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(54) **ATOMIZING DEVICE AND ELECTRONIC CIGARETTE HAVING THE SAME**

ZERSTÄUBUNGSVORRICHTUNG UND ELEKTRONISCHE ZIGARETTE MIT EINER SOLCHEN
ZERSTÄUBUNGSVORRICHTUNG

DISPOSITIF D'ATOMISATION ET CIGARETTE ÉLECTRONIQUE COMPORTANT CELUI-CI

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Description

BACKGROUND

1. Technical Field

[0001] The present invention relates to electronic cigarettes, and particularly to an atomizing device and an electronic cigarette having the atomizing device.

2. Description of Related Art

[0002] Atomizing devices are key components of electronic cigarettes. A typical atomizing device includes a reservoir cotton, a tobacco solution reserved in the reservoir cotton, and a heating assembly for heating and atomizing the tobacco solution. Then the atomized tobacco solution can be sucked by a user of the electronic cigarette.

[0003] However, as the reservoir cotton is immersed by the tobacco solution, the reservoir cotton may be smelly after a long time immersion, thereby the taste of the tobacco solution may be changed accordingly.

[0004] What is needed, therefore, is an atomizing device and an electronic cigarette which can overcome the above shortcomings.

[0005] CN 202 456 410 U discloses an atomizing device according to the preamble of claim 1.

SUMMARY OF THE INVENTION

[0006] The present invention provides an atomizing device for an electronic cigarette according to claim 1.

[0007] Further embodiments of the atomizing device of the present invention are provided according to the dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Many aspects of the present atomizing device and electronic cigarette can be better understood with reference to the following drawings. The components in the drawings are not necessarily drawn to scale, the emphasis instead being placed upon clearly illustrating the principles of the present atomizing device and electronic cigarette. Moreover, in the drawings, like reference numerals designate corresponding parts throughout the several views.

FIG. 1 is a cross sectional view of an atomizing device of an electronic cigarette in accordance with an embodiment of the present invention.

FIG. 2 is similar to FIG. 1, but taken along a perpendicular line relative to FIG. 1.

FIG. 3 is an exploded view of the atomizing device of FIG. 1.

FIG. 4 is a cross sectional view of an air pipe and a sealing cover shown in FIG. 3.

FIG. 5 is a schematic isometric view of the sealing cover of FIG. 4.

FIG. 6 is a schematic isometric view of a heating assembly fixing base shown in FIG. 3.

FIG. 7 is a schematic isometric view of a tobacco solution obstructing ring shown in FIG. 3.

FIG. 8 is a cross sectional view of an atomizing device of an electronic cigarette which does not form part of the invention but represents background art that is useful for understanding the invention.

FIG. 9 is a schematic view of an electronic cigarette comprising an atomizing device according to the present invention.

15 DETAILED DESCRIPTION

[0009] Embodiments of the present electronic cigarette will now be described in detail below and with references to the drawings.

[0010] Referring to FIGs. 1 to 3, an atomizing device 100 for an electronic cigarette in accordance with an embodiment of the present invention is provided. The atomizing device 100 includes an atomizing sleeve 1, an air pipe 5, a heating assembly 4 fixed on the air pipe 5, a metallic ring 7 and a nozzle 3 located respectively at two ends of the air pipe 5, a heating assembly fixing base 8, and a sealing cover 2. The heating assembly fixing base 8 is fixed on the metallic ring 7. The sealing cover 2, air pipe 5, metallic ring 7, and heating assembly fixing base 8 are received in the atomizing sleeve 1. The sealing cover 2, air pipe 5, heating assembly fixing base 8, and metallic ring 7 cooperatively define a sealed tobacco solution reserving space 11 without a reservoir cotton received therein.

[0011] In addition, an electrode ring 9 is fixed in the metallic ring 7, and an insulating ring 10 is located between the metallic ring 7 and the electrode ring 9. The metallic ring 7 and the electrode ring 9 are respectively connected to a positive end and a negative end of a power source.

[0012] The heating assembly 4 includes a glass fiber core 41 and a heating coil 42 winding around the glass fiber core 41. Two ends of the heating coil 42 are connected to the electrode ring 9 and the metallic ring 7, respectively. The glass fiber core 41 can absorb the tobacco solution reserved in the tobacco solution reserving space 11, and the heating coil 42 can heat the tobacco solution absorbed by the glass fiber core 41, thereby atomizing the tobacco solution. Therefore, the atomizing device 100 work properly without a conventional reservoir cotton, and the taste of the tobacco solution cannot be changed.

[0013] Referring to FIGs. 4 and 5, the sealing cover 2 has an air through hole 22 and a connecting groove 23. The connecting groove 23 surrounds the through hole 22. The air pipe 5 is inserted in the connecting groove 23 and is in communication with the through hole 22. The sealing cover 2 is arranged adjacent to the nozzle 3. The

sealing cover 2 is made of a flexible material, and has a tobacco solution filling hole 21 configured for filling the tobacco solution into the tobacco solution reserving space 11 between the atomizing sleeve 1 and the air pipe 5. The tobacco solution filling hole 21 is a blind hole. A needle can be used to fill the tobacco solution into the tobacco solution reserving space 11 during filling the tobacco solution. As the tobacco solution reserving space 11 is sealed, a negative pressure is formed in the tobacco solution reserving space 11 after the tobacco solution is used, thereby the tobacco solution would not leak out through the metallic ring 7 and the electrode ring 9 even when the atomizing device 100 stands upwards.

[0014] Referring to FIG. 6, the heating assembly fixing base 8 includes a central through hole 84, a first sidewall through hole 82, and a second sidewall through hole 83. Axes of the central through hole 84, first sidewall through hole 82, and second sidewall through hole 83 are parallel with each other. Two ends of the heating coil 42 respectively extend through the first sidewall through hole 82 and the second sidewall through hole 83, and respectively bend at an outer wall of the heating assembly fixing base 8 and an inner wall of the central through hole 84. The electrode ring 9 is positioned inside the central through hole 84.

[0015] Referring to FIG. 2 and FIG. 6, the heating assembly fixing base 8 further has an inserting hole 81 in communication with the central through hole 84. The air pipe 5 is inserted in the inserting hole 81.

[0016] Referring to FIG. 1 again, a tobacco solution obstructing ring 6 is arranged on the air pipe 5 inside the atomizing sleeve 1. The tobacco solution obstructing ring 6 is arranged above the heating assembly 4. Referring to FIG. 7, the tobacco solution obstructing ring 6 includes a first ring 63 and a second ring 61 in communication with the first ring 63. An inner diameter of the second ring 61 is greater than that of the first ring 63. In the present embodiment, the second ring 61 is in contact with the heating assembly 4. An outer wall of the second ring 61 has a cutout surface 62 facing toward the atomizing sleeve 1, and the cutout surface 62 is configured for controlling a rate of flow of the tobacco solution.

[0017] In the present embodiment, each of the tobacco solution obstructing ring 6, the sealing cover 2, the nozzle 3, and the heating assembly fixing base 8 is made of a flexible material. The flexible material can be silicon or plastic material.

[0018] Referring to FIG. 8, an atomizing device 200 is provided. The atomizing device 200 does not form part of the invention but represents background art that is useful for understanding the invention. The atomizing device 200 is essentially similar to the atomizing device 100. In the present embodiment, the atomizing sleeve 1 has a tobacco solution obstructing structure 16 integrally formed thereon, so that the tobacco solution obstructing ring 6 is not needed. The tobacco solution obstructing structure 16 has a through hole surrounding the air pipe 5, and an inner wall of the through hole has a cutout

surface 17 facing toward the air pipe 5.

[0019] Referring to FIG. 9, an electronic cigarette 400 comprising an atomizing device according to the present invention is provided. The electronic cigarette 400 includes an atomizing device 100 (200) and a battery assembly 300 connected to the atomizing device 100(200). The battery assembly 300 has a chargeable battery.

[0020] It is understood that the above-described embodiments are intended to illustrate rather than limit the disclosure. Variations may be made to the embodiments without departing from the scope of the appended claims.

Claims

1. An atomizing device (100) for an electronic cigarette, comprising:

an atomizing sleeve (1);
 an air pipe (5) located inside the atomizing sleeve (1);
 a heating assembly (4) arranged on the air pipe (5);
 a heating assembly fixing base (8) fixing and supporting the heating assembly (4);
 a metallic sleeve (7) supporting the heating assembly fixing base (8); and
 a sealing cover (2), wherein the sealing cover (2) and the heating assembly fixing base (8) are respectively located at two opposite ends of the air pipe (5), and the atomizing sleeve (1), the air pipe (5), the sealing cover (2), the heating assembly fixing base (8), and the metallic sleeve (7) cooperatively define a sealed tobacco solution reserving space (11) without a reservoir cotton received therein; and
 a tobacco solution obstructing ring (6) arranged on the air pipe (5) and above the heating assembly (4), wherein the tobacco solution obstructing ring (6) comprises a first ring (63) and a second ring (61) in communication with the first ring (63), a diameter of the second ring (61) is greater than that of the first ring (63), and the second ring (61) is in contact with the heating assembly (4); the atomizing device being **characterized in that** an outer wall of the second ring (61) has a cutout surface (62) facing toward the atomizing sleeve (1), the cutout surface (62) being configured for controlling a rate of flow of the tobacco solution.

2. The atomizing device of claim 1, wherein the tobacco solution obstructing ring (6) is made of a flexible material.
3. The atomizing device of claim 1, wherein the sealing cover (2) is made of a flexible material, the sealing cover (2) has a tobacco solution filling hole (21), and

the tobacco solution filling hole is a blind hole (21).

4. The atomizing device of claim 1, wherein the heating assembly (4) comprises a glass fiber core (41) and a heating coil (42) winding around the glass fiber core (41); the heating assembly fixing base (8) comprises a central through hole (84), a first sidewall through hole (82) and a second sidewall through hole (83), two ends of the heating coil (42) respectively extend through the first sidewall through hole (82) and the second sidewall through hole (83), and respectively bend at an outer wall of the heating assembly fixing base (8) and an inner wall of the central through hole (84).
5. The atomizing device of claim 1, further comprising a nozzle arranged on the sealing cover (2) and in communication with the air pipe (5).
6. An electronic cigarette comprising an atomizing device of claim 1, and a battery assembly connected to the atomizing device.

Patentansprüche

1. Zerstäubungsvorrichtung (100) für eine elektronische Zigarette, umfassend:
 - eine Zerstäubungshülse (1);
 - ein Luftrohr (5), das sich im Inneren der Zerstäubungshülse (1) befindet;
 - eine Heizanordnung (4), die auf dem Luftrohr (5) angeordnet ist;
 - eine Fixierbasis (8) für die Heizanordnung, welche die Heizanordnung (4) fixiert und trägt;
 - eine Metallhülse (7), die die Fixierbasis (8) für die Heizanordnung trägt; und
 - einen Abschlussdeckel (2), wobei der Abschlussdeckel (2) und die Fixierbasis (8) für die Heizanordnung sich jeweils an zwei gegenüber liegenden Enden des Luftrohrs (5) befinden, und die Zerstäubungshülse (1), das Luftrohr (5), der Abschlussdeckel (2), die Fixierbasis (8) für die Heizanordnung und die Metallhülse (7) zusammenwirkend einen abgeschlossenen Raum (11) definieren, der für Tabaklösung reserviert ist, ohne dass darin ein Reservoirbaumwollmaterial enthalten ist; und
 - einen Tabaklösung blockierenden Ring (6), der auf dem Luftrohr (5) und oberhalb der Heizanordnung (4) angeordnet ist, wobei der Tabaklösung blockierende Ring (6) einen ersten Ring (63) und einen zweiten Ring (61) in Kommunikation mit dem ersten Ring (63) umfasst, wobei ein Durchmesser des zweiten Rings (61) größer als derjenige des ersten Rings (63) ist, und der zweite Ring (61) in Kontakt mit der Heizanord-

nung (4) ist;

wobei die Zerstäubungsvorrichtung **dadurch gekennzeichnet ist, dass**

eine Außenwand des zweiten Rings (61) eine Ausschnittoberfläche (62) aufweist, die zu der Zerstäubungshülse (1) weist, wobei die Ausschnittoberfläche (62) ausgestaltet ist, um eine Flussrate der Tabaklösung zu steuern.

2. Zerstäubungsvorrichtung nach Anspruch 1, wobei der Tabaklösung blockierende Ring (6) aus einem flexiblen Material gefertigt ist.
3. Zerstäubungsvorrichtung nach Anspruch 1, wobei der Abschlussdeckel (2) aus einem flexiblen Material gefertigt ist, der Abschlussdeckel (2) ein Füllloch (21) für Tabaklösung aufweist und das Füllloch für Tabaklösung ein Sackloch (21) ist.
4. Zerstäubungsvorrichtung nach Anspruch 1, wobei die Heizanordnung (4) einen Glasfaserkern (41) und eine Heizspirale (42) umfasst, die um den Glasfaserkern (41) gewickelt ist; die Fixierbasis (8) für die Heizanordnung ein mittiges durchgehendes Loch (84), ein erstes durchgehendes Seitenwandloch (82) und ein zweites durchgehendes Seitenwandloch (83) umfasst, wobei sich zwei Enden der Heizspirale (42) durch das erste durchgehende Seitenwandloch (82) beziehungsweise das zweite durchgehende Seitenwandloch (83) erstrecken und an einer Außenwand der Fixierbasis (8) der Heizanordnung beziehungsweise an einer Innenwand des mittigen durchgehenden Loches (84) gebogen sind.
5. Zerstäubungsvorrichtung nach Anspruch 1, ferner umfassend eine Düse, die auf dem Abschlussdeckel (2) und in Kommunikation mit dem Luftrohr (5) angeordnet ist.
6. Elektronische Zigarette, umfassend eine Zerstäubungsvorrichtung nach Anspruch 1 und eine Batterieanordnung, die mit der Zerstäubungsvorrichtung verbunden ist.

Revendications

1. Dispositif d'atomisation (100) pour une cigarette électronique, comprenant :
 - un manchon d'atomisation (1) ;
 - un tuyau d'air (5) situé à l'intérieur du manchon d'atomisation (1) ;
 - un ensemble de chauffage (4) disposé sur le tuyau d'air (5) ;
 - une base de fixation d'ensemble de chauffage (8) fixant et supportant l'ensemble de chauffage

(4) ;

un manchon métallique (7) supportant la base de fixation d'ensemble de chauffage (8) ; et un couvercle d'étanchéité (2), dans lequel le couvercle d'étanchéité (2) et la base de fixation d'ensemble de chauffage (8) sont respectivement situés au niveau de deux extrémités opposées du tuyau d'air (5) et le manchon d'atomisation (1), le tuyau d'air (5), le couvercle d'étanchéité (2), la base de fixation d'ensemble de chauffage (8) et le manchon métallique (7) définissent en coopération un espace de réserve de solution de tabac scellé (11) sans qu'un coton réservoir ne soit reçu à l'intérieur de ce dernier ; et

une bague d'obstruction de solution de tabac (6) disposée sur le tuyau d'air (5) et au-dessus de l'ensemble de chauffage (4), dans lequel la bague d'obstruction de solution de tabac (6) comprend une première bague (63) et une seconde bague (61) en communication avec la première bague (63), un diamètre de la seconde bague (61) est supérieur à celui de la première bague (63) et la seconde bague (61) est en contact avec l'ensemble de chauffage (4) ;

le dispositif d'atomisation étant **caractérisé en ce que**

une paroi externe de la seconde bague (61) comporte une surface découpée (62) orientée vers le manchon d'atomisation (1), la surface découpée (62) étant configurée pour réguler un débit d'écoulement de la solution de tabac.

2. Dispositif d'atomisation selon la revendication 1, dans lequel la bague d'obstruction de solution de tabac (6) est réalisée en un matériau flexible.
3. Dispositif d'atomisation selon la revendication 1, dans lequel le couvercle d'étanchéité (2) est réalisé en un matériau flexible, le couvercle d'étanchéité (2) comporte un trou de remplissage de solution de tabac (21) et le trou de remplissage de solution de tabac est un trou aveugle (21).
4. Dispositif d'atomisation selon la revendication 1, dans lequel l'ensemble de chauffage (4) comprend une âme en fibre de verre (41) et un serpent de chauffage (42) s'enroulant autour de l'âme en fibre de verre (41) ; la base de fixation d'ensemble de chauffage (8) comprend un trou traversant central (84), un premier trou traversant de paroi latérale (82) et un second trou traversant de paroi latérale (83), deux extrémités du serpent de chauffage (42) s'étendent respectivement à travers le premier trou traversant de paroi latérale (82) et le second trou traversant de paroi latérale (83) et se plient respectivement au niveau d'une paroi externe de la base de fixation d'ensemble de chauffage (8) et d'une pa-

roi interne du trou traversant central (84).

5. Dispositif d'atomisation selon la revendication 1, comprenant en outre une buse disposée sur le couvercle d'étanchéité (2) et en communication avec le tuyau d'air (5) .
6. Cigarette électronique comprenant un dispositif d'atomisation selon la revendication 1, et un ensemble batterie raccordé au dispositif d'atomisation.

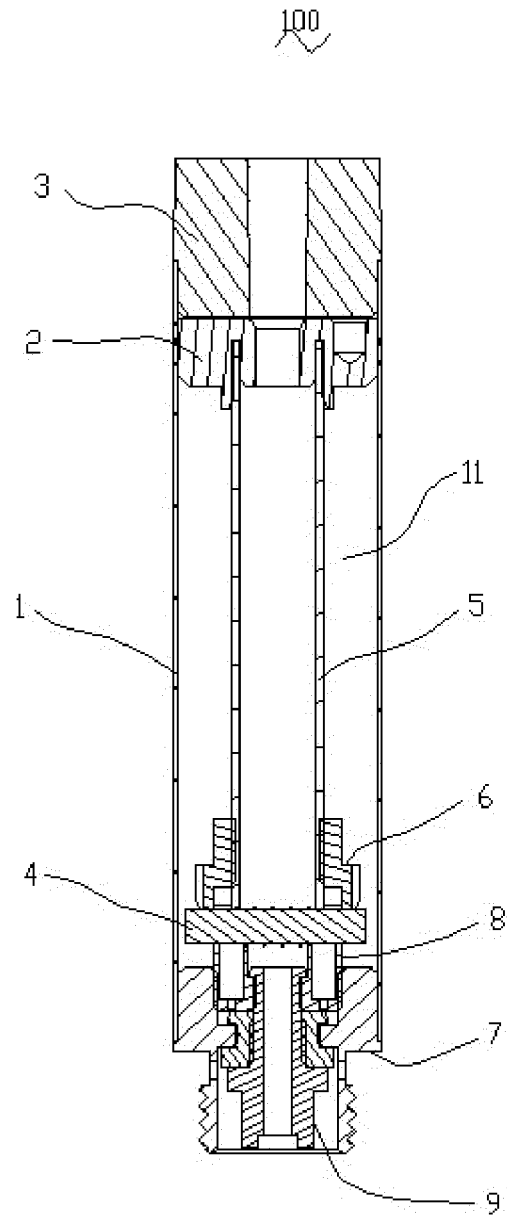


FIG.1

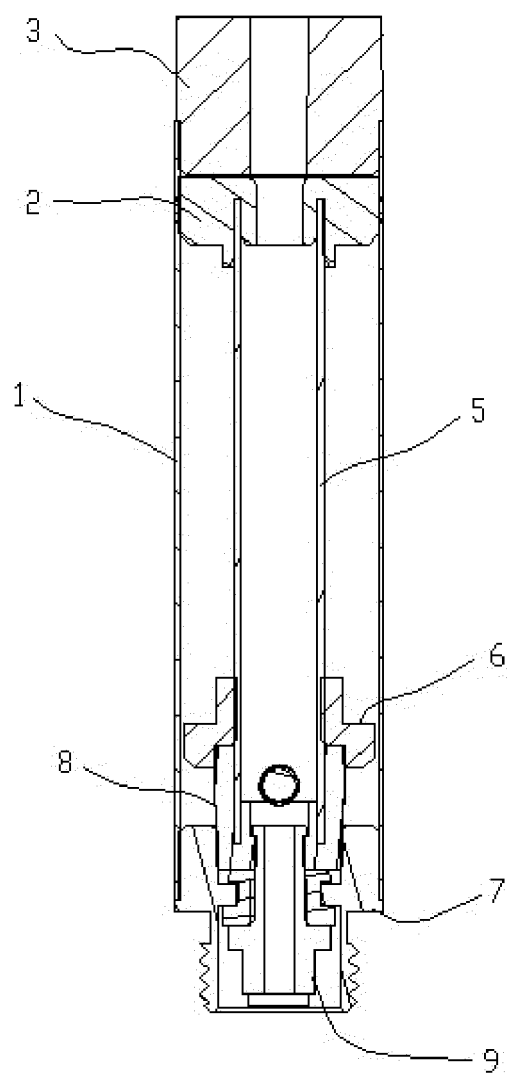


FIG.2

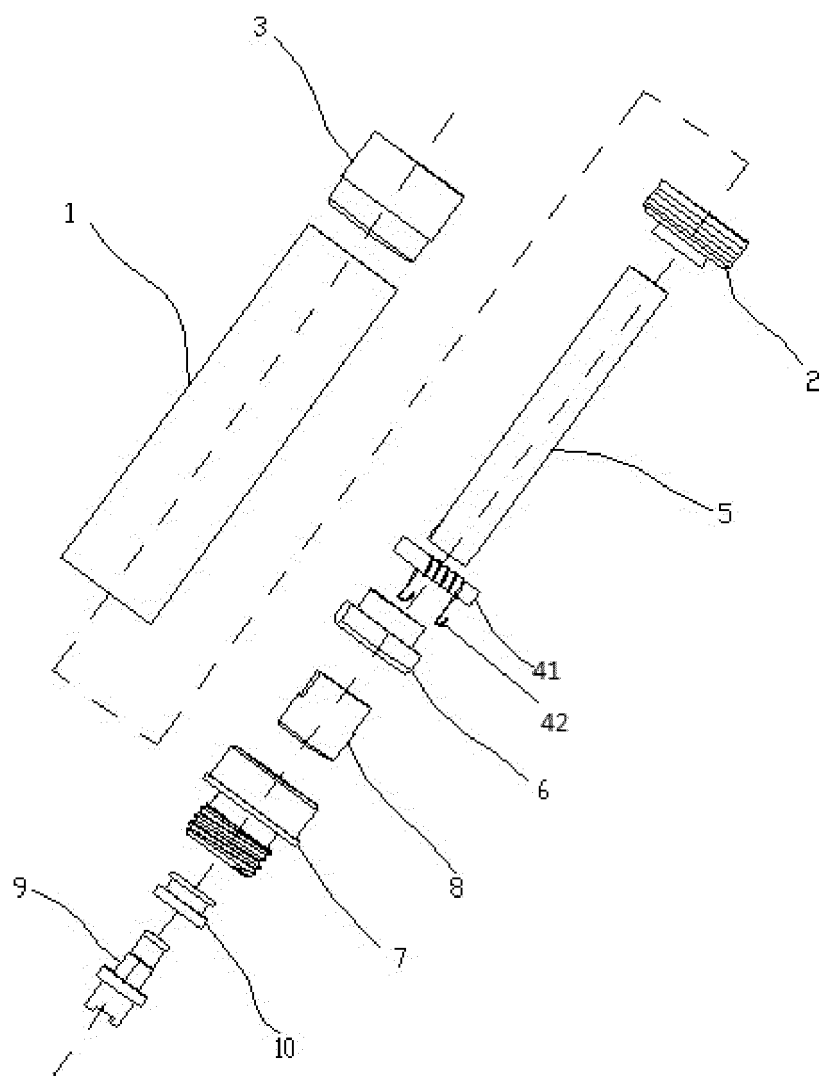


FIG.3

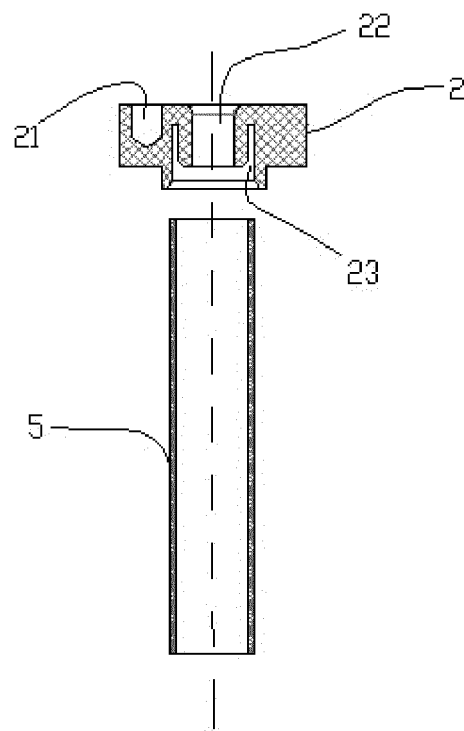


FIG.4

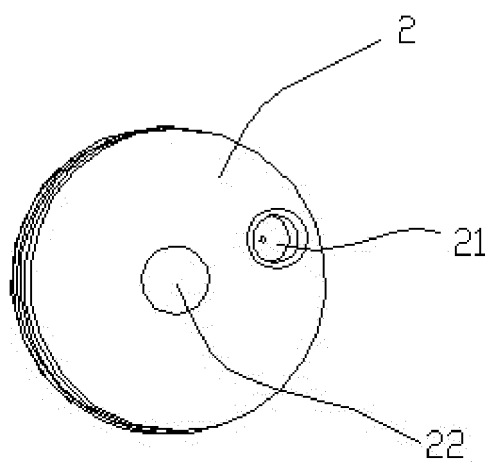


FIG.5

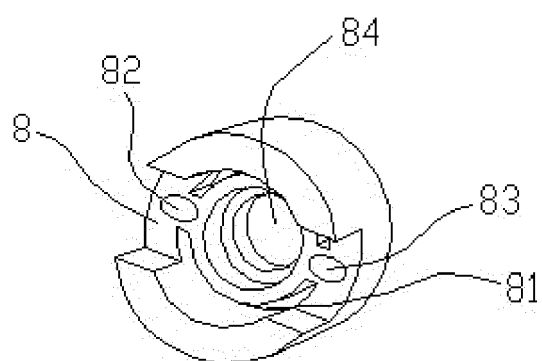


FIG. 6

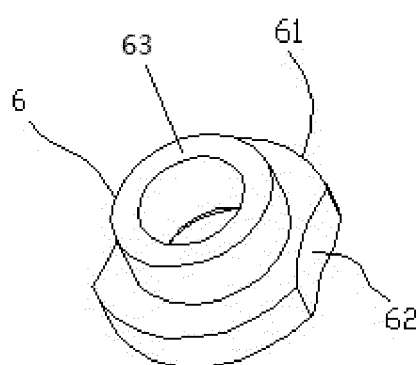


FIG. 7

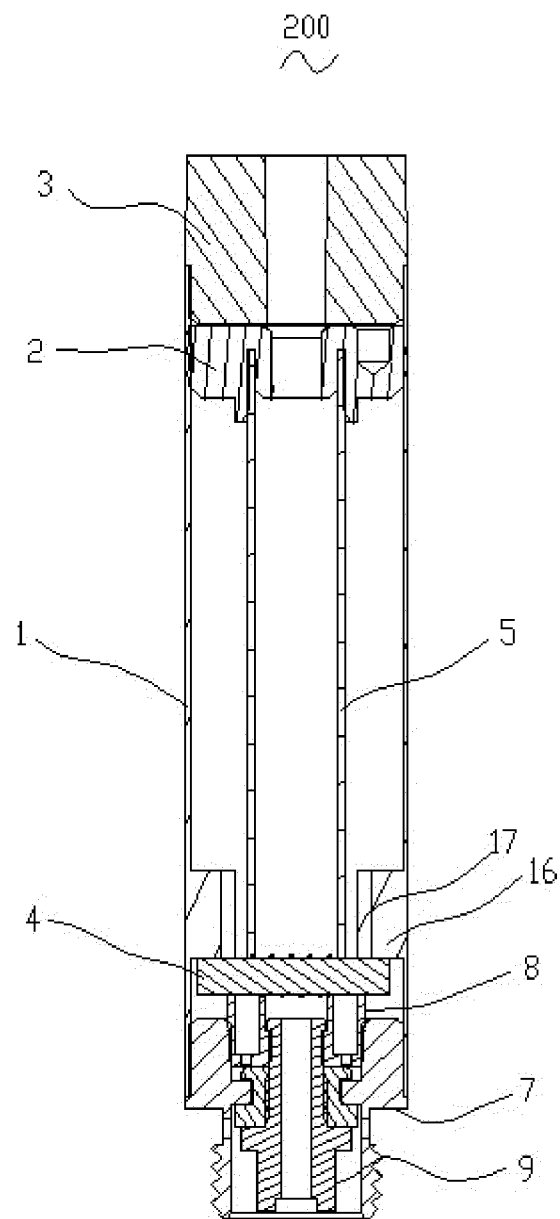


FIG.8

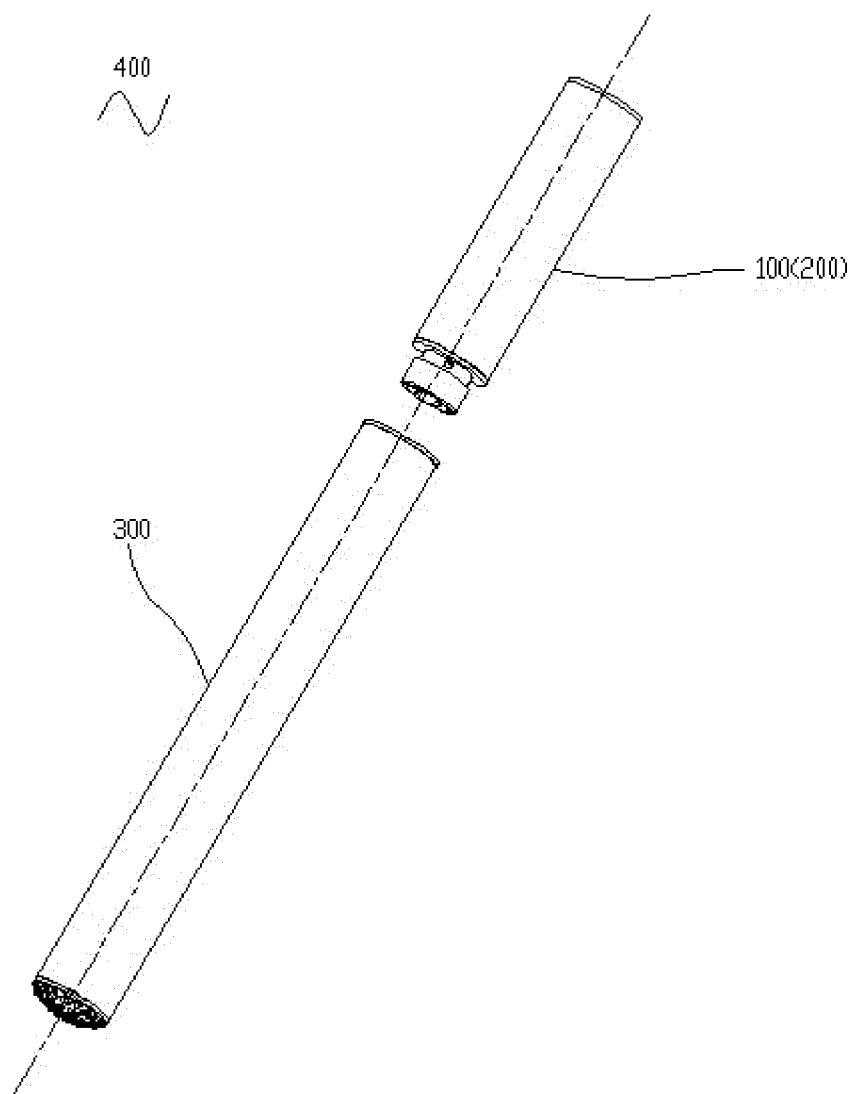


FIG.9

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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