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(54) **METHOD FOR PROCESSING HEAT-NOT-BURN CIGARETTES**

VERFAHREN ZUR VERARBEITUNG VON HEAT-NOT-BURN-ZIGARETTEN

PROCÉDÉ DE TRAITEMENT DE CIGARETTES À CHAUFFAGE SANS COMBUSTION

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Description**CROSS-REFERENCE TO RELATED APPLICATIONS**

[0001] This application claims priority to Chinese Patent Application No. 2017104626338, filed on June 19, 2017 with the State Intellectual Property Office (SIPO) of the People's Republic of China and entitled "Method for Processing Heat-not-burn Cigarettes".

Technical Field

[0002] The present disclosure relates to the technical field of processing of heat-not-burn cigarettes, and particularly to a method for processing heat-not-burn cigarettes.

Background Art

[0003] For traditional cigarettes, dozens of cancerogenic substances exist in the smoke produced by tobacco burning. Relevant researches showed that the generation of various chemical substances in the smoke is closely related to the burning temperature of cigarettes, and the hazard index of cigarettes is increased along with the increase of the burning temperature of cigarettes. Moreover, the smoke lingers in the air to form second-hand smoke. Heat-not-burn cigarettes, belonging to a novel cigarette system, produce smoke by low-temperature baking of solid smoke generating substances such as tobacco shreds at 200-400°, without burning the tobacco shreds. Since the baking temperature is lower than the burning temperature, the generation of harmful substances can be greatly reduced. In the international environment and background of smoking prohibition and control, the heat-not-burn cigarette is of great significance.

[0004] In the publicly known traditional cigarettes, cigarettes are burned to be smoked. For heat-not-burn cigarettes, the baking temperature thereof is relatively low, active ingredients in the tobacco shreds are difficult to volatilize, and the volatilized active ingredients can be easily re-adsorbed by the tobacco shreds, resulting in poor smoking quality and small smoke volume. US4889143A discloses cigarette rods and filters containing strands provided from sheet-like materials. CN205831054U discloses a heat-not-burn cigarette.

Disclosure of the Invention

[0005] Tobacco shreds are composed of leaf shreds, stem shreds, expanded tobacco shreds, etc. The present inventors found that it is because the tobacco shreds do not have the same length and are arranged in a disorderly fashion and not regularly that the active ingredients in the tobacco shreds are difficult to volatilize. In view of this, a method for processing heat-not-burn cigarettes provided by the present disclosure better overcomes the above problems and defects existing in the prior art. By orderly arranging the tobacco shreds, orderly-arranged gaps are formed between the tobacco shreds, which greatly improves the porosity, as compared with disorderly-arranged tobacco shreds, and ensures good air permeability and airflow uniformity inside the cigarettes; and the orderly-arranged tobacco shreds and the orderly-arranged gaps formed thereby provide approximately straight airflow passages for smoke circulation, which reduces the smoking resistance and the smoke adsorption property of the tobacco shreds, and improves the smoke passing efficiency.

[0006] A method for processing heat-not-burn cigarettes according to the invention comprises:

cutting flaky reconstituted tobacco leaves in a single direction into a plurality of elongated tobacco shreds; and making the plurality of elongated tobacco shreds stay close to each other by pressing in a width direction of the elongated tobacco shreds and then wrapping the same with tipping paper to form a cylindrical tobacco rod, wherein the plurality of elongated tobacco shreds in the tobacco rod are regularly and orderly arranged, orderly-arranged gaps are formed between the orderly-arranged tobacco shreds in a longitudinal direction of a cigarette, characterized in that the orderly-arranged tobacco shreds and the orderly-arranged gaps formed therebetween provide approximately straight airflow passages, and a surface of the tipping paper is coated with a flame retardant.

[0007] Compared with the prior art, the method for processing heat-not-burn cigarettes of the present disclosure has the following beneficial effects:

For the method for processing heat-not-burn cigarettes of the present disclosure, by cutting reconstituted tobacco leaves in a single direction into a plurality of elongated tobacco shreds, and then making the plurality of elongated tobacco shreds tight (stay close to each other) by pressing, using devices such as a cigarette rolling machine or a filter rod making machine, etc., in the width direction of the elongated tobacco shreds to form tobacco shred rods in which the tobacco shreds are arranged in an orderly fashion, and wrapping the tobacco shred rods with tipping paper to form cylindrical

tobacco rods in which the tobacco shreds are arranged in an orderly fashion, orderly-arranged gaps are formed between the tobacco shreds, which greatly improves the porosity, as compared with disorderly-arranged tobacco shreds, and ensures good air permeability and airflow uniformity inside the cigarettes; at the time of smoking a cigarette, a large volume of air can go through the tipping paper from outside the cigarette and go into the inside of the cigarette, providing air support for the generation of smoke; what's more, in the longitudinal direction of the cigarette, the orderly-arranged tobacco shreds and the orderly-arranged gaps formed therebetween provide approximately straight airflow passages for smoke circulation, which reduces the smoking resistance and the smoke adsorption property of the tobacco shreds, and improves the smoke passing efficiency, thereby improving the smoking quality and effectively solving the technical problem that the low-temperature cigarettes have a small smoke volume and poor smoking quality.

[0008] In order to make it easier to understand the objects, features and advantages of the present disclosure, detailed description is made below in connection with preferred examples.

Detailed Description of Embodiments

[0009] In order to facilitate understanding the present disclosure, the technical solutions of the present disclosure are described below in detail in combination with the examples, and in the following description, numerous specific details are set forth in order to facilitate adequately understanding the present disclosure.

[0010] Unless otherwise defined, all of the technical and scientific terms used herein have the same meaning as commonly understood by a person skilled in the technical field of the present disclosure. When there occurs a contradiction, the definitions in the description prevail.

[0011] For the terms as used herein:

The term "comprise", "include", "have", "contain" or any other variant thereof used herein is intended to encompass a non-exclusive inclusion. For example, a composition, step, method, article or device comprising listed elements is not necessarily limited to those elements, but can comprise other elements not explicitly listed, or inherent elements of the composition, step, method, article or device.

[0012] The connecting phrase "consist of" excludes any unindicated element, step or ingredient. If the phrase is used in a claim, the phrase makes the claim a closed claim, so that the claim does not contain materials other than those described, except conventional impurities related thereto. When the phrase "consist of" appears in a clause of a claim rather than immediately after the subject matter thereof, the phrase merely defines the elements described in the clause; and other elements are not excluded from the claim as a whole.

[0013] When the amount, concentration, or other value or parameter is represented by a range, a preferred range, or a range defined by a series of upper limit preferred values and lower limit preferred values, it should be understood as specifically disclosing all the ranges formed by a pair of any upper limit or preferred value and any lower limit or preferred value, regardless of whether the range is disclosed separately. For example, when the range "1-5" is disclosed, the described range should be interpreted as including the ranges "1-4", "1-3", "1-2", "1-2 and 4-5", "1-3 and 5", etc. When a numerical range is described herein, unless otherwise indicated, the range is intended to include the end values and all the integers and fractions within the range.

[0014] The term "and/or" is used to indicate that one or both of the illustrated cases may occur, for example, A and/or B include (A and B) and (A or B).

[0015] The present disclosure provides a method for processing heat-not-burn cigarettes, comprising:

cutting flaky reconstituted tobacco leaves in a single direction into a plurality of elongated tobacco shreds; and making the plurality of elongated tobacco shreds stay close to each other by pressing in the width direction of the elongated tobacco shreds and then wrapping the same with tipping paper to form cylindrical tobacco rods, the plurality of elongated tobacco shreds in the tobacco rods being regularly and orderly arranged.

[0016] It should be noted that reconstituted tobacco leaves are also called tobacco sheets, reconstituted tobacco, recombined tobacco leaves or homogenized tobacco leaves. They are obtained by subjecting the raw materials of waste tobacco stems, tobacco leaf shreds, tobacco powder, etc. to the technological processes of extraction, concentration, separation, pulping, grinding, papermaking, drying and flavoring to produce natural tobacco leaves with excellent performance, used as a cigarette filler for cigarette production. The reconstituted tobacco leaves have been subjected to the reconstitution processing, and therefore have good flexibility and tear resistance, are especially suitable for rolling-forming and cannot be damaged easily.

[0017] According to the above description, in the present disclosure, by orderly arranging the tobacco shreds, orderly-arranged gaps are formed between the tobacco shreds, which greatly improves the porosity, as compared with disorderly-arranged tobacco shreds, and ensures good air permeability and airflow uniformity inside the cigarettes; at the time of smoking a cigarette, a large volume of air can go through the tipping paper from outside the cigarette and go into the inside of the cigarette, providing air support for the generation of smoke; what's more, in the longitudinal direction of the

cigarette, the orderly-arranged tobacco shreds and the orderly-arranged gaps formed therebetween provide approximately straight airflow passages for smoke circulation, which reduces the smoking resistance and the smoke adsorption property of the tobacco shreds, and improves the smoke passing efficiency, thereby improving the smoking quality and effectively solving the technical problem that the low-temperature cigarettes have a small smoke volume and poor smoking quality.

[0018] Preferably, the reconstituted tobacco leaves are one of papermaking-process reconstituted tobacco leaves, dry-process reconstituted tobacco leaves, slurry-process reconstituted tobacco leaves and rolling-process reconstituted tobacco leaves.

[0019] Preferably, the length of the reconstituted tobacco leaves is not less than 10.0 mm, and the width of the reconstituted tobacco leaves is not less than 20.0 mm.

[0020] Preferably, the absolute-dry quantitative index of the reconstituted tobacco leaves is 20-110 g/m², such as 20 g/m², 35 g/m², 50 g/m², 65 g/m², 80 g/m², 95 g/m², 110 g/m², etc.

[0021] The thickness of the reconstituted tobacco leaves is 0.05-0.60 mm, such as 0.05 mm, 0.10 mm, 0.15 mm, 0.20 mm, 0.25 mm, 0.30 mm, 0.35 mm, 0.40 mm, 0.45 mm, 0.50 mm, 0.55 mm, 0.60 mm, etc.

[0022] Preferably, the length of each of the elongated tobacco shreds is not less than 10.0 mm, and the width of each of the elongated tobacco shreds is 0.5-3.0 mm, such as 0.5 mm, 1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, etc.

[0023] Preferably, the plurality of elongated tobacco shreds are made to stay close to each other by pressing in the width direction of the elongated tobacco shreds using a cigarette rolling machine or a filter rod making machine.

[0024] The surface of the tipping paper is coated with a flame retardant.

[0025] Preferably, the flame retardant is one of magnesium hydroxide and aluminum hydroxide or a mixture of them.

[0026] It should be noted that the surface of the tipping paper is coated with a certain amount of flame retardant so as to prevent burning of the tipping paper and ensure the integrity of the cigarette after being heated for smoking.

[0027] Preferably, the surface of the tipping paper is coated with an atomizing agent.

[0028] Preferably, the atomizing agent is one of propylene glycol, glycerol, propylene glycol acetate and glycerol acetate or a mixture of several of them.

[0029] It should be noted that by coating the surface of the tipping paper with an atomizing agent, the smoke release amount of the reconstituted tobacco leaf product of in the heat-not-burn state is ensured.

[0030] In order to facilitate understanding the present disclosure, the technical solutions of the present disclosure are further described below in combination with examples. The applicant declares that the specific technological equipment and technological processes of the present disclosure are described with the following examples, however, the present disclosure is not limited to these specific technological equipment and technological process, i.e., it does not mean that the present invention shall rely on the specific technological equipment and technological process described below in order to be implemented.

Example 1

[0031] Papermaking-process reconstituted tobacco leaves having an absolute-dry quantitative index of 100.0 ± 5.0 g/m² and a thickness of 0.22 ± 0.02 mm were cut, by using a shredding device, in a single direction into a plurality of elongated tobacco shreds, with the width of the elongated tobacco shreds being 0.5 mm. The plurality of elongated tobacco shreds were made to stay close to each other by transversely pressing using a cigarette rolling machine to form tobacco shred rods in which the tobacco shreds were arranged in an orderly fashion and which were then wrapped with tipping paper to form a cylindrical tobacco rod in which the tobacco shreds were arranged in an orderly fashion. The tobacco rod was cut according to a length of 100.0 mm. Each cylindrical tobacco rod having a length of 100.0 mm was further cut according to a length of 10.0 mm, and then each cylindrical tobacco rod having a length of 10.0 mm was connected to a cigarette filter tip to form a heat-not-burn cigarette, 1# sample.

[0032] With the width of the elongated tobacco shreds set to be 0.8 mm, 1.0 mm, 1.2 mm and 1.5 mm respectively, the above technological processes were repeated to obtain 4 heat-not-burn cigarette samples, i.e., 2# sample, 3# sample, 4# sample and 5# sample having different widths of elongated tobacco shreds. In addition, by following the conventional cigarette making technology, papermaking-process reconstituted tobacco leaves were cut into small pieces (generally having a shape of rhombus of 20 mm*30 mm) and further cut into shreds with a width of 1.0 mm, and then rolled using a cigarette making machine into a conventional tobacco rod, in which the tobacco shreds were in an irregularly-ordered state. The tobacco rod was cut according to a length of 10.0 mm and then connected to a cigarette filter tip to form a control sample.

[0033] The above 5 samples and control sample were evaluated by being smoked using a smoking set for heat-not-burn cigarettes. The results of sensory quality are as shown in Table 1:

Table 1 Evaluation of Sensory Quality of Papermaking-Process Heat-not-burn Cigarettes

No.	Gloss	Aroma	Harmony	Offensive odor	Irritation	Aftertaste	Aggregate score	Puff count	Note
Control sample	4.5	26.0	5.0	10.0	17.0	21.0	83.5	2-3 puffs/per cigarette	Smoke volume being relatively small
1#	4.5	27.0	5.0	10.5	17.0	21.0	85.0	7-9 puffs/per cigarette	Smoke volume being slightly small
2#	4.5	28.0	5.0	10.5	17.0	21.0	86.0	7-9 puffs/per cigarette	Smoke volume being relatively large
3#	4.5	28.0	5.0	10.5	17.0	21.0	86.0	7-9 puffs/per cigarette	Smoke volume being relatively large
4#	4.5	28.0	5.0	10.5	17.0	21.0	86.0	7-9 puffs/per cigarette	Smoke volume being relatively large
5#	4.5	27.5	5.0	10.5	17.0	21.0	85.5	7-9 puffs/per cigarette	Smoke volume being slightly small

Example 2

[0034] Dry-process reconstituted tobacco leaves having an absolute-dry quantitative index of 95.0 ± 3.0 g/m² and a thickness of 0.25 ± 0.02 mm were cut, by a shredding device, in a single direction into a plurality of elongated tobacco shreds, with the width of the elongated tobacco shreds being 0.5 mm. The plurality of elongated tobacco shreds were made to stay close to each other by transversely pressing using a cigarette rolling machine (optionally, a filter rod making machine or other device) to form tobacco shred rods in which the tobacco shreds were arranged in an orderly fashion and which were then wrapped with tipping paper to form a cylindrical tobacco rod in which the tobacco shreds were arranged in an orderly fashion. The tobacco rod was cut according to a length of 120.0 mm. Each cylindrical tobacco rod having a length of 120.0 mm was further cut according to a length of 12.0 mm, and then each cylindrical tobacco rod having a length of 12.0 mm was connected to a cigarette filter tip to form a heat-not-burn cigarette 1# sample.

[0035] With the width of the elongated tobacco shreds set to be 0.8 mm, 1.0 mm, 1.2 mm and 1.5 mm respectively, the above technological processes were repeated to obtain 4 heat-not-burn cigarette samples, i.e., 2# sample, 3# sample, 4# sample and 5# sample having different widths of elongated tobacco shreds. In addition, by following the conventional cigarette making technology, dry-process reconstituted tobacco leaves were cut into small pieces (generally having a shape of rhombus of 20 mm*30 mm) and further cut into shreds with a width of 1.0 mm, and then rolled using a cigarette making machine into a conventional tobacco rod, in which the tobacco shreds were in an irregularly-arranged state, and the tobacco rod was cut according to a length of 12.0 mm and then connected to a cigarette filter tip to form a control sample.

[0036] The above 5 samples and control sample were evaluated by being smoked using a smoking set for heat-not-burn cigarettes. The evaluation results of sensory quality are as shown in Table 2:

Table 2 Evaluation of Sensory Quality of Heat-not-burn Cigarettes of Dry-process reconstituted tobacco leaves

No.	Gloss	Aroma	Harmony	Offensive odor	Irritation	Aftertaste	Aggregate score	Puff count	Note
Control sample	4.5	27.0	5.0	10.0	17.0	22.0	85.5	3-4 puffs/per cigarette	Smoke volume being relatively small
1#	4.5	29.0	5.0	10.5	17.0	22.0	87.0	8-10 puffs/per cigarette	Smoke volume being slightly small
2#	4.5	29.5	5.0	10.5	17.0	22.0	88.0	8-10 puffs/per cigarette	Smoke volume being relatively large
3#	4.5	29.5	5.0	10.5	17.0	22.0	88.0	8-10 puffs/per cigarette	Smoke volume being relatively large
4#	4.5	29.5	5.0	10.5	17.0	22.0	88.0	8-10 puffs/per cigarette	Smoke volume being relatively large
5#	4.5	29.0	5.0	10.5	17.0	22.0	87.5	8-10 puffs/per cigarette	Smoke volume being slightly small

Example 3

[0037] Slurry-process reconstituted tobacco leaves having an absolute-dry quantitative index of 95.0 ± 5.0 g/m² and a thickness of 0.20 ± 0.02 mm were cut, by a shredding device, in a single direction into a plurality of elongated tobacco shreds, with the width of the elongated tobacco shreds being 0.5 mm. The plurality of elongated tobacco shreds were made to stay close to each other by transversely pressing using a cigarette rolling machine (optionally, a filter rod making machine or other device) to form tobacco shred rods in which the tobacco shreds were arranged in an orderly fashion and which were then wrapped with tipping paper to form a cylindrical tobacco rod in which the tobacco shreds were arranged in an orderly fashion. The tobacco rod was cut according to a length of 120.0 mm. Each cylindrical tobacco rod having a length of 120.0 mm was further cut according to a length of 15.0 mm, and then each cylindrical tobacco rod having a length of 15.0 mm was connected to a cigarette filter tip to form a heat-not-burn cigarette 1# sample.

[0038] With the width of the elongated tobacco shreds set to be 0.8 mm, 1.0 mm, 1.2 mm and 1.5 mm respectively, the above technological processes were repeated to obtain 4 heat-not-burn cigarette samples, i.e., 2# sample, 3# sample, 4# sample and 5# sample having different widths of elongated tobacco shreds. In addition, by following the conventional cigarette making technology, slurry-process reconstituted tobacco leaves were cut into small pieces (generally having a shape of rhombus of 20 mm*30 mm) and further cut into shreds with a width of 1.0 mm, and then rolled using a cigarette making machine into a conventional tobacco rod, in which the tobacco shreds were in an irregularly-arranged state, and the tobacco rod was cut according to a length of 15.0 mm and then connected to a cigarette filter tip to form a control sample.

[0039] The above 5 samples and control sample were evaluated by being smoked using a smoking set for heat-not-burn cigarettes. The evaluation results of sensory quality are as shown in Table 3:

Table 3 Evaluation of Sensory Quality of Heat-not-burn Cigarettes of Slurry-process reconstituted tobacco leaves

No.	Gloss	Aroma	Harmony	Offensive odor	Irritation	Aftertaste	Aggregate score	Puff count	Note
Control sample	4.5	27.0	5.0	10.0	17.0	22.0	85.5	3-4 puffs/per cigarette	Smoke volume being relatively small
1#	4.5	29.0	5.0	10.5	17.0	22.0	87.0	7-9 puffs/per cigarette	Smoke volume being slightly small
2#	4.5	29.5	5.0	10.5	17.0	22.0	88.0	7-9 puffs/per cigarette	Smoke volume being relatively large
3#	4.5	29.5	5.0	10.5	17.0	22.0	88.0	7-9 puffs/per cigarette	Smoke volume being relatively large
4#	4.5	29.5	5.0	10.5	17.0	22.0	88.0	7-9 puffs/per cigarette	Smoke volume being relatively large
5#	4.5	29.0	5.0	10.5	17.0	22.0	87.5	7-9 puffs/per cigarette	Smoke volume being slightly small

Example 4

[0040] Rolling-process reconstituted tobacco leaves having an absolute-dry quantitative index of 100.0 ± 5.0 g/m² and a thickness of 0.20 ± 0.02 mm were cut, by a shredding device, in a single direction into a plurality of elongated tobacco shreds, with the width of the elongated tobacco shreds being 0.5 mm. The plurality of elongated tobacco shreds were made to stay close to each other by transversely pressing using a cigarette rolling machine (optionally, a filter rod making machine or other device) to form tobacco shred rods in which the tobacco shreds were arranged in an orderly fashion and which were then wrapped by tipping paper to form a cylindrical tobacco rod in which the tobacco shreds were arranged in an orderly fashion. The tobacco rod was cut according to a length of 144.0 mm. Each cylindrical tobacco rod having a length of 144.0 mm was further cut according to a length of 12.0 mm, and then each cylindrical tobacco rod having a length of 12.0 mm was connected to a cigarette filter tip to form a heat-not-burn cigarette 1# sample.

[0041] With the width of the elongated tobacco shreds set to be 0.8 mm, 1.0 mm, 1.2 mm and 1.5 mm respectively, the above technological processes were repeated to obtain 4 heat-not-burn cigarette samples, i.e., 2# sample, 3# sample, 4# sample and 5# sample having different widths of elongated tobacco shreds. In addition, by following the conventional cigarette making technology, rolling-process reconstituted tobacco leaves were cut into small pieces (generally having a shape of rhombus of 20 mm*30 mm) and further cut into shreds with a width of 1.0 mm, and then rolled using a cigarette making machine into a conventional tobacco rod, in which the tobacco shreds were in an irregularly-arranged state, and the tobacco rod was cut according to a length of 12.0 mm and then connected with a cigarette filter tip to form a control sample.

[0042] The above 5 samples and control sample were evaluated by being smoked using a smoking set for heat-not-burn cigarettes. The evaluation results of sensory quality are as shown in Table 4:

Table 4 Evaluation of Sensory Quality of Heat-not-burn Cigarettes of Rolling-process reconstituted tobacco leaves

No.	Gloss	Aroma	Harmony	Offensive odor	Irritation	Aftertaste	Aggregate score	Puff count	Note
Control sample	4.5	26.0	5.0	10.0	17.0	21.0	83.5	2-3 puffs/per cigarette	Smoke volume being relatively small
1#	4.5	27.0	5.0	10.5	17.0	21.0	85.0	7-9 puffs/per cigarette	Smoke volume being slightly small
2#	4.5	28.0	5.0	10.5	17.0	21.0	86.0	7-9 puffs/per cigarette	Smoke volume being relatively large
3#	4.5	28.0	5.0	10.5	17.0	21.0	86.0	7-9 puffs/per cigarette	Smoke volume being relatively large
4#	4.5	28.0	5.0	10.5	17.0	21.0	86.0	7-9 puffs/per cigarette	Smoke volume being relatively large
5#	4.5	27.5	5.0	10.5	17.0	21.0	85.5	7-9 puffs/per cigarette	Smoke volume being slightly small

[0043] According to Example 1 to Example 4 described above, compared with the heat-not-burn cigarettes produced by the conventional cigarette making technology, the heat-not-burn cigarettes produced by the processing method of the present disclosure have higher smoke passing efficiency and larger smoke volume, which greatly improves the smoking quality.

[0044] The descriptions above are only preferred examples of the present disclosure, which are not used to limit the present disclosure. For a person skilled in the art, the formulation and the preparation processes of the present disclosure may have various changes and variations.

Claims

1. A method for processing heat-not-burn cigarettes, comprising:

cutting flaky reconstituted tobacco leaves in a single direction into a plurality of elongated tobacco shreds; and making the plurality of elongated tobacco shreds stay close to each other by pressing in a width direction of the elongated tobacco shreds, and then wrapping the same with tipping paper to form a cylindrical tobacco rod, wherein the plurality of elongated tobacco shreds in the tobacco rod are regularly and orderly arranged, wherein orderly-arranged gaps are formed between the orderly-arranged tobacco shreds in a longitudinal direction of a cigarette,

characterized in that the orderly-arranged tobacco shreds and the orderly-arranged gaps formed therebetween provide approximately straight airflow passages, and

a surface of the tipping paper is coated with a flame retardant.

2. The method for processing heat-not-burn cigarettes according to claim 1, **characterized in that** the reconstituted tobacco leaves are one of papermaking-process reconstituted tobacco leaves, dry-process reconstituted tobacco leaves, slurry-process reconstituted tobacco leaves and rolling-process reconstituted tobacco leaves.
3. The method for processing heat-not-burn cigarettes according to any one of claims 1 to 2, **characterized in that** a length of the reconstituted tobacco leaves is not less than 10.0 mm, and a width of the reconstituted tobacco leaves is not less than 20.0 mm.
4. The method for processing heat-not-burn cigarettes according to any one of claims 1 to 3, **characterized in that** an absolute-dry quantitative index of the reconstituted tobacco leaves is 20-110 g/m², and a thickness of the reconstituted tobacco leaves is 0.05-0.60 mm.
5. The method for processing heat-not-burn cigarettes according to any one of claims 1 to 4, **characterized in that** a length of each of the elongated tobacco shreds is not less than 10.0 mm, and a width of each of the elongated tobacco shreds is 0.5-3.0 mm.
6. The method for processing heat-not-burn cigarettes according to any one of claims 1 to 5, **characterized in that** a cigarette rolling machine or a filter rod making machine is used to make the plurality of elongated tobacco shreds stay close to each other by pressing in the width direction of the elongated tobacco shreds.
7. The method for processing heat-not-burn cigarettes according to any one of claims 1 to 6, **characterized in that** the flame retardant is one selected from the group consisting of magnesium hydroxide and aluminum hydroxide, or a mixture of two of the group.
8. The method for processing heat-not-burn cigarettes according to any one of claims 1 to 7, **characterized in that** a surface of the tipping paper is coated with an atomizing agent.
9. The method for processing heat-not-burn cigarettes according to claim 8, **characterized in that** the atomizing agent is one selected from the group consisting of propylene glycol, glycerol, propylene glycol acetate and glycerol acetate, or a mixture of several of the group.

Patentansprüche

1. Verfahren zur Verarbeitung von Zigaretten zum Erwärmen und nicht Verbrennen, umfassend:

das Schneiden von blattförmigen rekonstituierten Tabakblättern in einer einzigen Richtung in eine Vielzahl von länglichen Tabakstreifen; und
das Zusammenhalten der Vielzahl von länglichen Tabakstreifen durch Drücken in einer Breitenrichtung der länglichen Tabakstreifen und anschließendes Einwickeln derselben mit Mundstückpapier, um einen zylindrischen Tabakstängel zu bilden, wobei die Vielzahl von länglichen Tabakstreifen im Tabakstängel regelmäßig und geordnet angeordnet sind,
wobei in einer Längsrichtung einer Zigarette geordnet angeordnete Lücken zwischen den geordnet angeordneten Tabakstreifen gebildet werden,
dadurch gekennzeichnet, dass die geordnet angeordneten Tabakstreifen und die dazwischen gebildeten geordnet angeordneten Lücken annähernd gerade Luftströmungspassagen bereitstellen, und
eine Oberfläche des Mundstückpapiers mit einem Flammenschutzmittel beschichtet ist.

2. Verfahren zur Verarbeitung von Zigaretten zum Erwärmen und nicht Verbrennen nach Anspruch 1, **dadurch gekennzeichnet, dass** die rekonstituierten Tabakblätter eines von Tabakblättern aus einem Papierherstellungsverfahren, Tabakblättern aus einem Trockenverfahren, Tabakblättern aus einem Schlammverfahren oder Tabakblättern aus einem Walzverfahren sind.
3. Verfahren zur Verarbeitung von Zigaretten zum Erwärmen und nicht Verbrennen nach einem der Ansprüche 1 bis 2, **dadurch gekennzeichnet, dass** eine Länge der rekonstituierten Tabakblätter nicht weniger als 10,0 mm beträgt und eine Breite der rekonstituierten Tabakblätter nicht weniger als 20,0 mm beträgt.

4. Verfahren zur Verarbeitung von Zigaretten zum Erwärmen und nicht Verbrennen nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** ein absoluttrockener quantitativer Index der rekonstituierten Tabakblätter 20-110 g/m² beträgt und eine Dicke der rekonstituierten Tabakblätter 0,05-0,60 mm beträgt.
5. Verfahren zur Verarbeitung von Zigaretten zum Erwärmen und nicht Verbrennen nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** eine Länge von jedem der länglichen Tabakstreifen nicht weniger als 10,0 mm beträgt und die Breite von jedem der länglichen Tabakstreifen 0,5-3,0 mm beträgt.
6. Verfahren zur Verarbeitung von Zigaretten zum Erwärmen und nicht Verbrennen nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** eine Zigarettenwickelmaschine oder eine Filterstängelherstellungsmaschine verwendet wird, um die Vielzahl der länglichen Tabakstreifen durch Drücken in einer Breitenrichtung der länglichen Tabakstreifen zusammenzuhalten.
7. Verfahren zur Verarbeitung von Zigaretten zum Erwärmen und nicht Verbrennen nach einem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** das Flammenschutzmittel eines, ausgewählt aus der Gruppe, bestehend aus Magnesiumhydroxid und Aluminiumhydroxid, oder ein Gemisch aus zwei dieser Gruppe ist.
8. Verfahren zur Verarbeitung von Zigaretten zum Erwärmen und nicht Verbrennen nach einem der Ansprüche 1 bis 7, **dadurch gekennzeichnet, dass** eine Oberfläche des Mundstückpapiers mit einem Zerstäubungsmittel beschichtet ist.
9. Verfahren zur Verarbeitung von Zigaretten zum Erwärmen und nicht Verbrennen nach Anspruch 8, **dadurch gekennzeichnet, dass** das Zerstäubungsmittel eines, ausgewählt aus der Gruppe, bestehend aus Propylenglykol, Glycerin, Propylenglykolacetat und Glycerinacetat, oder ein Gemisch aus mehreren dieser Gruppe ist.

Revendications

1. Procédé de traitement de cigarettes à base de tabac à chauffer, comprenant les étapes consistant à :
 découper les feuilles de tabac reconstitué floconneuses dans une seule direction en une pluralité de brins de tabac allongés ; et
 rapprocher les uns des autres la pluralité de brins de tabac allongés en comprimant dans le sens de la largeur les brins de tabac allongés, puis les envelopper avec du papier de manchette pour former une tige de tabac cylindrique, la pluralité de brins de tabac allongés dans la tige de tabac étant agencés de manière régulière et ordonnée,
 dans lequel des espaces agencés de manière ordonnée sont formés entre les brins de tabac agencés de manière ordonnée dans une direction longitudinale d'une cigarette,
caractérisé en ce que les brins de tabac agencés de manière ordonnée et les espaces agencés de manière ordonnée formés entre eux fournissent des passages d'écoulement d'air approximativement rectilignes, et une surface du papier de manchette est revêtue d'un retardateur de flamme.
2. Procédé de traitement de cigarettes à base de tabac à chauffer selon la revendication 1, **caractérisé en ce que** les feuilles de tabac reconstitué sont des feuilles parmi des feuilles de tabac reconstitué par procédé de fabrication de papier, des feuilles de tabac reconstitué par procédé à sec, des feuilles de tabac reconstitué par procédé à base de pâte liquide et des feuilles de tabac reconstitué par procédé de roulage.
3. Procédé de traitement de cigarettes à base de tabac à chauffer selon l'une quelconque des revendications 1 et 2, **caractérisé en ce qu'**une longueur des feuilles de tabac reconstitué n'est pas inférieure à 10,0 mm, et qu'une largeur des feuilles de tabac reconstitué n'est pas inférieure à 20,0 mm.
4. Procédé de traitement de cigarettes à base de tabac à chauffer selon l'une quelconque des revendications 1 à 3, **caractérisé en ce qu'**un indice quantitatif sec absolu des feuilles de tabac reconstitué est de 20 à 110 g/m², et qu'une épaisseur des feuilles de tabac reconstitué est de 0,05 à 0,60 mm.
5. Procédé de traitement de cigarettes à base de tabac à chauffer selon l'une quelconque des revendications 1 à 4, **caractérisé en ce qu'**une longueur de chacun des brins de tabac allongés n'est pas inférieure à 10,0 mm, et qu'une largeur de chacun des brins de tabac allongés est de 0,5 à 3,0 mm.

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6. Procédé de traitement de cigarettes à base de tabac à chauffer selon l'une quelconque des revendications 1 à 5, **caractérisé en ce qu'**une confectionneuse de cigarettes ou une confectionneuse de filtres est utilisée pour que la pluralité de brins de tabac allongés restent rapprochés les uns des autres par compression dans la direction de leur longueur des brins de tabac allongés.

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7. Procédé de traitement de cigarettes à base de tabac à chauffer selon l'une quelconque des revendications 1 à 6, **caractérisé en ce que** le retardateur de flamme est un élément choisi dans le groupe constitué de l'hydroxyde de magnésium et de l'hydroxyde d'aluminium, ou d'un mélange de deux éléments du groupe.

10 8. Procédé de traitement de cigarettes à base de tabac à chauffer selon l'une quelconque des revendications 1 à 7, **caractérisé en ce qu'**une surface du papier de manchette est revêtue d'un agent de pulvérisation.

15 9. Procédé de traitement de cigarettes à base de tabac à chauffer selon la revendication 8, **caractérisé en ce que** l'agent de pulvérisation est un élément choisi dans le groupe constitué du propylène glycol, du glycérol, de l'acétate de propylène glycol et de l'acétate de glycérol, ou d'un mélange de plusieurs éléments du groupe.

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REFERENCES CITED IN THE DESCRIPTION

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