop a new heated cigarette fragrance enhancing mode, solve the problem that the integrated aerosol generating matrix stick is too hard and guarantee that no collapse and deformation occur at the cutting position is expected by people to solve.

[0006] The present invention is provided for solving the above problems.

SUMMARY

[0007] The present invention provides an aerosol generating product suitable for heaters with different lengths, including a smoke producing pipe; and the smoke producing pipe includes a tobacco substance and/or a porous material, a fragrance enhancing substance and/or a smoke producing substance, a supporting fiber and an adhesive; and an aerosol generating apparatus matching with the aerosol generating product has a heater, and an axial length of the heater is less than or equal to an axial length of the smoke producing pipe.

[0008] Preferably, the smoke producing pipe has a length ranging from 10 mm to 25 mm.

[0009] Preferably, the tobacco substance includes tobacco powder or tobacco particles.

[0010] Preferably, the porous material includes activated carbon, a ceramic molecular sieve type inorganic material, or a polymer type organic material, or a plant natural porous material.

[0011] Preferably, the fragrance enhancing substance includes menthol, ionone, ethyl maltol, vanillin, rose absolute essence and flavor or a tobacco extract or nicotine salt; and the smoke producing substance includes one or more of glycerol or propylene glycol.

[0012] Preferably, a pipe wall of the smoke producing pipe has a thickness ranging from 0.8 mm to 1.5 mm.

[0013] Preferably, the supporting fiber is selected from a plant fiber, the plant fiber includes one or more of a fluff

pulp fiber, a jute pulp fiber or a wood pulp fiber which are commonly used in the art, and the wood pulp fiber may be selected from commonly used wood pulp fibers such as birch wood, poplar wood, and pine wood.

[0014] Preferably, in the case that the smoke producing pipe includes the tobacco substance and the porous material, a mass ratio of the tobacco substance to the porous material is in a range from 0.1 to 0.5.

[0015] Preferably, a structure of the smoke producing pipe is a pipe body with one or more axial airflow passages. In the case that the smoke producing pipe is an ordinary hollow pipe body, the smoke producing pipe has one axial airflow passage, and in the case that the hollow pipe body internally has a structure with a "cross-shaped" or "Y-shaped" section, the smoke producing pipe has a plurality of axial airflow passages.

[0016] A second aspect of the present invention provides a preparation method for the aerosol generating product described in the first aspect of the present invention. The preparation method for the smoke producing pipe includes the following steps:

- (1) adsorbing a fragrance enhancing substance and/or a smoke producing substance to a tobacco substance and/or a porous material first;
- (2) mixing the tobacco substance and/or the porous material with the fragrance enhancing substance and/or the smoke producing substance adsorbed thereto with a supporting fiber, then adding an adhesive into a mixture, and obtaining a mixed pulp after mixing; and
- (3) obtaining a smoke producing pipe and/or a filter pipe by forming the mixed pulp in an extruding or molding mode.

[0017] Preferably, in step (1), the porous material is powdery with 80 meshes to 500 meshes, where a load quantity of the fragrance enhancing substance and/or the smoke producing substance is 40% to 80% of a total weight of the porous material and/or the tobacco substance; in step (2), the adhesive includes a water-soluble adhesive, and the supporting fiber mixed with the tobacco substance and/or the porous material has a length ranging from 0.5 mm to 5 mm.

[0018] A length of a plant fiber added into the smoke producing pipe or the filter pipe rather than a length of a plant fiber raw material is limited here. This is because for the purpose of convenient storage and transportation, at present, a plant fiber used in the market is usually agglomerated, a defiberizing process is needed during use, that is, the agglomerated plant fiber needs to be loosened. This process may adopt the following two methods: one method is to soak the agglomerated plant fiber in water till the plant fiber is separated, then perform wet milling till a needed fiber length is obtained, and at the moment, perform dewatering treatment on the separated plant fiber again, because the plant fiber mixed with the porous material and/or the tobacco substance cannot

contain too much water. The other method is to perform dry milling on the agglomerated plant fiber directly till a needed fiber length is obtained, and then mix the fiber with the porous material and/or the tobacco substance.

[0019] Preferably, in the smoke producing pipe, the added amount of the supporting fiber is 5% to 10% of a total mass of the mixed pulp, and the added amount of the adhesive is 50% to 70% of the total mass of the mixed pulp.

[0020] The aerosol generating product composed of a cigarette core stick according to the present invention is especially suitable for circumferential heating, airflow heating and other heating modes except central heating, this is because as for an existing cigarette core stick with a central passage for central heating, a volume of the cigarette core stick is reduced and internally shrunk after being heated due to flowing away of a smoke producing agent and the like, resulting in that after smoking, the cigarette core stick is stuck to a heating stick, and is difficult to clean. The present invention is aware of this problem, and applies the cigarette core stick to a heated cigarette in circumferential heating, airflow heating and other heating modes except central heating.

[0021] Compared with the prior art, the present invention has the following beneficial effects.

1. The aerosol generating product of the present invention is suitable for the heaters with different lengths though the axial length of the heater is less than or equal to the axial length of the smoke producing pipe. This is because the smoke producing pipe and/or the filter pipe of the present invention uses the tobacco substance and/or the porous material as a main body, the fragrance enhancing substance and/or the smoke producing substance is adsorbed by the tobacco substance and/or the porous material to achieve a fragrance enhancing or smoke producing effect. As the fragrance enhancing substance and/or the smoke producing substance are/is only adsorbed to the porous material, the fragrance enhancing substance and/or the smoke producing substance in the cigarette core stick in a region not covered with the heater can be released only through heat conducted by hot smoke, and thus the effects of fragrance enhancing and increasing the smoke volume are achieved.

2. The smoke producing pipe is integrated, so cigarette paper may be omitted, all units are directly combined together through forming paper or filled in a paper bobbin together, and thus the production efficiency is improved. Distinctively, the smoke producing pipe and a binary combination filter stick may be directly twisted and combined through tipping paper to form a cigarette, in this way, a cigarette structure can be simplified, and the production efficiency can be improved.

3. A fragrance enhancing mode of adsorbing the fragrance enhancing substance to the porous material widens a selection range and form of the fragrance enhancing substance, and any fragrance enhancing substance capable of being adsorbed into the porous material is fine, not limited to breakable capsule fragrance enhancing. In addition, the fragrance enhancing substance is adsorbed into the porous material, so the fragrance enhancing substance in the porous material is released slowly during smoking, and this type of fragrance enhancing can slowly release the fragrance enhancing substance and guarantee consistent fragrance quality before and after smoking. Further, based on this, both the fragrance enhancing substance and the smoke producing substance may be added to a filter section, and the smoke producing substance in the filter section can supplement the smoke volume at a later stage of smoking.

The tobacco powder or the tobacco particles has/have a pore structure and can adsorb the fragrance enhancing substance and the smoke producing substance itself, so as to increase the smoke volume and supplement the smoke fragrance, and as a temperature of a smoke producing section is high, releasing of the fragrance enhancing substance is more facilitated by introducing the fragrance enhancing substance into the smoke producing section, and thus the fragrance enhancing effect is improved. In addition, different fragrance enhancing substances may achieve characteristic flavor smoke of different fragrance types, and adding the fragrance enhancing substance and the smoke producing substance to the smoke producing section can make the characteristic flavor and the smoke be mixed more uniformly and make fragrance coordination better.

4. The smoke producing pipe of the present invention uses the supporting fiber as a forming accessory, and adding of the supporting fiber has the following benefits: (1) a sugar content of the supporting fiber is high, the added supporting fiber can play a role in bonding the porous material, so that a use amount of the adhesive is reduced, and not only is bonding the porous material into a stick guaranteed, but also the problem that the filter pipe becomes hard and brittle after the adhesive is solidified is solved. (2) The supporting fiber can play a role in supporting the filter pipe, so that collapse and deformation are prevented when a porous material fragrance enhancing long strip is cut into the smoke producing pipe. (3) The supporting fiber is odourless without an influence on the smoke during smoking.

5. The structure of the smoke producing pipe of the present invention is the pipe body with one or more axial airflow passages. As for the existing cigarette core stick, in order to increase a flowing area of the

smoke, a groove is usually formed in the periphery as an axial passage, but the present invention discovers that when a combination machine combines the cigarette core stick and other units, a roller of the combination machine picks up the cigarette core stick through a suction force, and a contact area between a suction opening of the roller and the cigarette core stick is too small due to the groove in the periphery, making it difficult to suck and often causing a problem of falling. Therefore, a structure a cigarette core section of the present invention is in a round pipe shape with a plurality of axial passages in a center, there is no axial groove in the periphery, so that the contact area between the suction opening of the roller and the cigarette core stick is increased, and it is guaranteed that the suction opening of the roller can suck up the cigarette core stick more stably.

6. A porous material function stick of the present invention has a high adsorption amount for both the fragrance enhancing substance and the smoke producing substance, so its fragrance carrying capacity is higher than that of a reconstituted tobacco leaf sheet or acetate fiber tows.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022]

Fig. 1 is a schematic structural diagram of an aerosol generating product in Embodiments 1 to 3.

Fig. 2 is a schematic structural diagram of an aerosol generating product in Embodiments 4 to 9.

Fig. 3 is a schematic structural diagram of a porous material function stick in an implementation.

Fig. 4 is a schematic structural diagram of a porous material function stick in another implementation.

Fig. 5 is a schematic structural diagram of a porous material function stick in another implementation.

Fig. 6 is a schematic structural diagram of a porous material function pipe in another implementation.

Fig. 7 is a schematic structural diagram of a porous material function pipe in another implementation.

[0023] Names of reference numerals in the description of the drawings: 1-Smoke producing section, 2-Hollow pipe section, 3-Acetate fiber filter section, 4-Airflow passage, 5-Air vent hole, and 6-Supporting section.

DETAILED DESCRIPTION

[0024] The present invention is further described in detail below with reference to the embodiments.

[0025] Those skilled in the art are to understand that the following embodiments are only for the purpose of describing the present invention instead of being regarded as limiting the scope of the present invention.

Where specific technologies or conditions are not indicated in the embodiments are performed according to technologies or conditions described by literatures in the art or according to the product specification. Whatever material or device used with no indicated manufacturer can be a common product obtained through purchase.

[0026] Those skilled in the art can understand that unless otherwise specially stated, a singular form "one", "an", "the" and "said" used here may also include a plural form. It should be further understood that a word "include" used in the specification of the present invention means that there is a feature, integer, step, operation, element and/or component without excluding presence or adding of one or more other features, integers, steps, operations, elements, components and/or a combination thereof. It should be understood that when an element is "connected" to another element, it may be directly connected to another element or there is a middle element. Besides, "connection" used here may include a wireless connection.

[0027] In the description of the present invention, unless otherwise stated, "a plurality of" means two or more than two. An orientation or state relationship indicated by terms such as "inside", "upper" and "lower" is an orientation or state relationship shown on the basis of the accompanying drawings only for the purpose of conveniently describing the present invention and simplifying the description instead of indicating or implying that an apparatus or element referred to necessarily has a specific orientation or constructed and operated in the specific orientation, so it should be understood as a limitation on the present invention.

[0028] In the description of the present invention, it needs to be noted that unless otherwise specified and limited clearly, terms "mount", "connect" and "arrange" should be understood in a broad sense, for example, it may be a fixed connection, or a detachable connection or an integrated connection; it may be a mechanical connection or an electrical connection; and it may be a direct connection or an indirect connection through an intermediate medium. Specific meanings of the above terms in the present invention may be understood by those ordinarily skilled in the art according to specific conditions.

[0029] Those skilled in the art can understand that unless otherwise defined, all terms (including technical or scientific terms) used here have the same meanings as usually understood by those ordinarily skilled in the art to which the present invention belongs. It should be further understood that those terms defined in a universal dictionary should be understood as having meanings consistent with meanings in the context of the prior art and are not interpreted as ideal or too formal meanings unless otherwise defined as defined herein.

Embodiment 1

[0030] In Fig. 1, an aerosol generating product of this

embodiment includes a smoke producing section 1, a hollow pipe section 2 and an acetate fiber filter section 3 in sequence from the upstream to the downstream, where the smoke producing section 1 is a smoke producing pipe. The hollow pipe section 2 is an acetate fiber hollow pipe with an air vent hole 5 penetrating through an outer pipe and a hollow pipe wall. In other embodiments, the hollow pipe section 2 may further be a hollow paper pipe. Lengths of the smoke producing section 1, the hollow pipe section 2 and the acetate fiber filter section 3 are 25 mm, 10 mm and 10 mm respectively.

[0031] The smoke producing pipe as the smoke producing section 1 includes a tobacco substance, a fragrance enhancing substance, a smoke producing substance, a supporting fiber, and an adhesive.

[0032] The tobacco substance includes tobacco powder.

[0033] The fragrance enhancing substance includes menthol.

[0034] The smoke producing substance includes glycerol and propylene glycol.

[0035] The supporting fiber is selected from a fluff pulp fiber.

[0036] The added amount of the supporting fiber is 5% of a total mass of a mixed pulp, and the added amount of the adhesive is 50% of the total mass of the mixed pulp.

[0037] A structure of the smoke producing pipe is a hollow pipe with one axial airflow passage 4, in addition, a supporting structure is further arranged inside the hollow pipe, and correspondingly, the hollow pipe may further have two to four axial airflow passages 4, seeing Figs. 3 to 7.

[0038] A preparation method of the smoke producing pipe includes the following steps:

(1) a fragrance enhancing substance and a smoke producing substance are adsorbed to a tobacco substance first;

(2) the tobacco substance with the fragrance enhancing substance and the smoke producing substance adsorbed thereto is mixed with a plant fiber, and an adhesive is added into a mixture, and a mixed pulp is obtained after mixing; and

(3) a porous material function stick is obtained by forming the mixed pulp in an extruding or molding mode.

[0039] In step (1), a load quantity of the fragrance enhancing substance and the smoke producing substance is 60% of a weight of the tobacco substance. In step (2), the adhesive includes a water-soluble adhesive, and the plant fiber mixed with the tobacco substance has a length ranging from 0.5 mm to 5 mm.

[0040] To put it more simply, a main body of the smoke producing pipe as the smoke producing section 1 is the tobacco powder.

Embodiment 2

[0041] A structure of an aerosol generating product of this embodiment is consistent with that of Embodiment 1, and a difference is that in the aerosol generating product of this embodiment, a smoke producing pipe as a smoke producing section 1 includes a porous material, a fragrance enhancing substance, a smoke producing substance, a supporting fiber, and an adhesive. The porous material includes activated carbon and is powdery with 80 meshes to 500 meshes, and a load quantity of the fragrance enhancing substance and the smoke producing substance is 60% of a weight of the porous material. The added amount of the supporting fiber is 8% of a total mass of a mixed pulp, and the added amount of the adhesive is 60% of the total mass of the mixed pulp.

[0042] In other words, in the aerosol generating product of this embodiment, a main body of the smoke producing pipe as the smoke producing section 1 is the activated carbon, in this case, as no tobacco substance is contained in the smoke producing section, for the purpose of providing the original fragrance of tobacco, the fragrance enhancing substance adsorbed in the smoke producing pipe is a tobacco extract.

Embodiment 3

[0043] A structure of an aerosol generating product of this embodiment is consistent with that of Embodiment 1, and a difference is that in the aerosol generating product of this embodiment, a smoke producing pipe as a smoke producing section 1 includes a tobacco substance, a porous material, a fragrance enhancing substance, a smoke producing substance, a supporting fiber, and an adhesive. The porous material includes activated carbon and is powdery with 80 meshes to 500 meshes, and a load quantity of the fragrance enhancing substance and the smoke producing substance is 60% of a total weight of the porous material and the tobacco substance. The added amount of the supporting fiber is 8% of a total mass of a mixed pulp, and the added amount of the adhesive is 60% of the total mass of the mixed pulp.

[0044] In other words, in the aerosol generating product of this embodiment, a main body of the smoke producing pipe as the smoke producing section 1 is tobacco powder and activated carbon, and a mass ratio of the tobacco powder to the activated carbon is 0.3.

[0045] Embodiments 4 to 5 are a four-section cigarette, and in terms of a structure, Embodiments 4 to 5 belongs to an improvement on a three-section cigarette of Embodiment 1. In terms of a material, in an aerosol generating product in Embodiments 4 to 5, a main body of a smoke producing pipe as a smoke producing section 1 is tobacco powder, and Embodiments 4 to 5 are different only in terms of a material of a supporting section 6.

Embodiment 4

[0046] As shown Fig. 2, a structure of an aerosol generating product of this embodiment is similar to that of Embodiment 1, and a difference is that the aerosol generating product of this embodiment includes a smoke producing section 1, a supporting section 6, a hollow pipe section 2 and an acetate fiber filter section 3 in sequence from the upstream to the downstream. Lengths of the smoke producing section 1, the supporting section 6, the hollow pipe section 2 and the acetate fiber filter section 3 are 25 mm, 10 mm, 10 mm and 10 mm respectively.

[0047] The smoke producing section 1 is the smoke producing pipe, the supporting section 6 is a porous material stick, and the porous material stick includes a porous material, a fragrance enhancing substance, a smoke producing substance, a supporting fiber, and an adhesive. The porous material includes activated carbon and is powdery with 80 meshes to 500 meshes, and a load quantity of the fragrance enhancing substance and the smoke producing substance is 60% of a weight of the porous material.

[0048] To put it more simply, a main body of the smoke producing pipe as the smoke producing section 1 is tobacco powder, and a main body of the porous material stick as the supporting section 6 is the activated carbon. In the smoke producing section 1, the added amount of the supporting fiber is 5% of a total mass of a mixed pulp, and the added amount of the adhesive is 50% of the total mass of the mixed pulp. In the supporting section 6, the added amount of the supporting fiber is 8% of the total mass of the mixed pulp, and the added amount of the adhesive is 60% of the total mass of the mixed pulp.

Embodiment 5

[0049] A structure of an aerosol generating product of this embodiment is consistent with that of Embodiment 4, and a difference is that in the aerosol generating product of this embodiment, a supporting section 6 is a tobacco substance and porous material mixed stick, and the tobacco substance and porous material mixed stick includes a tobacco substance, a porous material, a fragrance enhancing substance, a smoke producing substance, a supporting fiber, and an adhesive. A load quantity of the fragrance enhancing substance and the smoke producing substance is 60% of a total weight of the porous material and the tobacco substance. In a smoke producing section 1, the added amount of the supporting fiber is 5% of a total mass of a mixed pulp, and the added amount of the adhesive is 50% of the total mass of the mixed pulp. In the supporting section 6, the added amount of the supporting fiber is 8% of the total mass of the mixed pulp, and the added amount of the adhesive is 60% of the total mass of the mixed pulp.

[0050] In other words, in the aerosol generating product of this embodiment, a main body of the smoke

producing pipe as the smoke producing section 1 is tobacco powder, a main body of the tobacco substance and porous material mixed stick as the supporting section 6 is tobacco powder and activated carbon, and a mass ratio of the tobacco powder to the activated carbon is 0.3.

[0051] Embodiments 6 to 7 are a four-section cigarette, and in terms of a structure, Embodiments 6 to 7 belongs to an improvement on a three-section cigarette of Embodiment 2. In terms of a material, in an aerosol generating product in Embodiments 6 to 7, a main body of a smoke producing pipe as a smoke producing section 1 is activated carbon, and Embodiments 6 to 7 are different only in terms of a material of a supporting section 6.

Embodiment 6

[0052] A structure of an aerosol generating product of this embodiment is consistent with that of Embodiment 5, and a difference is that in the aerosol generating product of this embodiment, a smoke producing pipe as a smoke producing section 1 includes a porous material, a fragrance enhancing substance, a smoke producing substance, a supporting fiber, and an adhesive. The porous material includes activated carbon and is powdery with 80 meshes to 500 meshes, and a load quantity of the fragrance enhancing substance and the smoke producing substance is 60% of a weight of the porous material. In the smoke producing section 1, the added amount of the supporting fiber is 8% of a total mass of a mixed pulp, and the added amount of the adhesive is 60% of the total mass of the mixed pulp. In a supporting section 6, the added amount of the supporting fiber is 8% of the total mass of the mixed pulp, and the added amount of the adhesive is 60% of the total mass of the mixed pulp.

[0053] In other words, in the aerosol generating product of this embodiment, a main body of the smoke producing pipe as the smoke producing section 1 is the activated carbon, in this case, as no tobacco substance is contained in the smoke producing section, for the purpose of providing the original fragrance of tobacco, the fragrance enhancing substance adsorbed in the smoke producing pipe is a tobacco extract. A main body of the supporting section 6 is tobacco powder and activated carbon, where a mass ratio of the tobacco powder to the activated carbon is 0.3.

Embodiment 7

[0054] A structure of an aerosol generating product of this embodiment is consistent with that of Embodiment 6, and a difference is that a supporting section 6 includes a tobacco substance, a fragrance enhancing substance, a smoke producing substance, a supporting fiber, and an adhesive. The tobacco substance includes tobacco powder. The fragrance enhancing substance includes menthol. A load quantity of the fragrance enhancing substance and the smoke producing substance is 60% of a weight of the tobacco substance. In a smoke produ-

cing section 1, the added amount of the supporting fiber is 8% of a total mass of a mixed pulp, and the added amount of the adhesive is 60% of the total mass of the mixed pulp. In the supporting section 6, the added amount of the supporting fiber is 5% of the total mass of the mixed pulp, and the added amount of the adhesive is 50% of the total mass of the mixed pulp.

[0055] In other words, in the aerosol generating product of this embodiment, a main body of a smoke producing pipe as the smoke producing section 1 is activated carbon, in this case, as no tobacco substance is contained in the smoke producing section, for the purpose of providing the original fragrance of tobacco, the fragrance enhancing substance adsorbed in the smoke producing pipe is a tobacco extract. A main body of the supporting section 6 is tobacco powder.

[0056] Embodiments 8 to 9 are a four-section cigarette, and in terms of a structure, Embodiments 8 to 9 belongs to an improvement on a three-section cigarette of Embodiment 3. In terms of a material, in an aerosol generating product in Embodiments 8 to 9, a main body of a smoke producing pipe as a smoke producing section 1 is tobacco powder and activated carbon, and Embodiments 8 to 9 are different only in terms of a material of a supporting section 6.

Embodiment 8

[0057] A structure of an aerosol generating product of this embodiment is consistent with that of Embodiment 7, and a difference is that in the aerosol generating product of this embodiment, a smoke producing pipe as a smoke producing section 1 includes a tobacco substance, a porous material, a fragrance enhancing substance, a smoke producing substance, a supporting fiber, and an adhesive. The porous material includes activated carbon and is powdery with 80 meshes to 500 meshes, and a load quantity of the fragrance enhancing substance and the smoke producing substance is 60% of a total weight of the porous material and the tobacco substance. In the smoke producing section 1, the added amount of the supporting fiber is 8% of a total mass of a mixed pulp, and the added amount of the adhesive is 60% of the total mass of the mixed pulp. In a supporting section 6, the added amount of the supporting fiber is 5% of the total mass of the mixed pulp, and the added amount of the adhesive is 50% of the total mass of the mixed pulp.

[0058] In other words, in the aerosol generating product of this embodiment, a main body of the smoke producing pipe as the smoke producing section 1 is tobacco powder and the activated carbon, where a mass ratio of the tobacco powder to the activated carbon is 0.3. A main body of the supporting section 6 is tobacco powder.

Embodiment 9

[0059] A structure of an aerosol generating product of

this embodiment is consistent with that of Embodiment 8, and a difference is that in the aerosol generating product of this embodiment, a supporting section 6 is a porous material stick, and the porous material stick includes a porous material, a fragrance enhancing substance, a smoke producing substance, a supporting fiber, and an adhesive. The porous material includes activated carbon and is powdery with 80 meshes to 500 meshes, and a load quantity of the fragrance enhancing substance and the smoke producing substance is 60% of a weight of the porous material. In a smoke producing section 1, the added amount of the supporting fiber is 8% of a total mass of a mixed pulp, and the added amount of the adhesive is 60% of the total mass of the mixed pulp. In the supporting section 6, the added amount of the supporting fiber is 8% of the total mass of the mixed pulp, and the added amount of the adhesive is 60% of the total mass of the mixed pulp.

[0060] In other words, in the aerosol generating product of this embodiment, a main body of a smoke producing pipe as the smoke producing section 1 is tobacco powder and the activated carbon, where a mass ratio of the tobacco powder to the activated carbon is 0.3. A main body of the supporting section 6 is activated carbon.

Claims

1. An aerosol generating product suitable for heaters with different lengths, **characterized by** comprising a smoke producing pipe; and the smoke producing pipe comprising a tobacco substance and/or a porous material, a fragrance enhancing substance and/or a smoke producing substance, a supporting fiber and an adhesive; and an aerosol generating apparatus matching with the aerosol generating product having a heater, and an axial length of the heater being less than or equal to an axial length of the smoke producing pipe.
2. The aerosol generating product of claim 1, **characterized in that** the smoke producing pipe has a length ranging from 10 mm to 25 mm.
3. The aerosol generating product of claim 1, **characterized in that** tobacco substance comprises tobacco powder or tobacco particles; and the porous material comprises activated carbon, a ceramic molecular sieve type inorganic material, or a polymer type organic material, or a plant natural porous material.
4. The aerosol generating product of claim 1, **characterized in that** the fragrance enhancing substance comprises menthol, ionone, ethyl maltol, vanillin, rose absolute essence and flavor or a tobacco extract or nicotine salt; and the smoke producing substance comprises one or

more of glycerol or propylene glycol.

5. The aerosol generating product of claim 1, **characterized in that** the supporting fiber is selected from a plant fiber, and the plant fiber comprises one or more of a fluff pulp fiber, a jute pulp fiber or a wood pulp fiber.
6. The aerosol generating product of claim 1, **characterized in that** in the case that the smoke producing pipe comprises the tobacco substance and the porous material, a mass ratio of the tobacco substance to the porous material is in a range from 0.1 to 0.5.
7. The aerosol generating product of claim 1, **characterized in that** a structure of the smoke producing pipe is a pipe body with one or more axial airflow passages; and a pipe wall of the smoke producing pipe has a thickness ranging from 0.8 mm to 1.5 mm.
8. A preparation method for the aerosol generating product of any of claims 1 to 7, **characterized in that** the preparation method for a smoke producing pipe comprises the following steps:
 - (1) adsorbing a fragrance enhancing substance and/or a smoke producing substance to a tobacco substance and/or a porous material first;
 - (2) mixing the tobacco substance and/or the porous material with the fragrance enhancing substance and/or the smoke producing substance adsorbed thereto with a supporting fiber, and adding an adhesive into a mixture, and obtaining a mixed pulp after mixing; and
 - (3) obtaining the smoke producing pipe and/or a filter pipe by forming the mixed pulp in an extruding or molding mode.
9. The preparation method of claim 1, **characterized in that** in the smoke producing pipe, the added amount of the supporting fiber is 5% to 10% of a total mass of the mixed pulp, and the added amount of the adhesive is 50% to 70% of the total mass of the mixed pulp.
10. The preparation method of claim 1, **characterized in that** in step (1), the porous material is powdery with 80 meshes to 500 meshes, wherein a load quantity of the fragrance enhancing substance and/or the smoke producing substance is 40% to 80% of a total weight of the porous material and/or the tobacco substance; and in step (2), the adhesive comprises a water-soluble adhesive, and the supporting fiber mixed with the tobacco substance and/or the porous material has a length ranging from 0.5 mm to 5 mm.

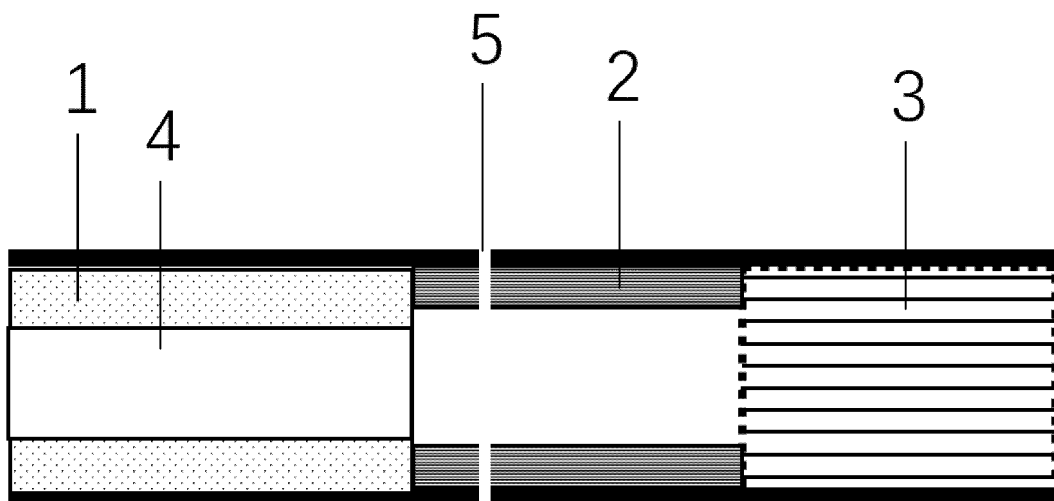


Fig. 1

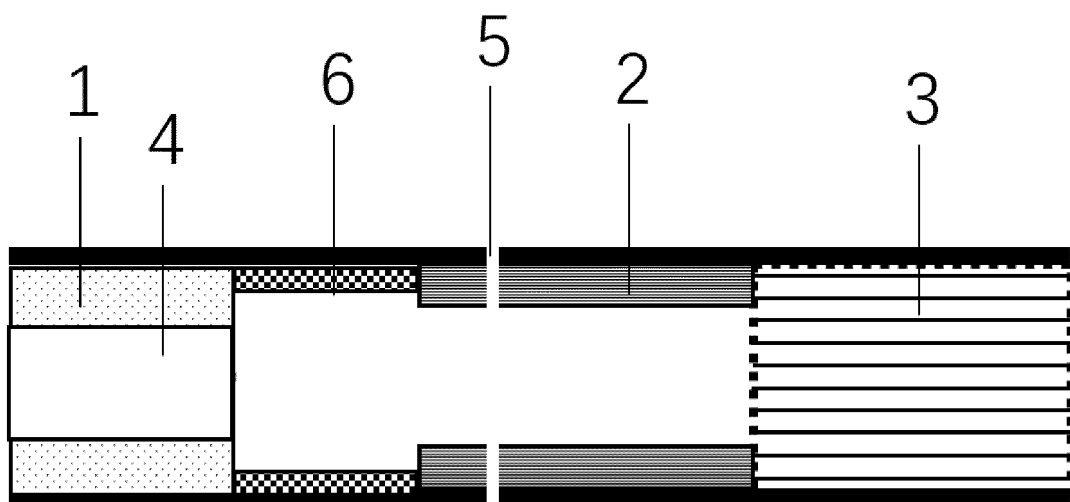


Fig. 2

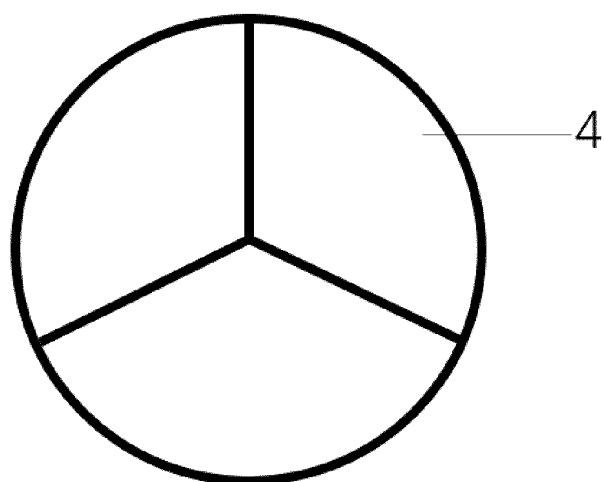


Fig. 3

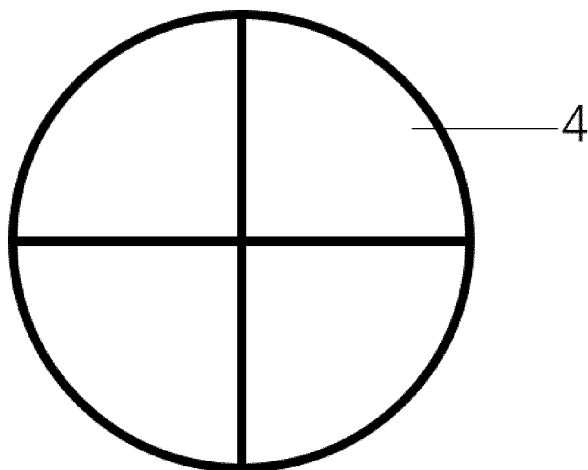


Fig. 4

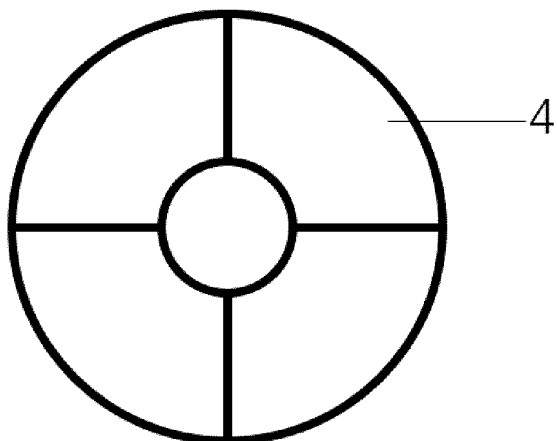


Fig. 5

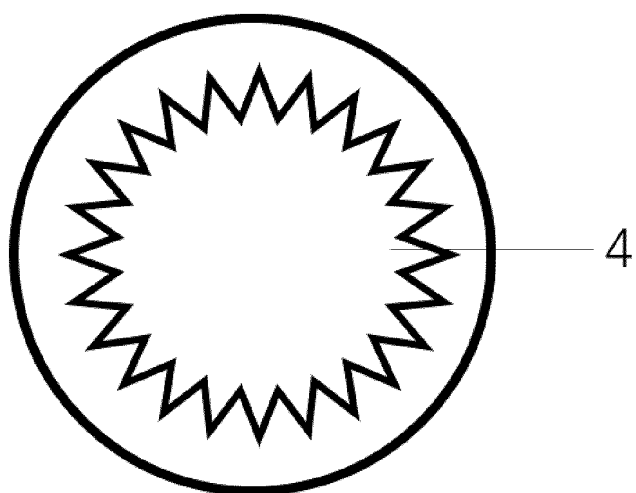


Fig. 6

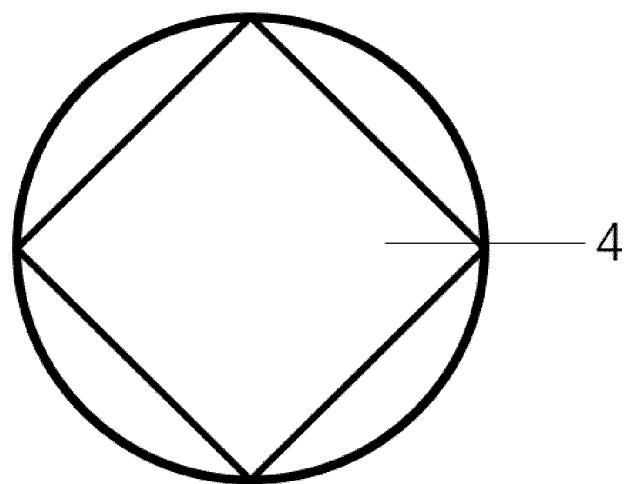


Fig. 7

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2023/126655

A. CLASSIFICATION OF SUBJECT MATTER

A24F40/20(2020.01)i

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: 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, CNABS: 壁, 发烟, 管, 基底, 基质, 浆, 麻, 木, 通道, 纤维, 植物, 中空, 竹; VEN, USTXT, WOTXT, EPTXT: aerosol, active, fragrance, fiber, plant, bamboo, channel, pulp, substrate, tube

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 111728265 A (YUNNAN ENDIAN TECHNOLOGY INDUSTRIAL DEVELOPMENT CO., LTD.) 02 October 2020 (2020-10-02) description, paragraphs 9-29, and figures 4-5	1-7
X	CN 111728264 A (YUNNAN ENDIAN TECHNOLOGY INDUSTRIAL DEVELOPMENT CO., LTD.) 02 October 2020 (2020-10-02) description, paragraphs 9-23, and figures 2-5	1-7
X	CN 112955029 A (NICOVENTURES TRADING LIMITED) 11 June 2021 (2021-06-11) description, paragraphs 57-114, and figures 3-4	1-7
X	CN 113395909 A (NICOVENTURES TRADING LIMITED) 14 September 2021 (2021-09-14) description, paragraphs 68-90 and 119-152, and figures 1-2	1-7
Y	CN 107006889 A (YUNNAN RECONSTITUTED TOBACCO CO., LTD.) 04 August 2017 (2017-08-04) description, paragraphs 5-12	8-10

☒ 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

“D” document cited by the applicant in the international application

“E” earlier application or patent but published on or after the international filing date

“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)

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“P” document published prior to the international filing date but later than the priority date claimed

“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

“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

“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&” document member of the same patent family

Date of the actual completion of the international search

27 May 2024

Date of mailing of the international search report

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Name and mailing address of the ISA/CN

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Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2023/126655

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 109463795 A (CHINA TOBACCO ANHUI INDUSTRIAL CORP.) 15 March 2019 (2019-03-15) description, paragraphs 9-19	8-10
Y	CN 111728265 A (YUNNAN ENDIAN TECHNOLOGY INDUSTRIAL DEVELOPMENT CO., LTD.) 02 October 2020 (2020-10-02) description, paragraphs 9-29, and figures 4-5	8-10
Y	CN 111728264 A (YUNNAN ENDIAN TECHNOLOGY INDUSTRIAL DEVELOPMENT CO., LTD.) 02 October 2020 (2020-10-02) description, paragraphs 9-23, and figures 2-5	8-10
Y	CN 112955029 A (NICOVENTURES TRADING LIMITED) 11 June 2021 (2021-06-11) description, paragraphs 57-114, and figures 3-4	8-10
Y	CN 113395909 A (NICOVENTURES TRADING LIMITED) 14 September 2021 (2021-09-14) description, paragraphs 68-90 and 119-152, and figures 1-2	8-10
A	CN 116420909 A (YUNNAN RECONSTITUTED TOBACCO CO., LTD.) 14 July 2023 (2023-07-14) entire document	1-10
A	WO 2015051308 A1 (ALTRIA CLIENT SERVICES, INC.) 09 April 2015 (2015-04-09) entire document	1-10

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2023/126655

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 111728265 A	02 October 2020	CN 209807154 U	20 December 2019
CN 111728264 A	02 October 2020	None	
CN 112955029 A	11 June 2021	GB 201812500 D0	12 September 2018
		BR 112021001842 A2	27 April 2021
		WO 2020025731 A1	06 February 2020
		CA 3107677 A1	06 February 2020
		CA 3107677 C	22 August 2023
		KR 20210031751 A	22 March 2021
		IL 280094 A	01 March 2021
		JP 2021532786 A	02 December 2021
		JP 7464229 B2	09 April 2024
		AU 2019314679 A1	04 February 2021
		AU 2019314679 B2	31 March 2022
		US 2021289833 A1	23 September 2021
		EP 3829343 A1	09 June 2021
		RU 2021104692 A	06 September 2022
CN 113395909 A	14 September 2021	KR 20210031753 A	22 March 2021
		KR 102596891 B1	01 November 2023
		GB 201812498 D0	12 September 2018
		IL 280497 A	01 March 2021
		IL 280497 B1	01 March 2024
		KR 20230154093 A	07 November 2023
		BR 112021001928 A2	27 April 2021
		AU 2019316188 A1	04 February 2021
		AU 2019316188 B2	21 July 2022
		RU 2769165 C1	28 March 2022
		WO 2020025730 A1	06 February 2020
		EP 3829342 A1	09 June 2021
		US 2021177041 A1	17 June 2021
		CA 3106427 A1	06 February 2020
		CA 3106427 C	12 December 2023
		JP 2021531809 A	25 November 2021
		JP 7291778 B2	15 June 2023
		UA 127648 C2	15 November 2023
		JP 2023113794 A	16 August 2023
		CN 113395909 B	02 January 2024
		CN 118020997 A	24 May 2024
CN 107006889 A	04 August 2017	CN 107006889 B	16 April 2019
CN 109463795 A	15 March 2019	None	
CN 116420909 A	14 July 2023	None	
WO 2015051308 A1	09 April 2015	DK 3052081 T3	18 January 2021
		EP 3881824 A1	22 September 2021
		ES 2842585 T3	14 July 2021
		EP 3052081 A1	10 August 2016
		EP 3052081 B1	09 December 2020
		US 2015096575 A1	09 April 2015
		US 10244786 B2	02 April 2019