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(54) **TEA-FLAVORED CIGARETTE AND ELECTRONIC CIGARETTE**

(57) The application provides a tea cigarette cartridge and an electronic cigarette. The tea cigarette cartridge comprises a smoke generating part (1) and a cigarette mouthpiece (2) connected to the upper end of the smoke generating part (1). The cigarette mouthpiece (2) is used for filtering toxic substances generated by the smoke generating part (1) and/or reducing the temperature of the smoke generated by the smoke generating part (1). The smoke generating part (1) comprises tea shreds, tea particles and a smoke generating agent. The electronic cigarette comprises a tea cigarette cartridge.

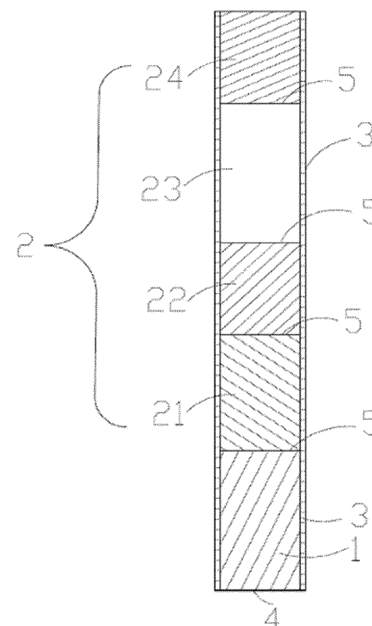


FIG. 1

**Description**

**[0001]** This application claims priority to Chinese Patent Application No. 201910947578.0, entitled "TEA CIGARETTE CARTRIDGE AND ELECTRONIC CIGARETTE" and filed with the Chinese Patent Office on September 30, 2021, the entire contents of which are incorporated herein by reference.

**TECHNICAL FIELD**

**[0002]** The present application belongs to the technical field of non-combustion cigarette products, and in particular, relates to a tea cigarette cartridge and an electronic cigarette.

**BACKGROUND**

**[0003]** Conventional combustion cigarettes contain a lot of harmful substances, such as tar and nicotine in the smoke generated after combustion. Long-term smoking is easy to become addicted and difficult to quit. High addiction caused by conventional combustion cigarettes and defects of all kinds of pollution and toxic substances produced by combustion have become a common concern of the tobacco industry and the public. In order to solve the above problems of the conventional cigarettes, electronic cigarettes have been accepted by more and more smokers. An electronic cigarette is a product powered by a battery to heat tobacco tar or a cartridge to deliver vapor for a user to inhale. The electronic cigarettes are becoming an alternative to cigarettes/smoking cessation, with the content of harmful substances such as tar and nicotine in the smoke produced by the electronic cigarettes drastically reduced.

**[0004]** Electronic cigarette cartridges made of conventional tobacco may still inevitably produce tar, nicotine and other harmful substances during the smoking, which causes certain addiction. In order to completely solve the problems of addiction and being harmful to health of the cartridges made of conventional tobacco, some tea cigarette cartridges have emerged in the market at present, but have a series of poor smoking experience problems, such as a poor smoke generating effect and a poor refreshing effect, which cannot really replace the cartridges made of conventional tobacco.

**[0005]** In view of the above, the present application provides a tea cigarette cartridge and an electronic cigarette to solve the technical defects of poor smoking experience of the tea cigarette cartridge of the electronic cigarette in the related art.

**[0006]** The present application provides a tea cigarette cartridge, wherein the tea cigarette cartridge includes a smoke generating part and a cigarette mouthpiece connected to the upper end of the smoke generating part, the smoke generating part is connected to the cigarette mouthpiece, and the cigarette mouthpiece is configured for filtering toxic substances generated by the smoke generating part and/or reducing the temperature of the smoke generated by the smoke generating part; and

the smoke generating part includes tea shreds, tea particles and a smoke generating agent.

**[0007]** Optionally, the smoke generating part includes 1 to 25 parts by mass of the tea shreds, 65 to 98 parts by mass of the tea particles and 1 to 25 parts by mass of the smoke generating agent.

**[0008]** Optionally, the smoke generating part has a density in a range of 0.3 g/cm<sup>3</sup> to 0.8 g/cm<sup>3</sup>.

**[0009]** Optionally, the smoke generating agent is selected from one or more of propylene glycol, glycerol and glycerol triacetate.

**[0010]** Optionally, the tea shreds is prepared by causing tea leaves to undergo multi-stage drying sequentially to obtain a dried product, and processing the dried product to produce tea shreds having a width in a range of 0.5 mm to 4 mm, a length in a range of 0.5 mm to 12 mm and humidity in a range of 3% to 10%; and

**[0011]** the multi-stage drying includes: causing the tea leaves to sequentially undergo first drying until water content is reduced by 30%, conducting second drying until the water content is reduced by 20% and conducting third drying until the water content is reduced by 10%, standing until room temperature to obtain the dried product.

**[0012]** Optionally, a preparation method of the tea particles includes:

S1: drying tea leaves, and causing the tea leaves to undergo low-temperature puffing via microwave puffing drying;

S2: grinding the tea leaves obtained in S1 to powder with 300 to 2000 meshes, and obtaining tea particles with 20 to 30 meshes by wet granulation.

**[0013]** Optionally, from bottom to top, the cigarette mouthpiece has a structure comprising a purification part, a temperature control part, an air source part and a filter; an isolation part is arranged among adjacent two parts of the purification part, the temperature control part, the air source part and the filter, and the isolation part is configured for independence of the parts.

**[0014]** Optionally, the purification part is a tea stem purification part.

**[0015]** Optionally, the tea cigarette cartridge further includes a sealing part and a shaping part;

the sealing part is arranged under the smoke generating part, for preventing exposure of content of the smoke generating part; and

the shaping part is sleeved upon external surfaces of the smoke generating part and the cigarette mouthpiece.

**[0016]** The present application further provides an electronic cigarette, including a heating unit, an energy storage unit, a control unit and the tea cigarette cartridge according to any one of the above.

**[0017]** Based on the above, the present application provides a tea cigarette cartridge, wherein the tea cigarette cartridge includes a smoke generating part and a cigarette mouthpiece connected to the upper end of the smoke generating part, the smoke generating part is connected to the cigarette mouthpiece, and the cigarette mouthpiece is configured for filtering toxic substances generated by the smoke generating part and/or reducing the temperature of the smoke generated by the smoke generating part; and the smoke generating part includes tea shreds, tea particles and a smoke generating agent. The present application further provides an electronic cigarette, including a heating unit, an energy storage unit, a control unit and the tea cigarette cartridge as described above. In the technical solution according to the present application, the composite design of the tea shreds and the tea particles can ensure convenient insertion of a heating plate and a good heating effect, and is combined with the smoke generating agent. The smoke generating agent is heated to carry refreshing ingredients produced by the tea shreds and the tea particles to be fully diffused along with the smoke. Further, after being evaluated and tested by reviewers, the refreshing effect, aroma, amount of smoke generated and overall smoking experience of the tea cigarette cartridge are better than those of the tea cigarette cartridge available in the market. The tea cigarette cartridge and the electronic cigarette according to the present application solve the technical defects of poor smoking experience of the tea cigarette cartridge of the electronic cigarette in the related art.

## BRIEF DESCRIPTION OF DRAWINGS

**[0018]** In order to more clearly illustrate the technical solutions in embodiments of the present application or the related art, the accompanying drawings used in the description of the embodiments or the related art will be briefly introduced below. It is apparent that, the accompanying drawings in the following description are only some embodiments of the present application, and other drawings can be obtained by those of ordinary skill in the art from the provided drawings without creative efforts.

FIG. 1 is a schematic diagram of a sectional structure of a tea cigarette cartridge in the technical solution according to the present application; and

FIG. 2 is an exploded view of a tea cigarette cartridge in the technical solution according to the present application.

**[0019]** Reference numeral: smoke generating part 1, cigarette mouthpiece 2, purification part 21, temperature control part 22, air source part 23, filter 24, shaping part 3, sealing part 4 and isolation part 5.

**[0020]** FIG. 1 is designated as the figure of the abstract.

## DESCRIPTION OF EMBODIMENTS

**[0021]** According to some embodiments of the present application, a tea cigarette cartridge and an electronic cigarette are provided to solve the technical defects of poor smoking experience of the tea cigarette cartridge of the electronic cigarette in the related art.

**[0022]** The technical solutions in the embodiments of the present application are clearly and completely described below. It is apparent that the embodiments described are only some rather than all of the embodiments of the present application. All other embodiments obtained by those of ordinary skill in the art based on the embodiments in the present application without creative efforts fall within the protection scope of the present application.

**[0023]** In order to describe the present application in more detail, a tea cigarette cartridge and an electronic cigarette according to the present application are specifically described below in conjunction with embodiments.

### Embodiment 1

**[0024]** In this embodiment, a smoke generating part prepared includes: 13 g of tea shreds, 98 g of tea particles and 25 g of a smoke generating agent. In this embodiment, the smoke generating agent is propylene glycol, and the smoke generating part prepared has a density of 0.38 g/cm<sup>3</sup>.

**[0025]** In this embodiment, a preparation method of the tea shreds includes: causing tea leaves to undergo multi-stage drying sequentially to obtain a dried product, and processing the dried product to produce tea shreds having a width in

a range of 0.5 mm to 4 mm, a length in a range of 0.5 mm to 12 mm and humidity in a range of 3% to 10%. The multi-stage drying includes: causing the tea leaves to sequentially undergo first drying until water content is reduced by 30%, conducting second drying until the water content is reduced by 20% and conducting third drying until the water content is reduced by 10%, standing until room temperature is reached, and obtaining the tea shreds.

**[0026]** In this embodiment, a preparation method of the tea particles includes: S1: drying tea leaves, and causing the tea leaves to undergo low-temperature puffing via microwave puffing drying; and S2: grinding the tea leaves obtained in S1 to powder with 300 to 500 meshes, and obtaining tea particles with 20 to 50 meshes by wet granulation.

#### Embodiment 2

**[0027]** In this embodiment, a smoke generating part prepared includes: 1g of tea shreds, 65 g of tea particles and 12 g of a smoke generating agent. In this embodiment, the smoke generating agent is propylene glycol, and the smoke generating part prepared has a density of 0.79 g/cm<sup>3</sup>.

**[0028]** In this embodiment, a preparation method of the tea shreds includes: causing tea leaves to undergo multi-stage drying sequentially, to obtain a dried product, and processing the dried product to produce tea shreds having a width in a range of 0.5 mm to 4 mm, a length in a range of 0.5 mm to 12 mm and humidity in a range of 3% to 10%. The multi-stage drying includes: causing the tea leaves to sequentially undergo first drying until water content is reduced by 30%, conducting second drying until the water content is reduced by 20% and conducting third drying until the water content is reduced by 10%, standing until room temperature is reached, and obtaining the tea shreds.

**[0029]** In this embodiment, a preparation method of the tea particles includes: S1: drying tea leaves, and causing the tea leaves to undergo low-temperature puffing via microwave puffing drying; and S2: grinding the tea leaves obtained in S1 to powder with 300 to 500 meshes, and obtaining tea particles with 20 to 50 meshes by wet granulation.

#### Embodiment 3

**[0030]** In this embodiment, a smoke generating part prepared includes: 25 g of tea shreds, 90 g of tea particles and 1 g of a smoke generating agent. In this embodiment, the smoke generating agent is propylene glycol, and the smoke generating part prepared has a density of 0.52 g/cm<sup>3</sup>.

**[0031]** In this embodiment, a preparation method of the tea shreds includes: causing tea leaves to undergo multi-stage drying sequentially, to obtain a dried product, and processing the dried product to produce tea shreds having a width in a range of 0.5 mm to 4 mm, a length in a range of 0.5 mm to 12 mm and humidity in a range of 3% to 10%. The multi-stage drying includes: causing the tea leaves to sequentially undergo first drying until water content is reduced by 30%, conducting second drying until the water content is reduced by 20% and conducting third drying until the water content is reduced by 10%, standing until room temperature is reached, and obtaining the tea shreds.

**[0032]** In this embodiment, a preparation method of the tea particles includes: S1: drying tea leaves, and causing the tea leaves to undergo low-temperature puffing via microwave puffing; and S2: grinding the tea leaves obtained in S1 to powder with 300 to 500 meshes, and obtaining tea particles with 20 to 50 meshes by wet granulation.

#### Embodiment 4

**[0033]** Tea cigarette cartridges are prepared respectively according to the smoke generating parts prepared in Embodiments 1-3. A structure of the tea cigarette cartridge prepared from bottom to top is: a sealing part 4, a smoke generating part 1, an isolation part 5, a purification part 21, an isolation part 5, a temperature control part 22, an isolation part 5, an air source part 23, an isolation part 5 and a filter 24. The entire tea cigarette cartridge is sleeved with a shaping part 3. For ease of understanding, the tea cigarette cartridges prepared according to the smoke generating parts prepared in Embodiments 1-3 are named a tea cigarette cartridge A, a tea cigarette cartridge B, and a tea cigarette cartridge C respectively.

**[0034]** In this embodiment, after the smoke generating part 1 generates smoke, the smoke is first purified by a tea stem purification part 21. Loose and porous tea stems can effectively absorb harmful substances in the smoke. At the same time, the tea stems in the purification part 21 can also enhance the aroma of the smoke, and tea polyphenols in the tea stems can also be refreshing. Therefore, the tea stem purification part 21 further has an effect of assisting in enhancing the aroma and refreshing, that is, assisting in strengthening the refreshing effect and the aroma enhancing effect of the smoke generating part 1. On the basis of ensuring a good filtration and purification effect on harmful substances in the smoke, the use of conventional filtration materials can be greatly avoided, which, on the one hand, can effectively reduce costs, and on the other hand, can also solve the problem of environmental pollution caused by difficult degradation of the conventional filtration materials.

**[0035]** In actual use, due to the complex structure of the tea cigarette cartridge, the structures are easy to loosen after being subjected to external force (such as insertion of heating plate insertion or smoking) or heating, and the structures

easily influence each other, leading to a poor smoking effect. In this case, the isolation part 5 can effectively isolate the structures.

**[0036]** In order to effectively improve the stability of the structure of the tea cigarette cartridge, prevent various parts of the tea cigarette cartridge from loosening and falling off, and reduce the use of chemical components such as adhesives, the tea cigarette cartridge according to the embodiment of the present application further includes: a shaping part 3. The shaping part 3 is sleeved upon external surfaces of the smoke generating part 1 and the cigarette mouthpiece 2. The shaping part 3 is sleeved upon external surfaces of the smoke generating part 1 and the cigarette mouthpiece 2, so as to effectively maintain the structural stability of the tea cigarette cartridge, and after being affected by external vibration, can still maintain the structural stability of the tea cigarette cartridge to facilitate storage and transportation of the tea cigarette cartridge. At the same time, due to the shaping function of the shaping part 3, during the preparation of the tea cigarette cartridge, the method of pressing in one by one can effectively reduce the use of adhesive, which can prevent the release of harmful gases when the adhesive is heated and decomposed, and further improve the smoking taste of the tea cigarette cartridge, making the smoking safer.

**[0037]** The tea cigarette cartridge is further provided with a sealing part 4. The sealing part 4 is arranged under the smoke generating part 1, for preventing the content of the smoke generating part 1 from falling out. The arrangement of the sealing part 4 can effectively reduce damages to the cigarette structure during storage of the tobacco, and after the heating plate is inserted into the smoke generating part 1, the sealing part 4 can effectively prevent falling of the tobacco into the body of the electronic cigarette caused by looseness of the smoke generating part 1 due to heating and insertion of foreign matters and prevent pollution of the body of the electronic cigarette.

#### Embodiment 5

**[0038]** This embodiment is to measure smoking effects of the tea cigarette cartridges 1-3 prepared in Embodiment 4. In this embodiment, the tea cigarette cartridges 1-3 prepared in Embodiment 4 are evaluated for smoking tests, and evaluation results are shown in Table 1.

Table 1

|                           | Amount of smoke       | Puff number of a single cigarette (puff) | Draw resistance (Pa) | Taste | Smoke temperature (°C) | Amount of tea polyphenols taken out |
|---------------------------|-----------------------|------------------------------------------|----------------------|-------|------------------------|-------------------------------------|
| Tea cigarette cartridge a | Large amount of smoke | 15                                       | 3000                 | Good  | 43                     | 25 ppm                              |
| Tea cigarette cartridge b | Large amount of smoke | 14                                       | 2950                 | Good  | 40                     | 28 ppm                              |
| Tea cigarette cartridge c | Large amount of smoke | 16                                       | 2980                 | Good  | 45                     | 27 ppm                              |

**[0039]** As shown in Table 1, the puff number of a single cigarette, the draw resistance, the smoke temperature, the taste and other technical parameters of the tea cigarette cartridge obtained in the technical solutions of the present application are all similar to those of existing electronic cigarette cartridges, therefore, the tea cigarette cartridge can act as an alternative to conventional cigarette cartridges from the perspective of smoking experience. Further, the tea polyphenols in the tea cigarette cartridge obtained have a good takeout effect, and the tea polyphenols have a good refreshing effect. Therefore, the tea cigarette cartridge can also act as an alternative to conventional cigarette cartridges from the perspective of refreshing requirements.

**[0040]** The present application further provides an electronic cigarette, including a heating unit, an energy storage unit, a control unit and the cigarette structure as described above. The control unit controls the heating unit for heating, and the energy storage unit provides energy for a heating process of the heating unit. When the heating unit is inserted into the cigarette structure, the cigarette structure is heated and the smoking process begins.

**[0041]** Based on the above, the present application provides a tea cigarette cartridge, wherein the tea cigarette cartridge includes a smoke generating part and a cigarette mouthpiece connected to the upper end of the smoke generating part, the smoke generating part is connected to the cigarette mouthpiece, and the cigarette mouthpiece is configured for filtering toxic substances generated by the smoke generating part and/or reducing the temperature of the smoke generated

by the smoke generating part; and the smoke generating part includes tea shreds, tea particles and a smoke generating agent. The present application further provides an electronic cigarette, including a heating unit, an energy storage unit, a control unit and the tea cigarette cartridge as described above. In the technical solution according to the present application, the composite design of the tea shreds and the tea particles can ensure convenient insertion of a heating plate and a good heating effect, and is combined with the smoke generating agent. The smoke generating agent is heated to carry refreshing ingredients produced by the tea shreds and the tea particles to be fully diffused along with the smoke. Further, after being evaluated and tested by reviewers, the refreshing effect, aroma, smoke emission and overall smoking experience of the tea cigarette cartridge are better than those of the tea cigarette cartridge available in the market. The tea cigarette cartridge and the electronic cigarette according to the present application solve the technical defects of poor smoking experience of the tea cigarette cartridge of the electronic cigarette in the related art.

**[0042]** The above are only preferred embodiments of the present application. It should be pointed out that those of ordinary skill in the art can also make several improvements and modifications without departing from the principle of the present application. Such improvements and modifications should also be regarded as falling within the protection scope of the present application.

## Claims

1. A tea cigarette cartridge, comprising a smoke generating part and a cigarette mouthpiece connected to an upper end of the smoke generating part, wherein

the smoke generating part is connected to the cigarette mouthpiece, and the cigarette mouthpiece is configured for filtering toxic substances generated by the smoke generating part and/or reducing temperature of smoke generated by the smoke generating part; and

the smoke generating part comprises tea shreds, tea particles and a smoke generating agent.

2. The tea cigarette cartridge according to claim 1, wherein the smoke generating part comprises 1 to 25 parts by mass of the tea shreds, 65 to 98 parts by mass of the tea particles and 1 to 25 parts by mass of the smoke generating agent.

3. The tea cigarette cartridge according to claim 1, wherein the smoke generating part has a density in a range of 0.3 g/cm<sup>3</sup> to 0.8 g/cm<sup>3</sup>.

4. The tea cigarette cartridge according to claim 1, wherein the smoke generating agent is selected from one or more of propylene glycol, glycerol and glycerol triacetate.

5. The tea cigarette cartridge according to claim 1, wherein

the tea shreds is prepared by causing tea leaves to undergo multi-stage drying sequentially to obtain a dried product, and processing the dried product to produce tea shreds having a width in a range of 0.5 mm to 4 mm, a length in a range of 0.5 mm to 12 mm and humidity in a range of 3% to 10%, and the multi-stage drying comprises: causing the tea leaves to sequentially undergo first drying until water content of the tea leaves is reduced by 30%, conducting second drying until the water content of the tea leaves is reduced by 20%, and conducting third drying until the water content of the tea leaves is reduced by 10%, standing until room temperature to obtain the dried product.

6. The tea cigarette cartridge according to claim 1, wherein a preparation method of the tea particles comprises:

S1: drying tea leaves, and causing the tea leaves to undergo low-temperature puffing via microwave puffing drying; and

S2: grinding the tea leaves obtained in S1 to powder with 300 to 2000 meshes, and obtaining tea particles with 20 to 30 meshes by wet granulation.

7. The tea cigarette cartridge according to claim 1, wherein

from bottom to top, the cigarette mouthpiece has a structure comprising a purification part, a temperature control part, an air source part and a filter; and

an isolation part is arranged among adjacent two of the purification part, the temperature control part, the air

source part and the filter, and the isolation part is configured for mutual independence of the parts.

8. The tea cigarette cartridge according to claim 7, wherein the purification part is a tea stem purification part.

5 9. The tea cigarette cartridge according to claim 1, further comprising a sealing part and a shaping part; wherein

the sealing part is arranged under the smoke generating part, for preventing exposure of content of the smoke generating part; and

10 the shaping part is sleeved upon external surfaces of the smoke generating part and the cigarette mouthpiece.

10 10. An electronic cigarette, comprising a heating unit, an energy storage unit and a control unit, wherein the electronic cigarette further comprises the tea cigarette cartridge according to any one of claims 1 to 9.

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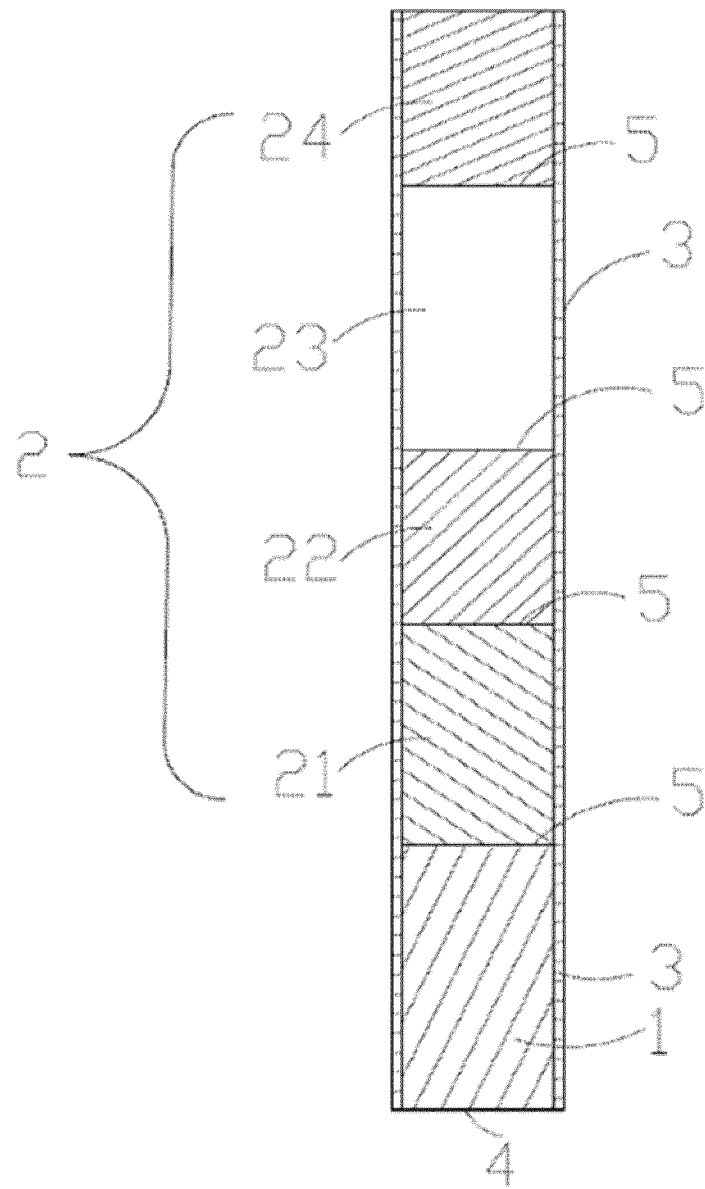


FIG. 1

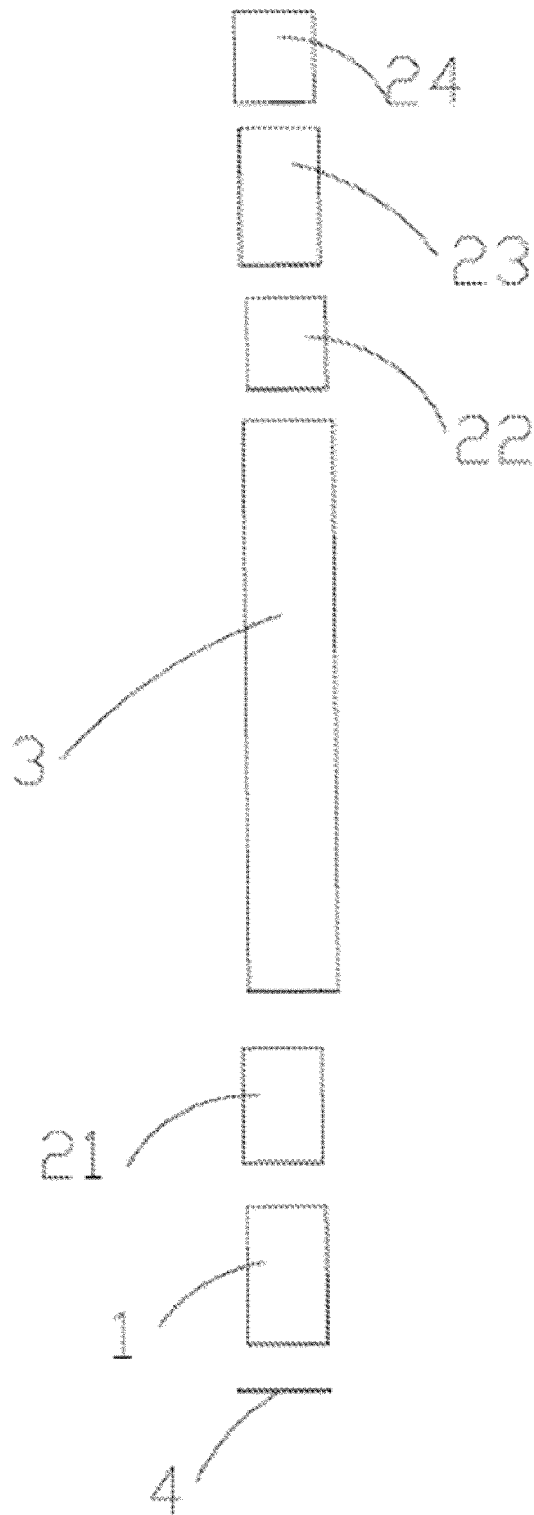


FIG. 2

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2020/117715

### A. CLASSIFICATION OF SUBJECT MATTER

A24B 15/16(2020.01)i; A24D 1/18(2006.01)i; A24F 47/00(2020.01)i

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

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A24B A24D A24F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DWPI: SIPOABS: CNABS: CNTXT: CNKI: WOTXT: USTXT: EPTXT: 舜宝科技, 电子烟, 香烟, 卷烟, 不燃烟, 烟弹, 茶, 粒, electronic, cigarette, tea, shred, thread, granule, particle

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                              | Relevant to claim No. |
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| X         | CN 109393541 A (DONGGUAN VANILLA BIOENGINEERING CO., LTD.) 01 March 2019 (2019-03-01)<br>description, paragraphs [0031]-[0073], and figures 1-5 | 1-10                  |
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| A         | CN 109757762 A (FUJIAN LVSE HUANGJIN BIOTECHNOLOGY CO., LTD.) 17 May 2019 (2019-05-17)<br>entire document                                       | 1-10                  |
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☐ 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 a particular development.

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

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Date of the actual completion of the international search

28 October 2020

Date of mailing of the international search report

**04 January 2021**

Name and mailing address of the ISA/CN

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**INTERNATIONAL SEARCH REPORT**  
**Information on patent family members**

International application No.

**PCT/CN2020/117715**

| Patent document<br>cited in search report | Publication date<br>(day/month/year) | Patent family member(s) | Publication date<br>(day/month/year) |
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**REFERENCES CITED IN THE DESCRIPTION**

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