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(54) BOTTOM SUPPORT OF HEAT-NOT-BURN SMOKING SET AND SMOKING SET USING SAME

(57) A bottom support (101) of a heat-not-burn smoking set (100). A bottom of the bottom support is provided with a through hole, wherein the shape of the through hole of the bottom support (101) is different from the shape of the cross section of an insertion heating element (102), and the shape of the through hole of the bottom support (101) is a non-centrosymmetric shape. The area of the shape of the through hole of the bottom support (101) is much larger than the area of an insertion hole required by the insertion heating element (102), so that a sufficient ventilation gap is kept between the through hole of the bottom support (101) and the insertion heating element (102). A smoking set (100) using the bottom support. The bottom support (101) and the smoking set (100) can obviously improve the smoking effect of a heat-not-burn cigarette (200), provide uniform and full fragrance for a user in a smoking process, and significantly improve the feeling of pleasant smoking of the heat-not-burn cigarette (200).

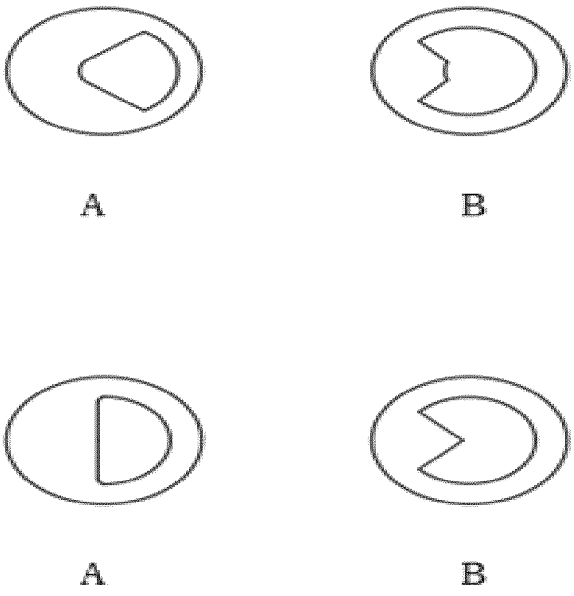


FIG. 5

EP 4 487 707 A1

Description

TECHNICAL FIELD

[0001] The present invention relates to the field of heat-not-burn cigarettes, and in particular, to a bottom support of a heat-not-burn smoking set and a smoking set using the same.

BACKGROUND

[0002] In recent years, the heat-not-burn cigarettes have been widely concerned by consumers since their appearance in the cigarette consumption market, and the market proportion thereof is increasing year by year. The "heat-not-burn cigarette" refers to that the cigarette is only heated without burning, and the heating temperature is significantly lower than the ignition point of the cigarette. Therefore, the heat-not-burn cigarette requires a heater to be used in conjunction with the cigarette; the cigarette is composed of tobacco and derivatives thereof, and the heater is a smoking set.

[0003] In the smoking set, a heating chamber is used for heating the cigarette located therein, which generates heat and temperature rise through electric conversion. The heating principle may be adopting an electric heating element to directly electrify and heat, or adopting an electromagnetic induction element to carry out electromagnetic induction heating. Currently, the type of the electronic heating element may adopt a cylinder wall type to heat the side wall of the cigarette, or may adopt an insertion type to heat the center inside the cigarette. No matter which heating method is adopted, the heating chamber in the smoking set should keep air communication to ensure the achievement of the smoking effect. Therefore, the structure in the smoking set which is in direct contact with the cigarettes must have vent holes to ensure the circulation of air. In the using process, air enters the heating chamber through the vent holes and flows through the cigarette along with the smoking of a user, and is mixed with fragrant substances in the cigarette in this process to form a smoke gas with a rich fragrance which enters the oral cavity along with the inhalation of the user.

[0004] The smoking set is in direct contact with and acts on the structure of the cigarette, and the cigarette can be maintained and fixed through the bottom support and/or the side clamping sleeve. Generally speaking, the side clamping sleeve and the bottom support act together. The side clamping sleeve can ensure that the cigarette is in a vertical state in the smoking set without inclination, and the bottom support can ensure the height of the cigarette in the smoking set to fix the cigarette in place in the smoking set, such that the cigarette is stably in an effective heating range to ensure the effective achievement of the heating function.

[0005] To achieve the penetration and circulation of air in the cigarette, a through hole is required to be formed at the center position of the bottom of the bottom support. Generally speaking, the shape of the through hole is the same as the shape of the cross section of the insertion type heating element. For example, the shape of the through hole is circular for a needle type heating element and linear for a sheet type heating element. However, unlike the conventional cigarette that is completely exposed to air, the air permeability of the heat-not-burn cigarette is significantly lower than that of the conventional cigarette, such that the user needs to apply a greater smoking force for smoking when using the cigarette. This means that, each time the heat-not-burn cigarette is smoked, the gas circulation speed of the smoke gas is significantly faster than the gas circulation speed of the common cigarette during smoking, such that the air in the heat-not-burn cigarette is converted into the smoke gas faster, resulting in a shorter time for the fragrance to attach to the gas of the heat-not-burn cigarette; the fragrant substance components in the smoke gas are reduced, and thus the pleasure degree for smoking the smoke gas is reduced, making it difficult to achieve an ideal smoking effect.

SUMMARY

[0006] To solve the above defect that the smoking effect of a heat-not-burn cigarette is not ideal in the prior art, the objective of the present invention is to provide a bottom support of a heat-not-burn smoking set and a smoking set using the same, which can significantly improve the smoking effect of the heat-not-burn cigarette, provide uniform and full fragrance for a user in a smoking process, and significantly improve the pleasant feeling of smoking the heat-not-burn cigarette.

[0007] According to one aspect of the present invention, provided is a bottom support of a heat-not-burn smoking set provided with a through hole at a bottom thereof, where a shape of the through hole of the bottom support is different from a shape of a cross section of an insertion type heating element. Preferably, the shape of the through hole of the bottom support is a non-centrosymmetric shape.

[0008] Preferably, the shape of the through hole of the bottom support of the smoking set is a special shape or an irregular shape.

[0009] Preferably, the shape of the through hole of the bottom support of the smoking set is a moon shape.

[0010] Preferably, an area of the shape of the through hole of the bottom support is much larger than an area of an insertion hole required by the insertion type heating element, such that a sufficient ventilation gap is kept between the through hole of the bottom support and the insertion type heating element. More preferably, the area of the through hole of the bottom support is more than 2 times an area of a maximum cross section of an insertion type heating sheet.

[0011] According to another aspect of the present invention, provided is a heat-not-burn smoking set, where

the smoking set is provided with the bottom support described above.

[0012] The bottom support of the smoking set is used for fixing the position of a cigarette, such that the cigarette is stably in an effective heating range, thereby achieving uniform heating of the cigarette by a heating element. Meanwhile, the through hole formed on the bottom support of the smoking set constitutes an air inlet of the cigarette. In an existing heat-not-burn smoking set, a through hole of a bottom support thereof is centered at a center of the bottom support, and a shape of the through hole is a regular and standard shape. Specifically, for a cylinder wall type heating element, a shape of a through hole is circular; for a needle type heating element, a shape of a bottom support of a smoking set is circular, as shown in FIG. 3; and for a sheet type heating element, a shape of a bottom support of a smoking set is linear, correspondingly, as shown in FIG. 4. Through research, the inventors have found that in the prior art, the so-called standard shape of the through hole of the bottom support is not beneficial to improving a circulation condition of air flowing through a heat-not-burn cigarette, such that adverse conditions such as small through hole area, low air intake, low smoke gas concentration, low utilization rate of fragrant components, incomplete functioning of the most important material components in the cigarette, and uneven smoking taste are generated.

[0013] In view of this, the inventors have made an improvement in the shape of the through hole of the bottom support, that is, the shape of the through hole of the bottom support is shaped as a non-centrosymmetric shape. Research has found that the improvement can produce remarkable beneficial technical effects, that is, the fact that the transport state of non-uniform flow is presented when air enters the cigarette through the through hole of the bottom support is achieved. More specifically, since the shape of the through hole of the bottom support is different from the shape of the cross section of the insertion type heating element and the through hole of the bottom support is in a non-centrosymmetric shape, the area of the through hole of the bottom support is also asymmetrically distributed. Since air flow is larger on the side with the larger area of the through hole of the bottom support, the loss speed of the fragrant substances of the fuming substances on this side of the cigarette can be faster. In this case, once the heat-not-burn cigarette is started for use, in the process that the heating element continuously heats the cigarette, the loss speed of the fragrant substances of the fuming substances on the side with the smaller area of the through hole of the bottom support is slower than that on the side with the larger area of the through hole of the bottom support, such that in the smoking process of the user, the fragrant substances on the side with the smaller area of the through hole of the bottom support in the cigarette can be fully mixed with air flowing through the cigarette to accumulate and increase the concentration, thereby facilitating the smoker to obtain a strong smoke gas. In a next smoking action of the user, since the fragrant substances on the side with the larger area of the through hole of the bottom support have not been fully emitted in a short time, while a large amount of smoke gas stored on the other side is preferentially supplied for smoking, it is ensured that the fragrant substances in the cigarette constantly gather and are transported alternatively, such that a high quality smoking taste is always kept for multiple times of smoking and the difference in the taste for each smoking is reduced. Therefore, in the process that the cigarette is smoked multiple times, it is ensured that the smoke gas amount and state are unified, the smoking feeling is consistent all the time, the smoking taste is uniform, and adverse conditions such as "a certain puff being enjoyable", "a certain puff being less enjoyable", "differences in the smoking feeling during smoking", and "a declining quality of the smoking experience over time" in smoking the existing heat-not-burn cigarette are eliminated.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014]

FIG. 1 is a schematic diagram of disassembly and assembly of a cigarette and a smoking set.

FIG. 2 is a schematic diagram of disassembly and assembly of a smoking set showing a bottom support.

FIG. 3 is a schematic diagram showing a bottom support structure of an insertion type heating element of a needle type in the prior art.

FIG. 4 is a schematic diagram showing a bottom support structure of an insertion type heating element of a sheet type in the prior art.

FIG. 5 is a schematic diagram showing moon shapes of a through hole of a bottom support of the present invention.

FIG. 6 is a schematic diagram showing other shapes of a through hole of a bottom support of the present invention.

[0015] In the drawings: 100-smoking set; 101-bottom support; 102-heating element; 103-base; 200-cigarette.

DETAILED DESCRIPTION

[0016] The present invention is described in detail below with reference to the accompanying drawings.

[0017] Taking a smoking set in which a heating element is of an insertion type as an example, in the embodiments, the shape of the through hole of a bottom support 101 for holding a cigarette 200 is a moon shape shown in FIG. 5. As shown in FIG. 5, these moon shapes are formed by adding a fan-shaped through hole on the basis of a central through hole. It can be clearly seen from the comparison between FIG. 5 and FIGs. 3 and 4 that the area of the shape of the through hole of the bottom

support 101 is much larger than the area of the insertion hole required by the insertion type heating element. Since the smoking set 100 adopts the through hole with such a special shape, the central through hole part thereof can ensure the smooth insertion of the heating element, and the added fan-shaped through hole can significantly increase air flow. The larger the fan-shaped arc is, the larger the area of the through hole is, the larger the increased air flow is, and the better the effect of improving air circulation through the cigarettes is, such that a high quality smoking taste is always kept for multiple times of smoking and the difference in the taste for each smoking is reduced. In the process that the cigarette is smoked multiple times, it is ensured that the smoke gas amount and state are unified, the smoking feeling is consistent all the time, and the smoking taste is uniform. Of course, due to the supporting function feature of the bottom support, the fan-shaped included angle is less than 360°.

[0018] Tests have further proved that, for example, the effect of improving air circulation through the cigarettes can be further increased by particularly setting the area of the through hole of the bottom support to more than 2 times the area of the maximum cross section of the insertion type heating sheet. The foregoing shows only preferred embodiments of the present invention. It should be emphasized that various modifications and improvements to the present invention made by those of ordinary skill in the art without departing from the conception of the present invention shall fall within the protection scope of the present invention.

Claims

1. A bottom support of a heat-not-burn smoking set provided with a through hole at a bottom thereof, wherein a shape of the through hole of the bottom support is different from a shape of a cross section of an insertion type heating element.

2. The bottom support of a heat-not-burn smoking set according to claim 1, wherein the shape of the through hole of the bottom support is a non-centrosymmetric shape.

3. The bottom support of a heat-not-burn smoking set according to claim 1, wherein the shape of the through hole of the bottom support of the smoking set is a special shape or an irregular shape.

4. The bottom support of a heat-not-burn smoking set according to any one of claims 1 to 3, wherein the shape of the through hole of the bottom support of the smoking set is a moon shape.

5. The bottom support of a heat-not-burn smoking set according to any one of claims 1 to 4, wherein an area of the shape of the through hole of the bottom support is much larger than an area of an insertion hole required by the insertion type heating element, such that a sufficient ventilation gap is kept between the through hole of the bottom support and the insertion type heating element.

6. The bottom support of a heat-not-burn smoking set according to claim 5, wherein the area of the through hole of the bottom support is more than 2 times an area of a maximum cross section of an insertion type heating sheet.

7. A heat-not-burn smoking set, wherein the smoking set is provided with the bottom support as defined in any one of claims 1 to 6.

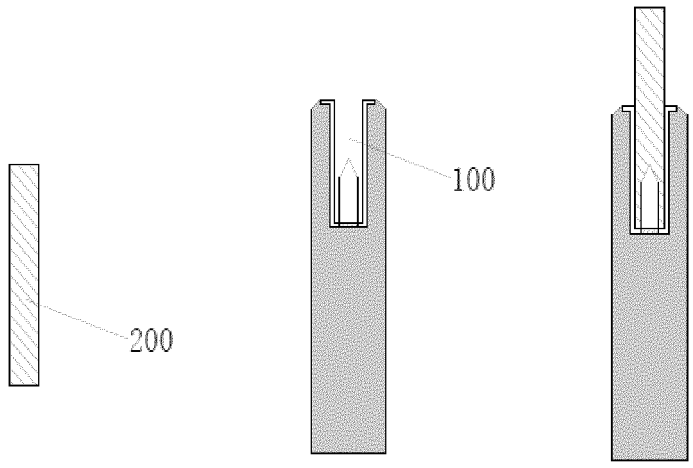


FIG. 1

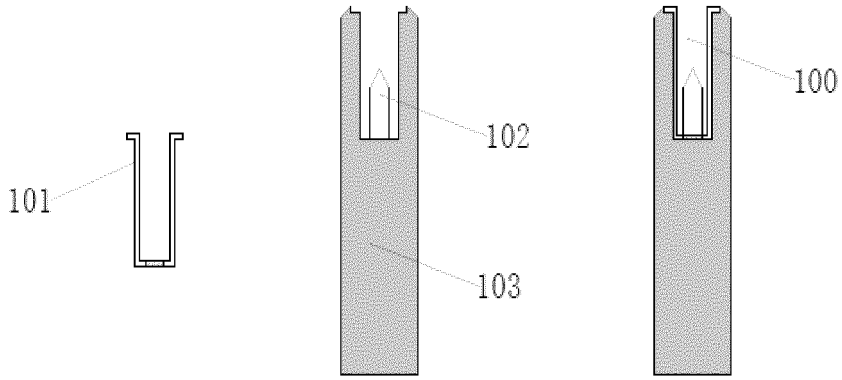
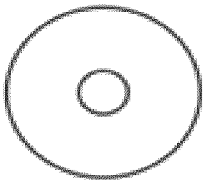
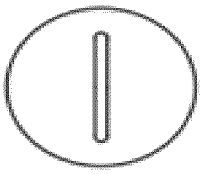


FIG. 2



Conventional bottom support of a needle type heating element

FIG. 3



Conventional bottom support of a sheet type heating element

FIG. 4

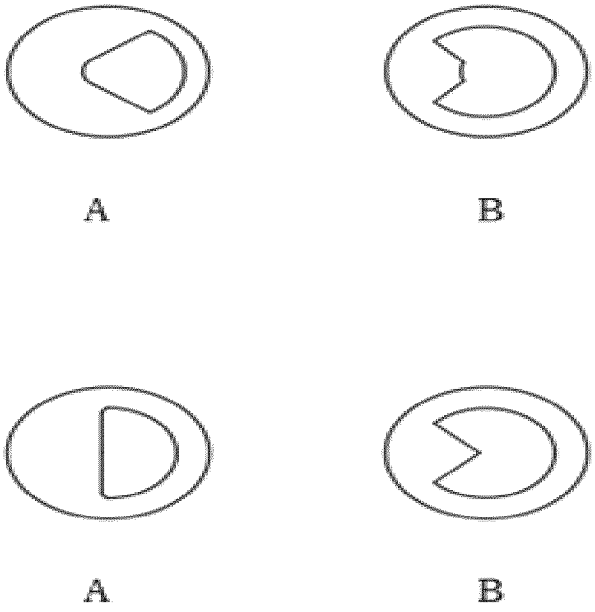


FIG. 5

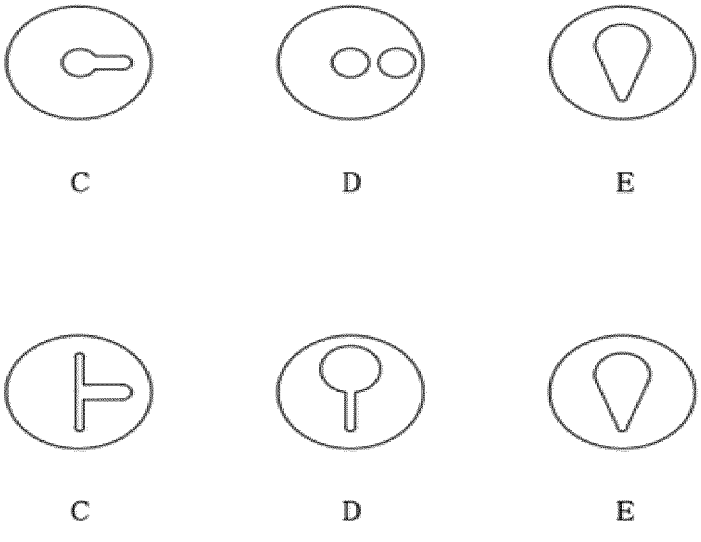


FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2022/097287

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/40(2020.01)i; A24F 40/46(2020.01)i; A24F 40/485(2020.01)i

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A24F A24D

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

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

CNABS; CNTXT; ENTXTC; ENTXT; WPABS; VEN: 加热, 发热, 感应, 感受, 穿, 插, 伸, 口, 孔, 眼, 洞, 通气, 气流, 气, 月, 扇, 星, 半圆, 不规则, 异形, 不规则, 非中心对称, 非对称, 不对称, 非均匀, 不均匀, 烘烤, 不燃烧, 非燃烧, extend+, insert +, through, heat+, hole?, aperture?, cavit+, open+, air+, vent+, abnormity, asymmetry, unsymmetry, non-uniform, nonuniform, non-uniform, moon, scallop, half round, semi-circle, semicircle, star

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 215936304 U (HUBEI CHINA TOBACCO INDUSTRY CO., LTD.) 04 March 2022 (2022-03-04) paragraph 33, and figures 5-6	1, 5-7
X	CN 207836767 U (KT&G CORP.) 11 September 2018 (2018-09-11) paragraphs 350-351, and figure 32	1, 7
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☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
25 October 2022	**30 November 2022**

Name and mailing address of the ISA/CN	Authorized officer
China National Intellectual Property Administration (ISA/CN) **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China**	
Facsimile No. **(86-10)62019451**	Telephone No.

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International application No.
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Information on patent family members

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