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(54) ELECTRONIC CIGARETTE VAPING DEVICE AND ELECTRONIC CIGARETTE

(57) An electronic cigarette vaping device and an electronic cigarette using the electronic cigarette vaping device are provided. The vaping device includes a first element, a heating structure and a second element. A first thread is provided at a connecting end of the first element, a second thread is provided at a connecting end of the second element. The first thread is one of an external thread and an internal thread, the second thread is the other of the external thread and the internal thread. The first thread is threadedly engaged with the second thread. Along the axial direction of the electronic cigarette vaping device, the first element is provided with a sliding groove extending from the connecting end of the first element toward a direction away from the second element. The sliding groove runs through the first thread. The vaping device can not only protect the heating member, but also facilitate the cleaning of the heating member.

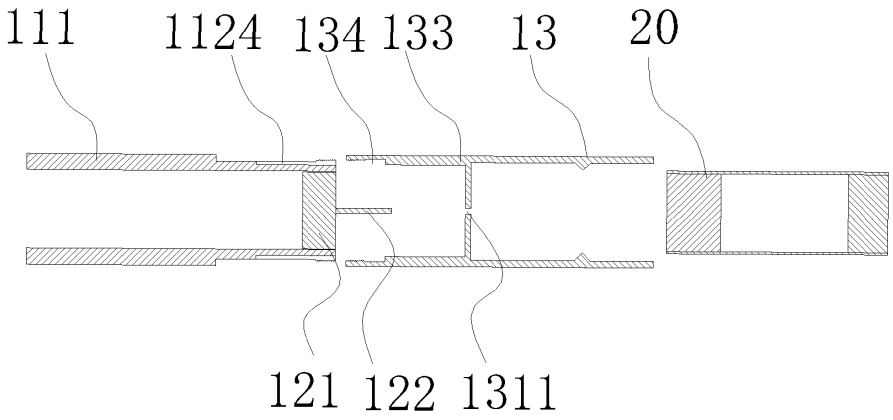

FIG. 4

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to the technical field of simulated smoking, and more particularly, relates to an electronic cigarette vaping device and an electronic cigarette using the electronic cigarette vaping device.

BACKGROUND

[0002] In the prior art, it is necessary to clean the heating member or the tobacco product scraps at the bottom of the heating member. It is difficult for a brush or a scraper to operate and clean in a small space, and it is difficult for the user to observe whether the residual dirt on the heating member has been cleaned off.

SUMMARY

[0003] In view of the above problems, it is necessary to provide an electronic cigarette vaping device and an electronic cigarette that can protect a heating member and facilitate cleaning of the heating member.

[0004] An electronic cigarette vaping device includes:

a first element, a heating structure and a second element;

wherein a first thread is provided at a connecting end of the first element, a second thread is provided at a connecting end of the second element, the first thread is one of an external thread and an internal thread, the second thread is the other of the external thread and the internal thread, the first thread is threadedly engaged with the second thread;

along the axial direction of the electronic cigarette vaping device, the first element is provided with a sliding groove extending from the connecting end of the first element toward a direction away from the second element, the sliding groove runs through the first thread;

along the axial direction of the electronic cigarette vaping device, the second element is provided with the second thread, a receiving groove and a positioning rib, which are sequentially arranged from the connecting end of the second element toward a direction away from the first element, the sliding groove and the positioning rib cooperate with each other;

the first element is one of a sleeve and a movable member, the second element is the other of the sleeve and the movable member, the heating structure is installed on the sleeve and at least partially protruded from the connecting end of the sleeve.

[0005] Further, the heating structure includes a heating member, the heating member is at least partially protruded from the connecting end of the sleeve.

[0006] Further, a limiting plate is provided in the movable member, the limiting plate is provided with a limiting hole corresponding to the heating member, the limiting plate divides an inner cavity of the movable member into a connecting chamber and an atomizing chamber.

[0007] Further, when the positioning rib slides into the sliding groove, in the axial direction of the electronic cigarette vaping device, the length from the connecting end of the sleeve to the bottom of the limiting plate is not less than the length from the connecting end of the sleeve to one end of the heating member away from the connecting end of the sleeve.

[0008] Further, the first element is the sleeve, the second element is the movable member, the sleeve includes a main body and a mounting portion located at one end of the main body, the mounting portion includes a reserved section connected with the main body and a sliding section configured for connecting with the movable member.

[0009] Further, an external thread section is provided on the sliding section along a circumferential direction of the sliding section, an internal thread section corresponding to the external thread section is provided on the inner surface of one end of the movable member.

[0010] Further, the outer surface of the sliding section is provided with the sliding groove extending along the axial direction of the sliding section and running through the external thread section, the sliding groove is at least one, the positioning rib corresponding to the sliding groove is protruded from the inner wall between the internal thread section and the limiting plate, the positioning rib is at least one.

[0011] Further, the inner wall between the internal thread section and the positioning rib is provided with the receiving groove along the circumferential direction of the movable member.

[0012] Further, in the axial direction of the electronic cigarette vaping device, the length of the receiving groove is greater than the length from the connecting end of the first element to one end of the first thread away from the connecting end of the first element.

[0013] An electronic cigarette includes an electronic cigarette charging device and an electronic cigarette vaping device as mentioned above. The electronic cigarette vaping device is electrically connected to the electronic cigarette charging device.

[0014] In the electronic cigarette vaping device of the present disclosure or the electronic cigarette using the electronic cigarette vaping device, the movable member is detachably connected to one end of the sleeve, the heating structure is mounted on the sleeve and at least partially protruded out from one end of the sleeve. When the movable member is connected to the sleeve, the tobacco product can be placed on the heating member. When the movable member is completely separated from the sleeve, the bottom of the heating structure is at least partially exposed to the outside, so that it is convenient for the user to clean the scraps of the tobacco product at the bottom of the heating structure. During the process of separating the movable member from the sleeve, the tobacco product can separate from the heating structure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The disclosure will be described more fully hereinafter with reference to the accompanying drawings and exemplary embodiments.

FIG. 1 is a schematic structural diagram of an electronic cigarette vaping device of an electronic cigarette according to the first embodiment of the present disclosure in one state;

FIG. 2 is a schematic structural diagram of the electronic cigarette vaping device shown in FIG. 1 in another state;

FIG. 3 is a schematic structural diagram of the electronic cigarette vaping device shown in FIG. 1 in a further state;

FIG. 4 is an exploded view of the electronic cigarette vaping device shown in FIG. 1;

FIG. 5 is a side view of the heating structure and the sleeve of the electronic cigarette vaping device shown in FIG. 4 after being matched;

FIG. 6 is a side view of the movable member of the electronic cigarette vaping device shown in FIG. 4;

FIG. 7 is a schematic structural diagram of an electronic cigarette vaping device of an electronic cigarette according to the second embodiment of the present disclosure;

FIG. 8 is a schematic structural diagram of an electronic cigarette vaping device of an electronic cigarette according to the third embodiment of the present disclosure;

FIG. 9 is a schematic structural diagram of an electronic cigarette vaping device of an electronic cigarette according to the fourth embodiment of the present disclosure.

[0016] The reference numerals for various components in the drawings are as follow:

Electronic cigarette vaping device 10	Tobacco product 20
Movable member 13	Main body 111
Sliding section 1122	External thread section 1123
Heating member 122	Limiting plate 131
Positioning rib 133	Receiving groove 134
Connecting chamber 1312	Atomizing chamber 1313
Sleeve 11	Heating structure 12
Mounting portion 112	Reserved section 1121
Sliding groove 1124	Mounting frame 121

(continued)

Limiting hole 1311	Internal thread section 132
Locking groove 1125	Protrusion 135

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0017] In order to make the objects, features, and advantages of the present disclosure more apparently, embodiments of the present disclosure will now be described in more detail with reference to the accompanying drawings. Numerous specific details are set forth in order to provide a thorough understanding of the embodiments described herein. However, it will be understood by those of ordinary skill in the art that the embodiments described herein can be practiced without these specific details. The description is not to be considered as limiting the scope of the embodiments described herein.

[0018] It should be noted that when an element is referred to as being "fixed to" another element, it may be directly on the other element or there may be a centered element. When an element is considered to be "connected" to another element, it can be directly connected to the other element or intervening elements may also be present.

[0019] Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this disclosure belongs. The terms used herein in the description of the present disclosure are only for the purpose of describing specific embodiments, and are not intended to limit the present disclosure. The term "and / or" as used herein includes any and all combinations of one or more of the associated listed items.

[0020] Please refer to FIG. 1, the first embodiment of the present disclosure provides an electronic cigarette (not shown), and the electronic cigarette includes an electronic cigarette charging device (not shown) and an electronic cigarette vaping device 10 detachably installed in the electronic cigarette charging device. The electronic cigarette vaping device 10 is electrically connected to the electronic cigarette charging device. The electronic cigarette charging device is configured to charge the electronic cigarette vaping device 10. The electronic cigarette vaping device 10 atomizes the tobacco product 20 disposed therein.

[0021] The electronic cigarette vaping device 10 includes a sleeve 11, a heating structure 12 installed at one end of the sleeve 11, and a movable member 13 detachably connected to one end of the sleeve 11 adjacent to the heating structure 12.

[0022] Refer to FIGs. 2-6, the sleeve 11 is substantially cylindrical. The sleeve 11 includes a main body 111 arranged in the axial direction of the sleeve 11 and a mounting portion 112 located at one end of the main body 111 adjacent to of the heating structure 12. In this embodiment, the outer diameter of the mounting portion 112 is smaller than the outer diameter of the main body 111. The mounting portion 112 includes a reserved section 1121 connected with the main body 111, and a sliding section 1122 configured for connecting with the movable member 13. In this embodiment, one end of the sleeve 11 facing the movable member 13 is defined as the connecting end of the sleeve 11. The sliding section 1122 and the reserved section 1121 are integrally formed. An external thread section 1123 is provided on the sliding section 1122 along a circumferential direction of the sliding section 1122. The outer surface of the sliding section 1122 is provided with at least one sliding groove 1124 extending along the axial direction of the mounting portion 112 and running through the external thread section 1123. In this embodiment, there are four sliding grooves 1124, and the four sliding grooves 1124 are evenly distributed on the outer surface of the sliding section 1122 along the circumferential direction of the sliding section 1122.

[0023] The heating structure 12 is at least partially protruded out from the connecting end of the sleeve 11. In this embodiment, the heating structure 12 includes a mounting frame 121 installed on the inner surface of the sliding section 1122 and a heating member 122 protruding from the mounting frame 121 in a direction away from the sleeve 11. The heating member 122 is at least partially protruded out from the connecting end of the sleeve 11. Specifically, the mounting frame 121 is installed at one end of the sleeve 11 adjacent to the movable member 13. More specifically, the mounting frame 121 is fixedly installed on the inner surface of one end of the sliding section 1122 adjacent to the movable member 13. It can be understood that, in other embodiments not shown, the sleeve 11 is substantially columnar or cylindrical, the heating structure 12 includes a heating member 122, and the heating member 122 is connected to the sleeve 11 and at least partially protrudes out from the connecting end of the sleeve 11. In order to improve the efficiency of heat conduction between the heating member 122 and the tobacco product 20, the shape of the heating member 122 is so designed that the heating member 122 has a relatively large specific surface area. In this embodiment, the heating member 122 is in the shape of a sheet. It is understood that, in other embodiments not shown, the heating member 122 may also be in a columnar shape or the like that is convenient for placing into the tobacco product 20.

[0024] The movable member 13 has two open ends. The inner surface of the movable member 13 is provided with a limiting plate 131. The limiting plate 131 divides the inner cavity of the movable member 13 into a connecting chamber 1312 used for receiving the mounting portion 112 and an atomizing chamber 1313 used for placing the tobacco product

20. The inner diameter of the connecting chamber 1312 of the movable member 13 is greater than the outer diameter of the mounting portion 112. The limiting plate 131 is provided with a limiting hole 1311 corresponding to the shape of the heating member 122. It can be understood that, in other embodiments not shown, the limiting plate 131 is not provided on the inner surface of the movable member 13. When the limiting plate 131 is omitted, the movable member 13 has two open ends, and the inner cavity of the movable member 13 is configured for receiving the mounting portion 112 and placing the tobacco product 20 at the same time. In this case, the inner wall of the movable member 13 can be provided with a protrusion 135 for abutting against the tobacco product 20. When the movable member 13 and the sleeve 11 are separated, since the protrusion 135 of the movable member 13 abuts against the tobacco product 20, the tobacco product 20 can be taken out from the heating member 122.

[0025] An internal thread section 132 corresponding to the external thread section 1123 is provided on the inner surface of one end of the movable member 13 adjacent to the sleeve 11 along a circumferential direction of the movable member 13. In this embodiment, one end of the movable member 13 facing the sleeve 11 is defined as the connecting end of the movable member 13. Along the axial direction of the electronic cigarette vaping device 10, at least one positioning rib 133 corresponding to the sliding groove 1124 is protruded from the inner wall of the movable member 13 at one side of the internal thread section 132 away from the sleeve 11. At least one positioning rib 133 corresponding to the sliding groove 1124 is protruded from the inner wall of the movable member 13 between the internal thread section 132 and the limiting plate 131. In this embodiment, there are four positioning ribs 133, and the four positioning ribs 133 are evenly distributed on the inner surface of the movable member 13 along the circumferential direction of the movable member 13.

[0026] The inner wall of the movable member 13 between the internal thread section 132 and the positioning rib 133 is provided with a receiving groove 134 along the circumferential direction of the movable member 13. The inner diameter of the receiving groove 134 is greater than the inner diameter of the internal thread section 132 and the outer diameter of the external thread section 1123. In this embodiment, the inner diameter of the receiving groove 134 is the same as the inner diameter of the connecting chamber 1312 of the movable member 13. When the movable member 13 is installed onto the mounting portion 112, the receiving groove 134 is used to, after the internal thread section 132 is screwed to the bottom of the external thread section 1123, avoid the external thread section 1123 from interfering with the positioning rib 133 to make it difficult for the positioning rib 133 to align with the sliding groove 1124 and enter into the sliding groove 1124. The term "bottom" as used herein refers to the end of each part of the electronic cigarette vaping device 10 that is away from the movable member 13 in the axial direction of the electronic cigarette vaping device 10.

[0027] By providing the receiving groove 134, when the internal thread section 132 is gradually screwed to the bottom of the external thread section 1123, the external thread section 1123 gradually enters into the receiving groove 134. When the internal thread section 132 is completely screwed to the bottom of the external thread section 1123, the threaded engagement between the internal thread section 132 and the external thread section 1123 is released, and the external thread section 1123 is completely received in the receiving groove 134, thereby providing a space for the positioning rib 133 to align with the sliding groove 1124. After the positioning rib 133 is aligned with the sliding groove 1124, the protruded positioning rib 133 gradually slides into the corresponding sliding groove 1124. At this time, since the inner diameter of the connecting chamber 1312 of the movable member 13 is greater than the outer diameter of the mounting portion 112, the inner surface of the movable member 13 will not contact the outer surface of the external thread section 1123 during the sliding process.

[0028] Before the positioning rib 133 slides into the sliding groove 1124, the heating member 122 does not extend into the limiting hole 1311. When the protruded positioning rib 133 gradually slides into the corresponding sliding groove 1124, the heating member 122 gradually extends through the limiting hole 1311. When the positioning rib 133 completely slides into the sliding groove 1124, the heating member 122 completely extends through the limiting hole 1311, and at this time, the heating member 122 is exposed to the maximal extent, which is convenient for the user to place the tobacco product 20 on the heating member 122 firmly.

[0029] When the movable member 13 is gradually separated from the mounting portion 112, the positioning rib 133 gradually separates from the sliding groove 1124, and the external thread section 1123 gradually enters into the receiving groove 134. When the positioning rib 133 is completely separated from the sliding groove 1124, the heating member 122 retracts from the limiting hole 1311, the external thread section 1123 is completely received in the receiving groove 134, and at this time, the internal thread section 132 can be gradually screwed to the top of the external thread section 1123, so that the movable member 13 is separated from the mounting portion 112. The term "top" as used herein refers to the end of each part of the electronic cigarette vaping device 10 that is away from the sleeve 11 in the axial direction of the electronic cigarette vaping device 10.

[0030] By providing the receiving groove 134, it is ensured that before the positioning rib 133 is completely separated from the sliding groove 1124, the internal thread section 132 and the external thread section 1123 will not contact with each other, to prevent that when the internal thread section 132 is in contact with the external thread section 1123, a portion of the positioning rib 133 is still located in the corresponding sliding groove 1124, the positioning rib 133 cannot be further separated from the sliding groove 1124, and the portion of the positioning rib 133 located in the corresponding sliding groove 1124 interferes with the rotation of the internal thread section 132 along the external thread section 1123,

so that the movable member 13 cannot be separated from the mounting portion 112.

[0031] In the axial direction of the electronic cigarette vaping device 10, the length of the reserved section 1121 is not less than the length between the bottom of the movable member 13 and the bottom of the positioning rib 133, so that the positioning rib 133 can slide in the sliding groove 1124 to the maximal extent. In this embodiment, the internal thread section 132 is provided at the bottom of the movable member 13. In the axial direction of the electronic cigarette vaping device 10, the length of the reserved section 1121 is not less than the sum of the length of the internal thread section 132 and the length of the receiving groove 134.

[0032] In the axial direction of the electronic cigarette vaping device 10, the length of the sliding groove 1124 is not less than the length between the bottom of the positioning rib 133 and the bottom of the limiting plate 131, so that the heating member 122 can pass through the limiting hole 1311 to the maximal extent and the heating member 122 is exposed to the maximal extent. In this embodiment, the top of the positioning rib 133 and the bottom of the limiting plate 131 are at the same position. In the axial direction of the electronic cigarette vaping device 10, the length of the sliding groove 1124 is not less than the length of the positioning rib 133. It can be understood that, in the case that the limiting plate 131 is not provided, in the axial direction of the electronic cigarette vaping device 10, the length of the sliding groove 1124 is not less than the length of the positioning rib 133, so that the positioning rib 133 does not affect the insertion of the tobacco product 20.

[0033] In the axial direction of the electronic cigarette vaping device 10, the length of the receiving groove 134 is greater than the length between the top of the sleeve 11 and the bottom of the external thread section 1123. When the internal thread section 132 is gradually screwed to the bottom of the external thread section 1123, the external thread section 1123 gradually enters into the receiving groove 134. When the internal thread section 132 is completely screwed to the bottom of the external thread section 1123, the threaded engagement between the internal thread section 132 and the external thread section 1123 is released, and the external thread section 1123 is completely received in the receiving groove 134, thereby providing a space for the positioning rib 133 to align with the sliding groove 1124. After the positioning rib 133 is aligned with the sliding groove 1124, the protruded positioning rib 133 gradually slides into the corresponding sliding groove 1124. It is prevented that when the internal thread section 132 is screwed to the bottom of the external thread section 1123, a portion of the positioning rib 133 is still located in the corresponding sliding groove 1124, the positioning rib 133 cannot be further separated from the sliding groove 1124, and the portion of the positioning rib 133 located in the corresponding sliding groove 1124 interferes with the rotation of the internal thread section 132 along the external thread section 1123, so that the movable member 13 cannot be separated from the sleeve 11.

[0034] When the positioning rib 133 slides into the sliding groove 1124, in the axial direction of the electronic cigarette vaping device 10, the length from the connecting end of the sleeve 11 to the bottom of the limiting plate 131 is not less than the length from the connecting end of the sleeve 11 to one end of the heating member 122 away from the connecting end of the sleeve 11.

[0035] In this embodiment, in the axial direction of the electronic cigarette vaping device 10, the length from the bottom of the positioning rib 133 to the bottom of the limiting plate 131 is not less than the length from the top of the sleeve 11 to the top of the heating member 122, so that before the positioning rib 133 is separated from the sliding groove 1124, the heating member 122 is already completely retracted from the limiting hole 1311, to prevent that when the movable member 13 rotates relative to the sleeve 11, the heating member 122 is damaged due to not being completely retracted from the limiting hole 1311. Specifically, the bottom of the heating member 122 and the top of the sleeve 11 are at the same position, the top of the positioning rib 133 and the bottom of the limiting plate 131 are at the same position. In the axial direction of the electronic cigarette vaping device 10, the length of the positioning rib 133 is not less than the length of the heating member 122. It can be understood that, in the case that the limiting plate 131 is not provided, in the axial direction of the electronic cigarette vaping device 10, the length of the sliding groove 1124 is not less than the length of the positioning rib 133, so that the positioning rib 133 does not affect the insertion of the tobacco product 20.

[0036] In use, the tobacco product 20 is placed on the heating member 122, the heating member 122 heats and atomizes the tobacco product 20 to form smoke.

[0037] Installation process: when the user needs to install the movable member 13 on the sleeve 11, the internal thread section 132 of the movable member 13 is gradually screwed to the bottom of the external thread section 1123, and the external thread section 1123 gradually enters into the receiving groove 134; when the internal thread section 132 is completely screwed to the bottom of the external thread section 1123, the external thread section 1123 is completely received in the receiving groove 134, and at this time, the positioning rib 133 is caused to align with the corresponding sliding groove 1124; after the positioning rib 133 is aligned with the sliding groove 1124, the protruded positioning rib 133 gradually slides into the corresponding sliding groove 1124. Before the positioning rib 133 slides into the corresponding sliding groove 1124, the heating member 122 does not extend into the limiting hole 1311; since the inner diameter of the movable member 13 is greater than the outer diameter of the mounting portion 112, the inner surface of the movable member 13 will not contact the outer surface of the external thread section 1123 during the sliding process, and the heating member 122 gradually passes through the limiting hole 1311; when the positioning rib 133 completely slides into the sliding groove 1124, the heating member 122 completely passes through the limiting hole

1311, so that the heating member 122 is exposed to the maximal extent, and the user can firmly put the tobacco product 20 on the heating member 122 located in the atomizing chamber 1313.

[0038] In use: when the user needs to separate the tobacco product 20 from the heating member 122, the movable member 13 slides along the axial direction of the electronic cigarette vaping device 10 in a direction the direction away from the sleeve 11, the positioning rib 133 gradually separates from the sliding groove 1124, the external thread section 1123 gradually enters into the receiving groove 134; at this time, the heating member 122 gradually retracts from the limiting hole 1311, and the tobacco product 20 on the heating member 122 gradually resists the top surface of the limiting plate 131. When the positioning rib 133 completely separates from the sliding groove 1124 and the external thread section 1123 is completely received in the receiving groove 134, the heating member 122 is completely retracted from the limiting hole 1311, the limiting plate 131 separates the tobacco product 20 and the heating member 122, the tobacco product 20 is separated from the heating member 122, and the tobacco product 20 can be taken out of the atomizing chamber 1313. When the user needs to clean the dirt on the heating member 122, the internal thread section 132 is screwed gradually to the top of the external thread section 1123, so that the movable member 13 is gradually separated from the mounting portion 112; at this time, since the movable member 13 is arranged outside the heating member 122, the movable member 13 can prevent the heating member 122 from being damaged when the heating member 122 is gradually exposed to the outside after retracting from the limiting hole 1311. When the heating member 122 is completely exposed to the outside, the user can clean the dirt on the heating member 122 and the scraps of the tobacco product 20 at the bottom of the heating member 122.

[0039] In the electronic cigarette vaping device 10 of the present disclosure or the electronic cigarette using the electronic cigarette vaping device 10, the movable member 13 is detachably connected to one end of the sleeve 11 adjacent to the heating structure 12, the mounting frame 121 is mounted on one end of the sleeve 11, the heating member 122 is protruded from one end of the mounting frame 121 away from the sleeve 11, the limiting plate 131 is provided on the inner surface of the movable member 13, the limiting plate 131 is provided with a limiting hole 1311 corresponding to the heating member 122. When the movable member 13 is connected to the sleeve 11, the tobacco product 20 can be placed on the heating member 122 passing through the limiting hole 1311. When it is required to take out the tobacco product 20 located in the movable member 13, the movable member 13 is caused to slide, when the heating member 122 retracts from the limiting hole 1311, the tobacco product 20 resists on the limiting plate 131 and is separated from the heating member 122. Then, the heating member 122 is taken out from the movable member 13, the movable member 13 maintains a connection relationship with the sleeve 11. The movable member 13 prevents the heating member 122 from being damaged when the heating member 122 is exposed to the outside. For the user's normal need to take out the tobacco product 20 and prevent damage to the heating member, the user only needs to slide the movable member 13, which is a low-risk routine operation. When it is required to clean the heating member 122 and the scraps of the tobacco product 20 at the bottom of the heating member 122, the movable member 13 is further rotated until it is completely separated from the sleeve 11, the heating member 122 and the bottom of the heating member 122 are at least partially exposed to the outside; at this time, it is convenient for the user to clean the heating member 122 and the scraps of the tobacco product 20 at the bottom of the heating member 122. In addition to the normal need to take out the tobacco product 20, for users who want to try to expose the heating member 122 so as to directly clean the heating member 122 and the scraps of the tobacco product 20 at the bottom of the heating member 122, the user needs to further rotate the movable member 13 on the basis of sliding the movable member 13 until the movable member 13 is completely separated from the sleeve 11. The two-step operation of sliding the movable member 13 and further rotating the movable member 13 not only provides the user with the possibility of cleaning the heating member 122 and the scraps of the tobacco product 20 at the bottom of the heating member 122, but also increases the difficulty of the user to expose the heating member 122, increasing the difficulty of the operation can be used as a warning to the user that the operation of exposing the heating member 122 may cause the heating member 122 to be damaged.

Second embodiment

[0040] Please refer to FIG. 7 at the same time, the main difference between the electronic cigarette vaping device 10 provided in the second embodiment of the present disclosure and the electronic cigarette vaping device 10 in the first embodiment is as follows. The movable member 13 includes a main body 111 arranged in the axial direction of the movable member 13 and a mounting portion 112 located at the bottom of the main body 111. The mounting portion 112 includes a reserved section 1121 connected with the main body 111 and a sliding section 1122 configured for connecting with the sleeve 11. The outer surface of the sliding section 1122 is provided with an external thread section 1123 along a circumferential direction of the sliding section 1122. The outer surface of the sliding section 1122 is provided with at least one sliding groove 1124 extending along the axial direction of the mounting portion 112 and running through the external thread section 1123. An internal thread section 132 corresponding to the external thread section 1123 is provided on the inner surface of one end of the sleeve 11 along a circumferential direction of the sleeve 11. In this embodiment, along the axial direction of the electronic cigarette vaping device 10, at least one positioning rib 133 corresponding to

the sliding groove 1124 is protruded from the inner wall of the sleeve 11 at one side of the internal thread section 132 away from the movable member 13. The inner wall of the sleeve 11 between the internal thread section 132 and the positioning rib 133 is provided with a receiving groove 134 along the circumferential direction of the sleeve 11.

[0041] In the axial direction of the electronic cigarette vaping device 10, the length of the reserved section 1121 is not less than the length between the top of the sleeve 11 and the top of the positioning rib 133, so that the positioning rib 133 can slide in the sliding groove 1124 to the maximal extent. In this embodiment, the internal thread section 132 is provided at the top of the sleeve 11, and in the axial direction of the electronic cigarette vaping device 10, the length of the reserved section 1121 is not less than the sum of the length of the internal thread section 132 and the length of the receiving groove 134.

[0042] In the axial direction of the electronic cigarette vaping device 10, the length of the sliding groove 1124 is not less than the length of the positioning rib 133, so that the heating member 122 can pass through the limiting hole 1311 to the maximal extent and the heating member 122 is exposed to the maximal extent.

[0043] In the axial direction of the electronic cigarette vaping device 10, the length of the receiving groove 134 is greater than the length between the bottom of the movable member 13 and the top of the external thread section 1123. When the internal thread section 132 is gradually screwed to the top of the external thread section 1123, the external thread section 1123 gradually enters into the receiving groove 134. When the internal thread section 132 is completely screwed to the top of the external thread section 1123, the threaded engagement between the internal thread section 132 and the external thread section 1123 is released, the external thread section 1123 is completely received in the receiving groove 134, thereby providing a space for the positioning rib 133 to align with the sliding groove 1124. After the positioning rib 133 is aligned with the sliding groove 1124, the protruded positioning rib 133 gradually slides into the corresponding sliding grooves 1124. It is prevented that when the internal thread section 132 is screwed to the top of the external thread section 1123, a portion of the positioning rib 133 is still located in the corresponding sliding groove 1124, the positioning rib 133 cannot be further separated from the sliding groove 1124, and the portion of the positioning rib 133 located in the corresponding sliding groove 1124 interferes with the rotation of the internal thread section 132 along the external thread section 1123, so that the movable member 13 cannot be separated from the sleeve 11.

[0044] In the axial direction of the electronic cigarette vaping device 10, the length from the bottom of the sliding section 1122 to the bottom of the limiting plate 131 is not less than the length from the top of the positioning rib 133 to the top of the heating member 122, so that before the positioning rib 133 is separated from the sliding groove 1124, the heating member 122 is already completely retracted from the limiting hole 1311, to prevent that when the movable member 13 rotates relative to the sleeve 11, the heating member 122 is damaged due to not being completely retracted from the limiting hole 1311. In this embodiment, the bottom of the heating member 122 and the top of the sleeve 11 are at the same position, the top of the reserved section 1121 and the bottom of the limiting plate 131 are at the same position. In the axial direction of the electronic cigarette vaping device 10, the length of the mounting portion 112 is not less than the sum of the length of the receiving groove 134, the internal thread section 132 and the heating member 122.

Third embodiment

[0045] Please refer to FIG. 8 at the same time, the main difference between the electronic cigarette vaping device 10 provided in the third embodiment of the present disclosure and the electronic cigarette vaping device 10 in the first embodiment is as follows. The movable member 13 includes a main body 111 arranged in the axial direction of the movable member 13 and a mounting portion 112 located at the bottom of the main body 111. The mounting portion 112 includes a reserved section 1121 connected with the main body 111 and a sliding section 1122 configured for connecting with the sleeve 11. The inner surface of the sliding section 1122 is provided with an internal thread section 132 along a circumferential direction of the sliding section 1122. The inner surface of the sliding section 1122 is provided with at least one sliding groove 1124 extending along the axial direction of the mounting portion 112 and running through the internal thread section 132. An external thread section 1123 corresponding to the internal thread section 132 is provided on the outer surface of one end of the sleeve 11. In this embodiment, along the axial direction of the electronic cigarette vaping device 10, at least one positioning rib 133 corresponding to the sliding groove 1124 is protruded from the outer wall of the sleeve 11 at one side of the external thread section 1123 away from the movable member 13. The outer wall of the sleeve 11 between the external thread section 1123 and the positioning rib 133 is provided with a receiving groove 134 along the circumferential direction of the sleeve 11.

[0046] In the axis of the electronic cigarette vaping device 10, the length from the bottom of the reserved section 1121 to the bottom of the limiting hole 1311 is not less than the length from the top of the sleeve 11 to the top of the positioning rib 133, so that the positioning rib 133 can slide in the sliding groove 1124 to the maximal extent. In this embodiment, the external thread section 1123 is provided at the top of the sleeve 11, and in the axial direction of the electronic cigarette vaping device 10, the length of the reserved section 1121 is not less than the sum of the length of the external thread section 1123 and the length of the receiving groove 134.

[0047] In the axial direction of the electronic cigarette vaping device 10, the length of the sliding groove 1124 is not

less than the length of the positioning rib 133, so that the heating member 122 can pass through the limiting hole 1311 to the maximal extent and the heating member 122 is exposed to the maximal extent. In this embodiment, in the axial direction of the electronic cigarette vaping device 10, the length of the sliding groove 1124 is not less than the length of the positioning rib 133.

[0048] In the axial direction of the electronic cigarette vaping device 10, the length of the receiving groove 134 is greater than the length between the bottom of the movable member 13 and the top of the internal thread section 132. When the internal thread section 132 is gradually screwed to the bottom of the external thread section 1123, the internal thread section 132 gradually enters into the receiving groove 134. When the internal thread section 132 is completely screwed to the bottom of the external thread section 1123, the threaded engagement between the internal thread section 132 and the external thread section 1123 is released, the internal thread section 132 is completely received in the receiving groove 134, thereby providing a space for the positioning rib 133 to align with the sliding groove 1124. After the positioning rib 133 is aligned with the sliding groove 1124, the protruded positioning rib 133 gradually slides into the corresponding sliding groove 1124. It is prevented that when the internal thread section 132 is completely screwed to the bottom of the external thread section 1123, a portion of the positioning rib 133 is still located in the corresponding sliding groove 1124, the positioning rib 133 cannot be further separated from the sliding groove 1124, and the portion of the positioning rib 133 located in the corresponding sliding groove 1124 interferes with the rotation of the internal thread section 132 along the external thread section 1123, so that the movable member 13 cannot be separated from the sleeve 11.

[0049] In the axial direction of the electronic cigarette vaping device 10, the length from the bottom of the movable member 13 to the bottom of the limiting plate 131 is not less than the length from the top of the positioning rib 133 to the top of the heating member 122, so that before the positioning rib 133 is separated from the sliding groove 1124, the heating member 122 is already completely retracted from the limiting hole 1311, to prevent that when the movable member 13 rotates relative to the sleeve 11, the heating member 122 is damaged due to not being completely retracted from the limiting hole 1311. In this embodiment, the bottom of the heating member 122 and the top of the sleeve 11 are at the same position, and the top of the mounting portion 112 and the bottom of the limiting plate 131 are at the same position. In the axial direction of the electronic cigarette vaping device 10, the length of the mounting portion 112 is greater than the sum of the length of the receiving groove 134, the external thread section 1123 and the heating member 122.

Fourth embodiment

[0050] Please refer to FIG. 9 at the same time. The main difference between the electronic cigarette vaping device 10 provided in the third embodiment of the present disclosure and the electronic cigarette vaping device 10 in the first embodiment is as follows. The sleeve 11 includes a main body 111 arranged in the axial direction of the sleeve 11 and a mounting portion 112 located at the top of the main body 111. The mounting portion 112 includes a reserved section 1121 connected with the main body 111 and a sliding section 1122 configured for connecting with the movable member 13. The inner surface of the sliding section 1122 is provided with an internal thread section 132 along a circumferential direction of the sliding section 1122. The inner surface of the sliding section 1122 is provided with at least one sliding groove 1124 extending along the axial direction of the mounting portion 112 and running through the internal thread section 132. An external thread section 1123 corresponding to the internal thread section 132 is provided on the outer surface of the bottom of the movable member 13 along a circumferential direction of the sleeve 11. In this embodiment, along the axial direction of the electronic cigarette vaping device 10, at least one positioning rib 133 corresponding to the sliding groove 1124 is protruded from the outer wall of the movable member 13 at one side of the external thread section 1123 away from the sleeve 11. The outer wall of the movable member 13 between the external thread section 1123 and the positioning rib 133 is provided with a receiving groove 134 along the circumferential direction of the movable member 13.

[0051] In the axial direction of the electronic cigarette vaping device 10, the length of the reserved section 1121 is not less than the length between the bottom of the movable member 13 and the bottom of the positioning rib 133, so that the positioning rib 133 can slide in the sliding groove 1124 to the maximal extent. In this embodiment, the external thread section 1123 is provided at the bottom of the movable member 13, and in the axial direction of the electronic cigarette vaping device 10, the length of the reserved section 1121 is not less than the sum of the length of the external thread section 1123 and the length of the receiving groove 134.

[0052] In the axis of the electronic cigarette vaping device 10, the length of the sliding groove 1124 is not less than the length of the positioning rib, so that the heating member 122 can pass through the limiting hole 1311 to the maximal extent and the heating member 122 is exposed to the maximal extent. In this embodiment, the top of the positioning rib 133 and the bottom of the limiting plate 131 are at the same position. In the axial direction of the electronic cigarette vaping device 10, the length of the sliding groove 1124 is not less than the length of the positioning rib 133.

[0053] In the axis of the electronic cigarette vaping device 10, the length of the receiving groove 134 is greater than

the length from the top of the sleeve 11 to the bottom of the internal thread section 132. When the internal thread section 132 is gradually screwed to the top of the external thread section 1123, the internal thread section 132 gradually enters into the receiving groove 134. When the internal thread section 132 is completely screwed to the top of the external thread section 1123, the threaded engagement between the internal thread section 132 and the external thread section 1123 is released, the internal thread section 132 is completely received in the receiving groove 134, thereby providing a space for the positioning rib 133 to align with the sliding groove 1124. After the positioning rib 133 is aligned with the sliding groove 1124, the protruded positioning rib 133 gradually slides into the corresponding sliding groove 1124. It is prevented that when the internal thread section 132 is completely screwed to the top of the external thread section 1123, a portion of the positioning rib 133 is still located in the corresponding sliding groove 1124, the positioning rib 133 cannot be further separated from the sliding groove 1124, and the portion of the positioning rib 133 located in the corresponding sliding groove 1124 interferes with the rotation of the internal thread section 132 along the external thread section 1123, so that the movable member 13 cannot be separated from the sleeve 11.

[0054] In the axis of the electronic cigarette vaping device 10, the length from the bottom of the positioning rib 133 to the bottom of the limiting plate 131 is not less than the length from the top of the sleeve 11 and the top of the heating member 122, so that before the positioning rib 133 is separated from the sliding groove 1124, the heating member 122 is already completely retracted from the limiting hole 1311, to prevent that when the movable member 13 rotates relative to the sleeve 11, the heating member 122 is damaged due to not being completely retracted from the limiting hole 1311. In this embodiment, the bottom of the heating member 122 and the top of the sleeve 11 are at the same position, the top of the positioning rib 133 and the bottom of the limiting plate 131 are at the same position. In the axial direction of the electronic cigarette vaping device 10, the length of the positioning rib 133 is not less than the length of the heating member 122.

[0055] The above-mentioned embodiments merely represent several implementations of the present application, and the descriptions thereof are more specific and detailed, but they shall not be understood as a limitation on the scope of the present application. It should be noted that, for those of ordinary skill in the art, variations and improvements may still be made without departing from the concept of the present application, and all of which shall fall into the protection scope of the present application. Therefore, the scope of protection of the present application shall be subject to the appended claims.

Claims

1. An electronic cigarette vaping device comprising a first element, a heating structure and a second element;

wherein a first thread is provided at a connecting end of the first element, a second thread is provided at a connecting end of the second element, the first thread is one of an external thread and an internal thread, the second thread is the other of the external thread and the internal thread, the first thread is threadedly engaged with the second thread;
along the axial direction of the electronic cigarette vaping device, the first element is provided with a sliding groove extending from the connecting end of the first element toward a direction away from the second element, the sliding groove runs through the first thread;
along the axial direction of the electronic cigarette vaping device, the second element is provided with the second thread, a receiving groove and a positioning rib, which are sequentially arranged from the connecting end of the second element toward a direction away from the first element, the sliding groove and the positioning rib cooperate with each other;
the first element is one of a sleeve and a movable member, the second element is the other of the sleeve and the movable member, the heating structure is installed on the sleeve and at least partially protruded from the connecting end of the sleeve.

2. The electronic cigarette vaping device according to claim 1, wherein the heating structure comprises a heating member, the heating member is at least partially protruded from the connecting end of the sleeve.

3. The electronic cigarette vaping device according to claim 2, wherein a limiting plate is provided in the movable member, the limiting plate is provided with a limiting hole corresponding to the heating member, the limiting plate divides an inner cavity of the movable member into a connecting chamber and an atomizing chamber.

4. The electronic cigarette vaping device according to claim 3, wherein when the positioning rib slides into the sliding groove, in the axial direction of the electronic cigarette vaping device, the length from the connecting end of the sleeve to the bottom of the limiting plate is not less than the length from the connecting end of the sleeve to one

end of the heating member away from the connecting end of the sleeve.

5. The electronic cigarette vaping device according to claim 1, wherein the first element is the sleeve, the second element is the movable member, the sleeve comprises a main body and a mounting portion located at one end of the main body, the mounting portion comprises a reserved section connected with the main body and a sliding section configured for connecting with the movable member.

6. The electronic cigarette vaping device according to claim 5, wherein an external thread section is provided on the sliding section along a circumferential direction of the sliding section, an internal thread section corresponding to the external thread section is provided on the inner surface of one end of the movable member.

7. The electronic cigarette vaping device according to claim 6, wherein the outer surface of the sliding section is provided with the sliding groove extending along the axial direction of the sliding section and running through the external thread section, the sliding groove is at least one, the positioning rib corresponding to the sliding groove is protruded from the inner wall between the internal thread section and the limiting plate, the positioning rib is at least one.

8. The electronic cigarette vaping device according to claim 7, wherein the inner wall between the internal thread section and the positioning rib is provided with the receiving groove along the circumferential direction of the movable member.

9. The electronic cigarette vaping device according to claim 1, wherein in the axial direction of the electronic cigarette vaping device, the length of the receiving groove is greater than the length from the connecting end of the first element to one end of the first thread away from the connecting end of the first element.

10. An electronic cigarette comprising an electronic cigarette charging device and an electronic cigarette vaping device according to any one of claims 1 to 9, wherein the electronic cigarette vaping device is electrically connected to the electronic cigarette charging device.

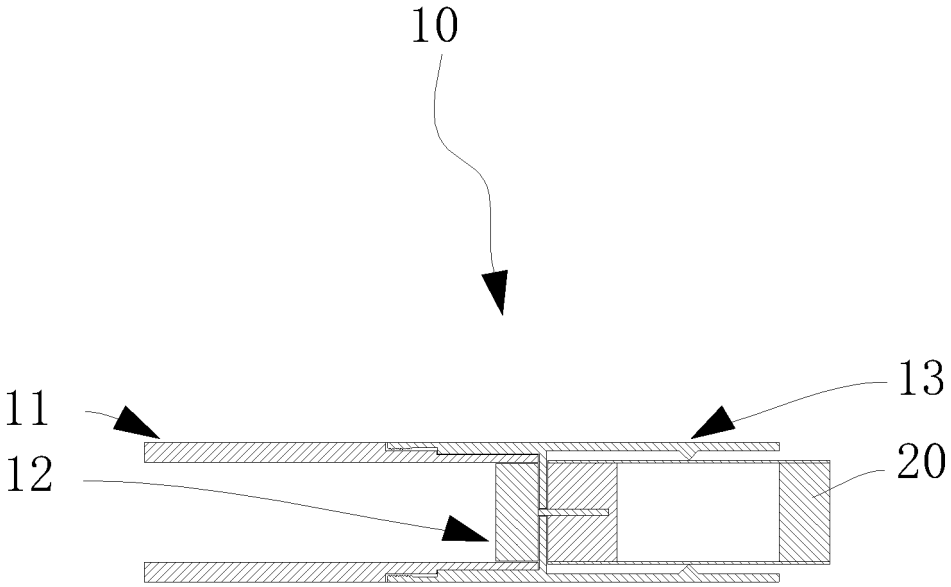


FIG. 1

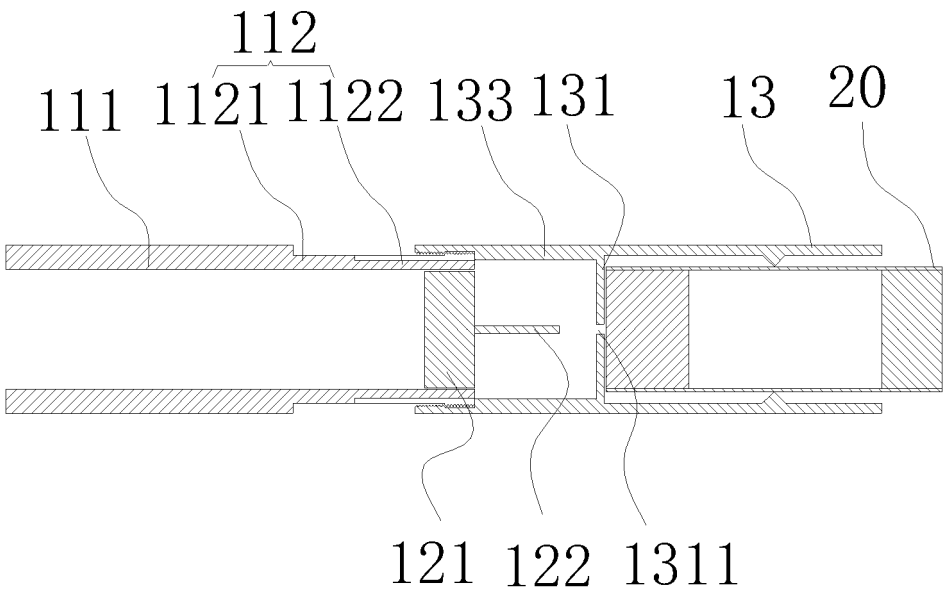
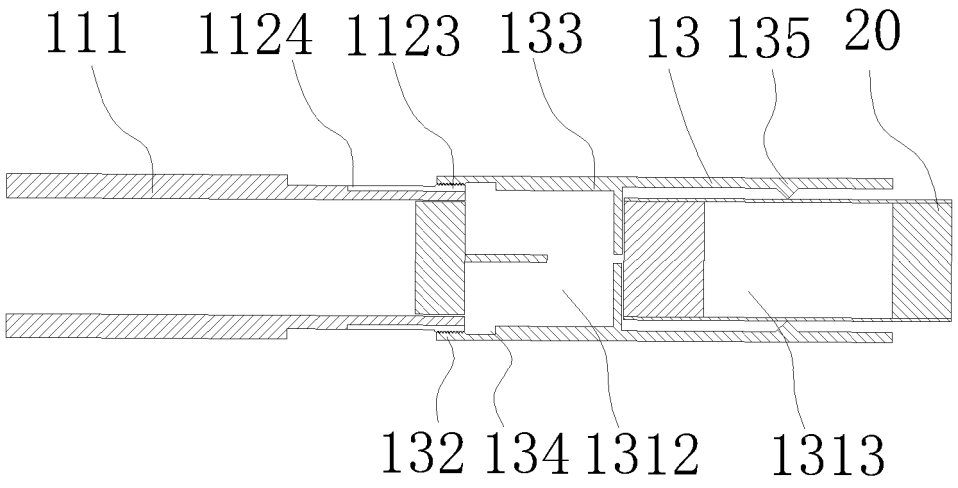


FIG. 2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1124
1123
133
13
135
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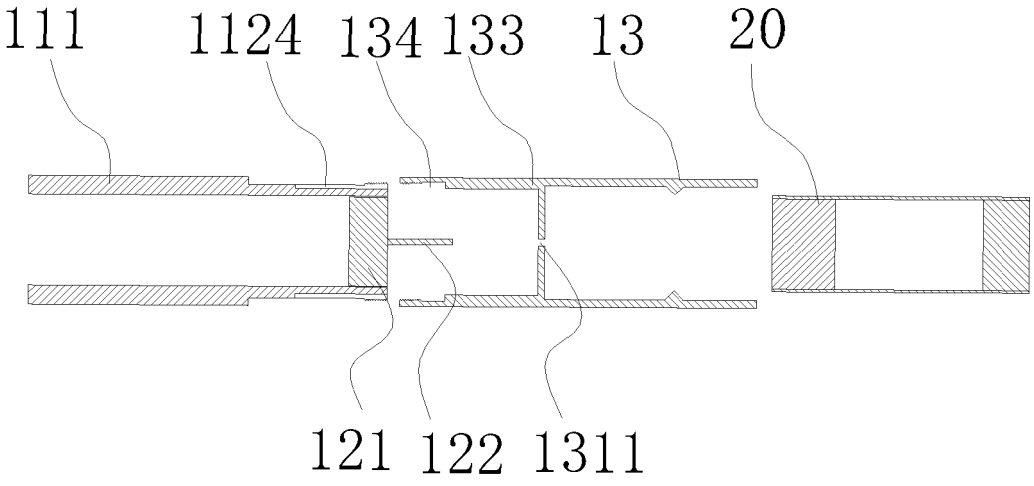
134
1312
1313

FIG. 3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121
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1311

FIG. 4

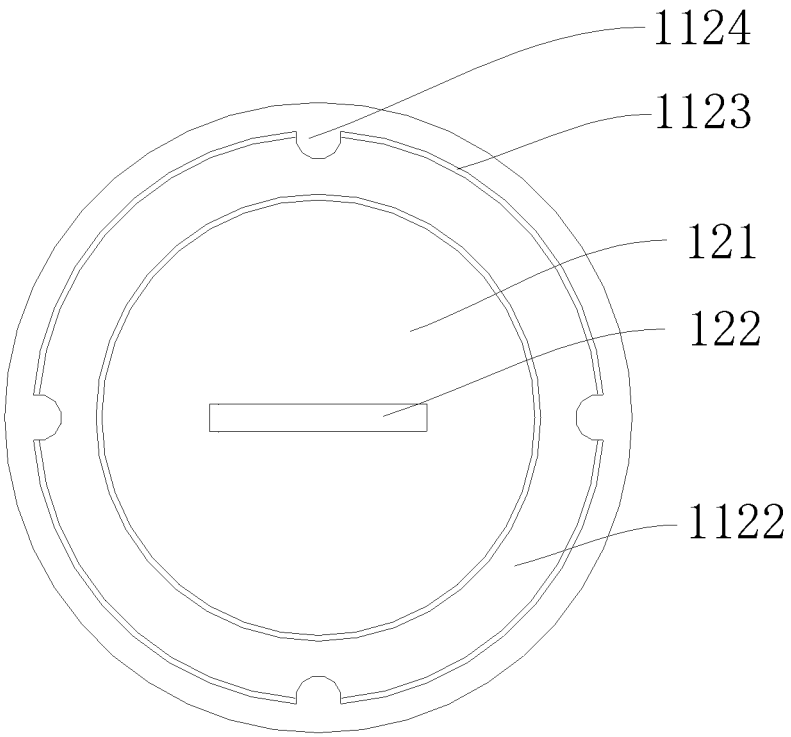


FIG. 5

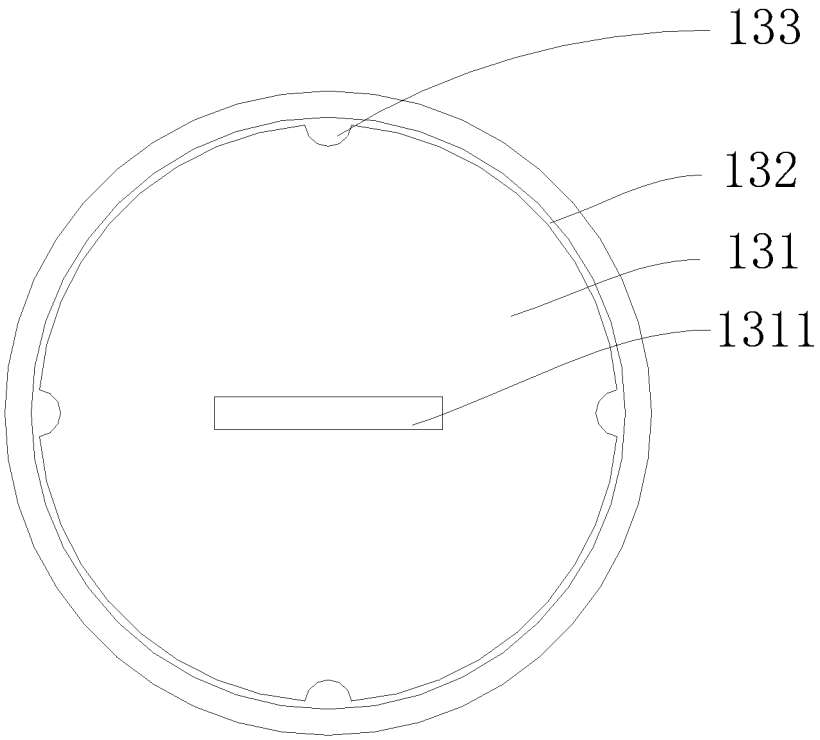
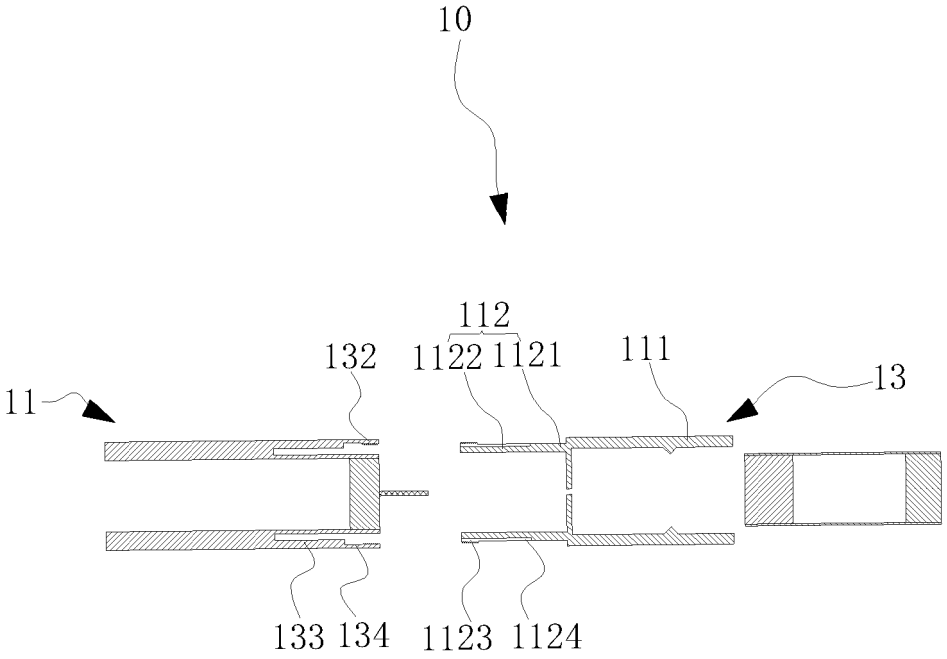


FIG. 6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1123
1124

FIG. 7

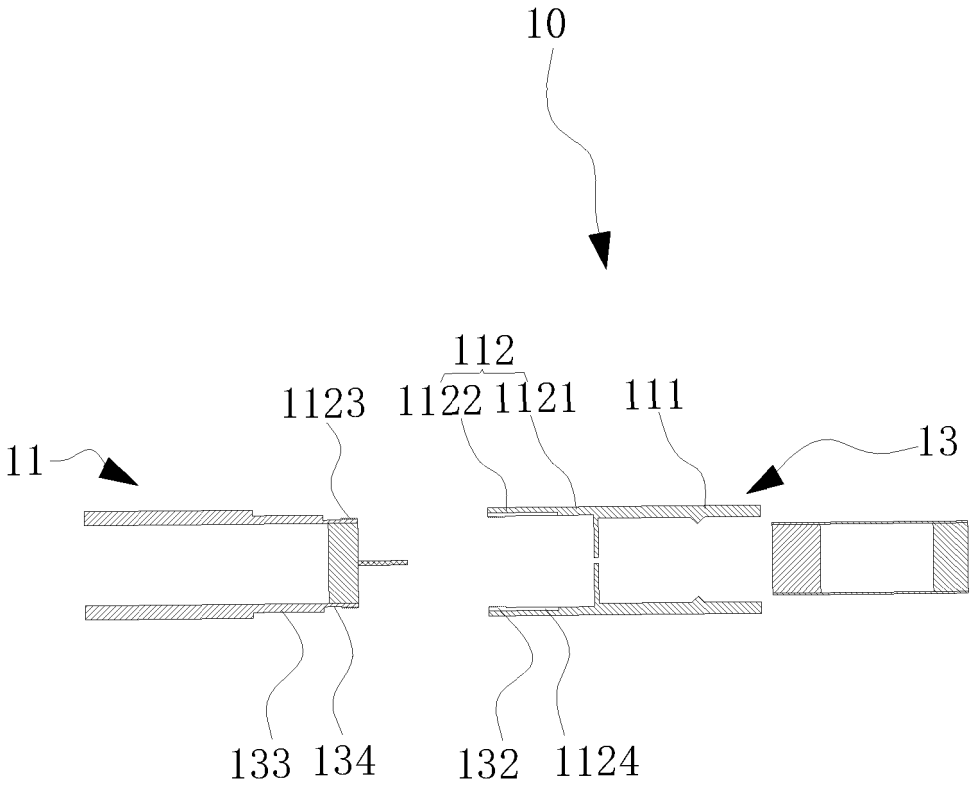
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FIG. 8

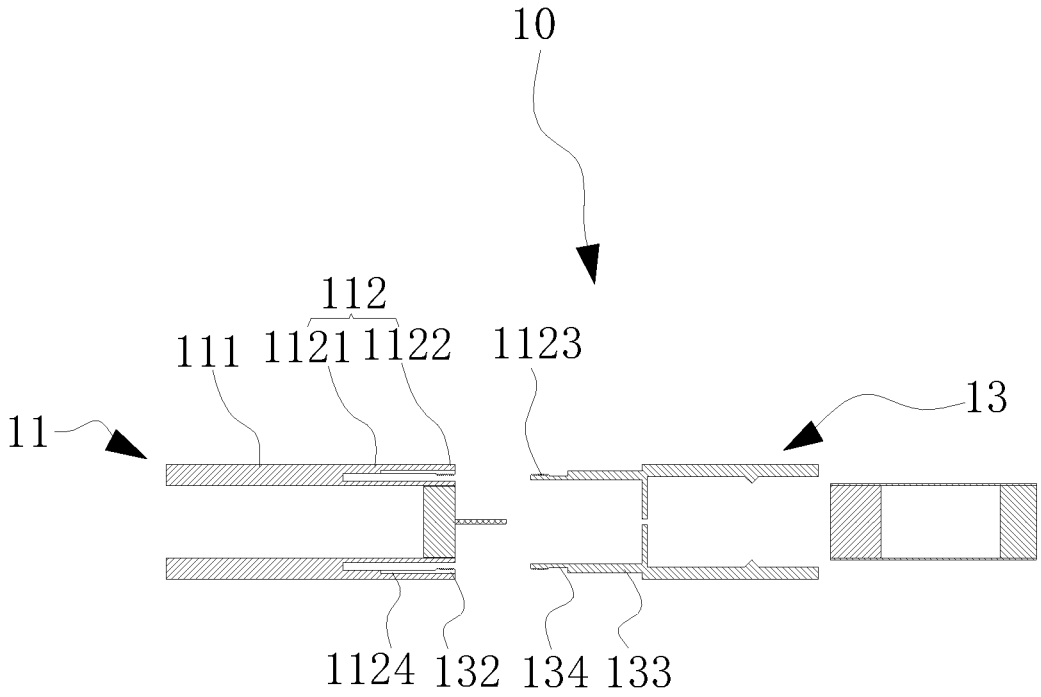

FIG. 9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/110695

A. CLASSIFICATION OF SUBJECT MATTER

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)

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)

CNABS; CNTXT; VEN: 电子烟, 套筒, 螺纹, 筋, 槽, 清洁, 烘烤, electronic, cigar+, thread, groove, heat, clean

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 109077366 A (CHANGZHOU PAITENG ELECTRONIC TECHNOLOGY SERVICES CO., LTD.) 25 December 2018 (2018-12-25) description, paragraphs [0031]-[0062], and figures 1-9	1-10
PX	CN 209420952 U (CHANGZHOU PAITENG ELECTRONIC TECHNOLOGY SERVICES CO., LTD.) 24 September 2019 (2019-09-24) description, paragraphs [0035]-[0066], and figures 1-9	1-10
X	CN 108685190 A (SHANGHAI JUHUA TECHNOLOGY CO., LTD.) 23 October 2018 (2018-10-23) description, paragraphs [0033]-[0040], and figures 1-5	1-10
A	CN 207995914 U (DANG, Haiyun) 23 October 2018 (2018-10-23) entire document	1-10
A	CN 108402526 A (CHINA TOBACCO YUNNAN INDUSTRIAL CO., LTD.) 17 August 2018 (2018-08-17) entire document	1-10
A	CN 207784273 U (HUIZHOU KIMREE TECHNOLOGY CO., LTD., SHENZHEN BRANCH) 31 August 2018 (2018-08-31) entire document	1-10

☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 January 2020	**19 January 2020**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration** **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/110695

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2017231279 A1 (ZIPLINE INNOVATIONS LLC) 17 August 2017 (2017-08-17) entire document	1-10

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2019/110695

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 109077366 A	25 December 2018	None	
CN 209420952 U	24 September 2019	None	
CN 108685190 A	23 October 2018	None	
CN 207995914 U	23 October 2018	None	
CN 108402526 A	17 August 2018	None	
CN 207784273 U	31 August 2018	None	
US 2017231279 A1	17 August 2017	US 9974341 B2	22 May 2018

Form PCT/ISA/210 (patent family annex) (January 2015)