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(54) **ELECTRONIC CIGARETTE AND AN ATOMIZING DEVICE THEREOF**

(57) An electronic cigarette and an atomizing device thereof, wherein the atomizing device comprises an atomizing tube (1), an atomizing component (2) disposed internal to the atomizing tube (1), and a connector (4) for connecting a battery component (3); an e-liquid storage space (5) is provided in an inner portion of the atomizing tube (1); a bottom part of the e-liquid storage space (5) is sealed by inner walls of the atomizing tube (1) and side walls of the atomizing component (2); an e-liquid inlet (21) is provided on the atomizing component (2) for inlet

of the e-liquid; one end of the connector (4) is fixed at a bottom part of the atomizing component (2); another end of the connector (4) is fixedly connected to the battery component (3) via mortise and tenon joints. The present invention can prevent unrestricted replenishment of e-liquid and hence the possible accidents that will be caused, thereby enhancing the safety of use. Furthermore, mortise and tenon joints are used to connect the atomizing device and the battery component, thereby facilitating connection and reducing breakdown rate.

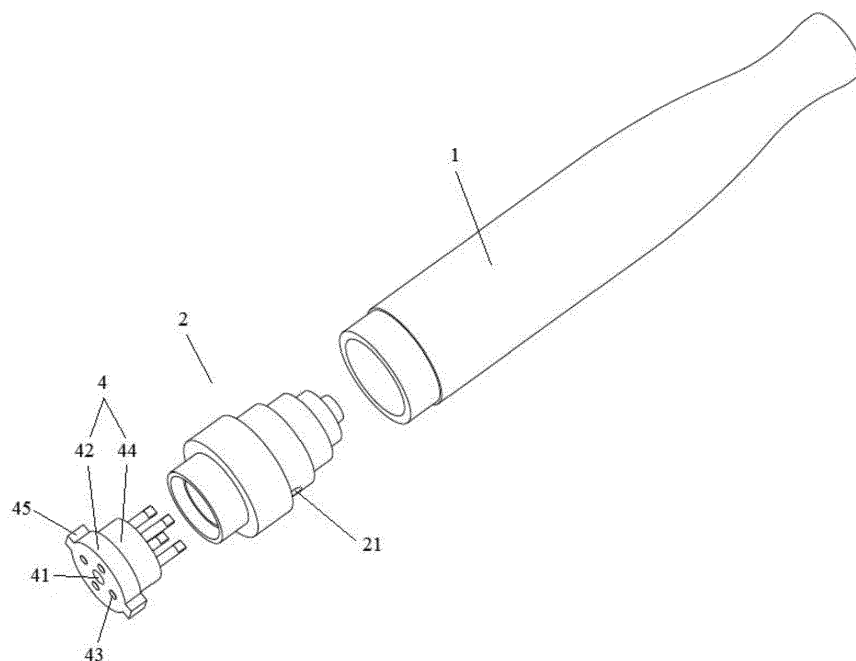


FIG. 1

## Description

### Technical Field

**[0001]** The present invention relates to the technical field of electronic cigarette, and more specifically relates to an electronic cigarette and an atomizing device thereof.

### Background Art

**[0002]** Electronic cigarette is a simulated cigarette. An atomizing device of an electronic cigarette is mainly used for smoking cessation and for replacing real cigarette. Electronic cigarette has the same appearance as a real cigarette and tastes similar to a real cigarette. In fact, electronic cigarette has a lot more flavors than real cigarette. Also, the smoke and taste of a real cigarette and the feeling of smoking a real cigarette can be found in smoking an electronic cigarette. As compared with a real cigarette, an electronic cigarette does not have harmful substances such as tar and suspended micro-particles. Therefore, electronic cigarette is the best alternative of real cigarette.

**[0003]** Nowadays, an atomizing device of an electronic cigarette has a design that allows unrestricted replenishment of e-liquid. Users may therefore easily replenish unqualified e-liquid into the atomizing device and thus damaging their own health. Further, an existing atomizing device is usually connected to a battery portion by screw threads. Therefore, an existing electronic cigarette breaks down frequently and is also complicated to use.

### Disclosure of the Invention

**[0004]** The atomizing device of an electronic cigarette and the electronic cigarette provided by the present invention can prevent unrestricted replenishment of e-liquid and hence the possible accidents that will be caused, thereby enhancing the safety of use. Furthermore, mortise and tenon joints are used to connect the atomizing device and the battery component, thereby facilitating connection and reducing breakdown rate.

**[0005]** The present invention has the following structural details:

An atomizing device of an electronic cigarette comprising an atomizing tube 1, an atomizing component 2 disposed internal to the atomizing tube 1 and a connector 4 for connecting a battery component 3; an e-liquid storage space 5 is provided in an inner portion of the atomizing tube 1; a bottom part of the e-liquid storage space 5 is sealed by inner walls of the atomizing tube 1 and side walls of the atomizing component 2; an e-liquid inlet 21 is provided on the atomizing component 2 for inlet of the e-liquid; one end of the connector 4 is fixed at a bottom part of the atomizing component 2; another end of the con-

necter 4 is fixedly connected to the battery component 3 via mortise and tenon joints.

**[0006]** In the above atomizing device, a vapor channel 6 communicating with the atomizing component 2 is provided inside a middle part of the inner portion of the atomizing tube 1.

**[0007]** In the above atomizing device, a liquid filtering and blocking device 22 is provided at the e-liquid inlet 21.

**[0008]** In the above atomizing device, the connector 4 comprises a disc 42 and a cylinder 44 extending from one side of the disc 42; the cylinder 44 is tightly inserted into the bottom part of the atomizing component 2; an air inlet hole 41 and electrode contacts 43 are provided on the disc 42; the air inlet hole 41 communicates with the atomizing component 2 and the atomizing tube 1; the connector 4 is electronically connected to the atomizing component 2 and the battery component 3 via the electrode contacts 43.

**[0009]** In the above atomizing device, two sides of the disc 42 are provided with protrusions 45 for fitting and fixing to the battery component 3.

**[0010]** In the above atomizing device, a top part of the atomizing component 2 is resilient material wrapping outer walls of the vapor channel 6.

**[0011]** Further, an electronic cigarette is also provided comprising the battery component 3 and the atomizing device as described above; the battery component 3 comprises an outer tube 31, a battery 32 disposed internal to the outer tube 31, and resilient electrode pins 33 disposed at an upper part of the battery 32; the resilient electrode pins 33 are electronically connected to the connector 4 and the atomizing component 2; the outer tube 31 is fixedly connected to the connector 4 via mortise and tenon joints.

**[0012]** In the above electronic cigarette, inner walls of an upper part of the outer tube 31 are provided with fitting slots 36 which match with the protrusions 45.

**[0013]** In the above electronic cigarette, the resilient electrode pins 33 are made of resilient and telescopic material enabling further stroke of the pins 33 after contact with the connector 4.

**[0014]** In the above electronic cigarette, a bottom part of the outer tube 31 is provided with an air flow sensor 34 and a magnetic charging port 35.

**[0015]** The atomizing device and the electronic cigarette provided by the present invention can prevent unrestricted replenishment of e-liquid and hence the possible accidents that will be caused, thereby enhancing the safety of use. Furthermore, mortise and tenon joints are used to connect the atomizing device and the battery component, thereby facilitating connection and reducing breakdown rate.

### Brief Description of Drawings

**[0016]**

FIG. 1 is an exploded structural view of the atomizing device of the present invention.

FIG. 2 is an assembled structural view of the atomizing device of the present invention.

FIG. 3 is a sectional view of the atomizing device of the present invention.

FIG. 4 is a sectional view of the electronic cigarette of the present invention.

FIG. 5 is a sectional view of the battery component shown in FIG. 4.

Fig. 6 is a perspective view of the battery component shown in FIG. 4.

#### Best Mode for Carrying out the Invention

**[0017]** For easier understanding of the present invention, the present invention will be described in detail below with reference to the accompanying drawings. The drawings only illustrate a preferred embodiment of the present invention. It should be noted that the present invention can be implemented in many different ways and therefore should not be limited to the embodiment described below. The embodiment described below is only intended for more detailed and thorough understanding of the present invention.

**[0018]** With reference to FIGs. 1 to 6, an atomizing device of an electronic cigarette of the present invention comprises a atomizing tube 1, a atomizing component 2 disposed internal to the atomizing tube 1 and a connector 4 for connecting a battery component 3. An e-liquid storage space 5 is provided in an inner portion of the atomizing tube 1. A bottom part of the e-liquid storage space 5 is sealed by inner walls of the atomizing tube 1 and side walls of the atomizing component 2. An e-liquid inlet 21 is provided on the atomizing component 2 for inlet of the e-liquid. One end of the connector 4 is fixed at a bottom part of the atomizing component 2. Another end of the connector 4 is fixedly connected to the battery component 3 via mortise and tenon joints.

**[0019]** A vapor channel 6 communicating with the atomizing component 2 is provided inside a middle part of the inner portion of the atomizing tube 1. The atomizing tube 1 and the atomizing component 2 are connected by non-removable tight fitting, in particular, a top part of the atomizing component 2 is silica gel wrapping the vapor channel 6 in the middle part of the inner portion of the atomizing tube 1; a bottom part of the atomizing component 2 is also silica gel having an outer diameter greater than an inner diameter of the atomizing tube 1 so that when the atomizing component 2 is inserted into the atomizing tube 1, the atomizing component 2 will tightly attach to the inner walls of the atomizing tube 1.

**[0020]** E-liquid in the e-liquid storage space 5 enters into the atomizing component 2 via the e-liquid inlet 21 on the atomizing component 2. A liquid filtering and blocking device 22 is provided at the e-liquid inlet 21 to prevent leakage of the e-liquid into the vapor channel 6.

**[0021]** The connector 4 comprises a disc 42 and a cyl-

inder 44 extending from one side of the disc 42. The cylinder 44 is tightly inserted into the bottom part of the atomizing component 2. An air inlet hole 41 and electrode contacts 43 are provided on the disc 42. The air inlet hole 41 communicates with the atomizing component 2 and the atomizing tube 1. The connector 4 is electronically connected to the atomizing component 2 and the battery component 3 via the electrode contacts 43.

**[0022]** Two sides of the disc 42 are provided with protrusions 45 for fitting and fixing to the battery component 3.

**[0023]** A top part of the atomizing component 2 is resilient material wrapping outer walls of the vapor channel 6. The resilient material can prevent leakage of the e-liquid into the vapor channel 6.

**[0024]** With reference to FIGs. 4 to 6, the present invention also provides an electronic cigarette comprising the battery component 3 and the atomizing device as described above. The battery component 3 comprises an outer tube 31, a battery 32 disposed internal to the outer tube 31, and resilient electrode pins 33 disposed at an upper part of the battery 32. The resilient electrode pins 33 are electronically connected to the connector 4 and the atomizing component 2. The outer tube 31 is fixedly connected to the connector 4 via mortise and tenon joints.

**[0025]** Inner walls of an upper part of the outer tube 31 are provided with fitting slots 36 which match with the protrusions 45. By fitting the protrusions 45 to the fitting slots 36, the outer tube 31 is fixedly connected to the connector 4. In other words, the connector 4 is fixed with the battery component 3 via mortise and tenon joints. During use, an end of the connector 4 of the atomizing device is inserted into the fitting slots 36 of the outer tube 31 and is then being rotated so that the protrusions 45 are tightly fitted in the fitting slots 36 such that the outer tube 31 is fixedly connected to the connector 4, and the electrode contacts 43 of the connector 4 are electronically connected to the resilient electrode pins 33. In the present embodiment, the resilient electrode pins 33 are made of resilient and telescopic material enabling further stroke of the pins 33 after contact with the connector 4.

**[0026]** A bottom part of the outer tube 31 is provided with an air flow sensor 34 and a magnetic charging port 35. The air flow sensor 34 is activated to enable electrical connection by an air flow caused by an inhaling action of the user. The magnetic charging port 35 is used for recharging the battery 32.

**[0027]** During use of the atomizing device of the present invention, the bottom part of the e-liquid storage space 5 is sealed by the inner walls of the atomizing tube 1 and the side walls of the atomizing component 2, and the e-liquid stored inside the e-liquid storage space 5 enters the atomizing component 2 via the e-liquid inlet 21 provided on the atomizing component 2. As compared to prior arts, the atomizing device of the present invention is sealed to disable replenishment of e-liquid, thereby enhancing its safety during use by preventing possible

accidents caused by unrestricted replenishment of e-liquid. Furthermore, mortise and tenon joints are used to connect the atomizing device and the battery component, thereby facilitating connection and reducing the breakdown rate.

**[0028]** The above described embodiment and application of the present invention are merely illustrative. The present invention should not be limited to the above described embodiment and application. Any changes and alterations of the embodiment described herein can be made based on alternative configurations and components known to a person skilled in this field of art as equally effective. A person skilled in this field of art should know that, the present invention can be implemented in another form, structure, configuration and proportion and by using other parts, components and materials without deviating from the essence or spirit of the present invention. Therefore, any changes and alterations of the embodiment described herein can be made without deviating from the scope and spirit of the present invention.

## Claims

1. An atomizing device of an electronic cigarette, **characterized in that**, the atomizing device comprises a atomizing tube (1), a atomizing component (2) disposed internal to the atomizing tube (1), and a connector (4) for connecting a battery component (3); an e-liquid storage space (5) is provided in an inner portion of the atomizing tube (1); a bottom part of the e-liquid storage space (5) is sealed by inner walls of the atomizing tube (1) and side walls of the atomizing component (2); an e-liquid inlet (21) is provided on the atomizing component (2) for inlet of the e-liquid; one end of the connector (4) is fixed at a bottom part of the atomizing component (2); another end of the connector (4) is fixedly connected to the battery component (3) via mortise and tenon joints.
2. The atomizing device according to Claim 1, wherein a vapor channel (6) communicating with the atomizing component (2) is provided inside a middle part of the inner portion of the atomizing tube (1).
3. The atomizing device according to Claim 2, wherein a liquid filtering and blocking device (22) is provided at the e-liquid inlet (21).
4. The atomizing device according to Claim 3, wherein the connector (4) comprises a disc (42) and a cylinder (44) extending from one side of the disc (42); the cylinder (44) is tightly inserted into the bottom part of the atomizing component (2); an air inlet hole (41) and electrode contacts (43) are provided on the disc (42); the air inlet hole (41) communicates with the atomizing component (2) and the atomizing tube (1); the connector (4) is electronically connected to the atomizing component (2) and the battery component (3) via the electrode contacts (43).
5. The atomizing device according to Claim 4, wherein two sides of the disc (42) are provided with protrusions (45) for fitting and fixing to the battery component (3).
6. The atomizing device according to Claim 1, wherein a top part of the atomizing component (2) is resilient material wrapping outer walls of the vapor channel (6).
7. An electronic cigarette, **characterized in that**, the electronic cigarette comprises the battery component (3) and the atomizing device as described in any one of Claims 1-6; the battery component (3) comprises an outer tube (31), a battery (32) disposed internal to the outer tube (31), and resilient electrode pins (33) disposed at an upper part of the battery (32); the resilient electrode pins (33) are electronically connected to the connector (4) and the atomizing component (2); the outer tube (31) is fixedly connected to the connector (4) via mortise and tenon joints.
8. The electronic cigarette according to Claim 7, wherein inner walls of an upper part of the outer tube (31) are provided with fitting slots (36) which match with the protrusions (45).
9. The electronic cigarette according to Claim 7, wherein the resilient electrode pins (33) are made of resilient and telescopic material enabling further stroke of the pins (33) after contact with the connector (4).
10. The electronic cigarette according to Claim 7, wherein a bottom part of the outer tube (31) is provided with an air flow sensor (34) and a magnetic charging port (35).

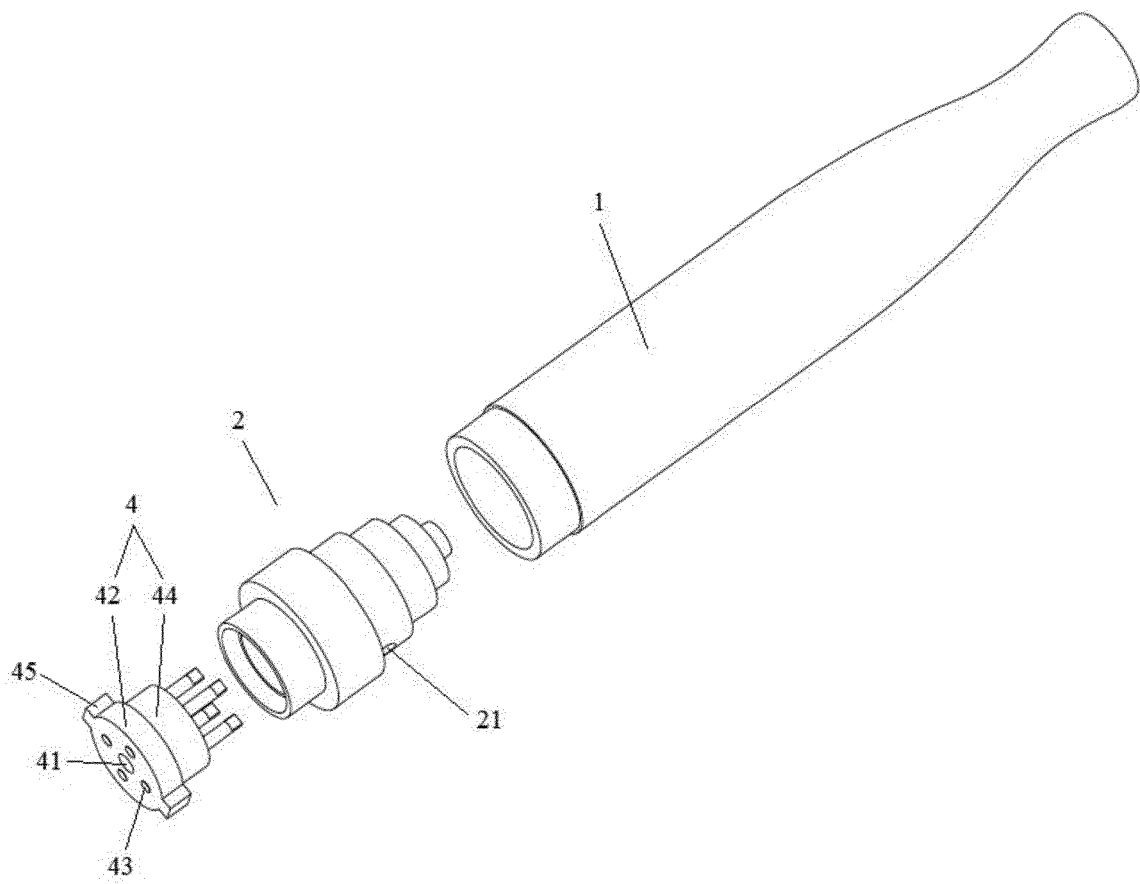


FIG.1

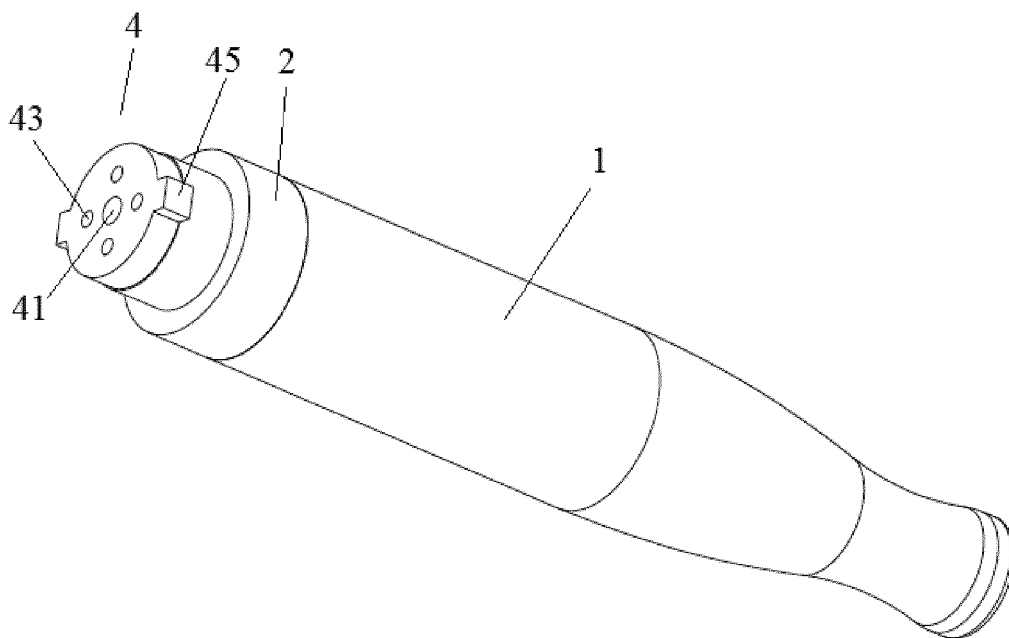


FIG.2

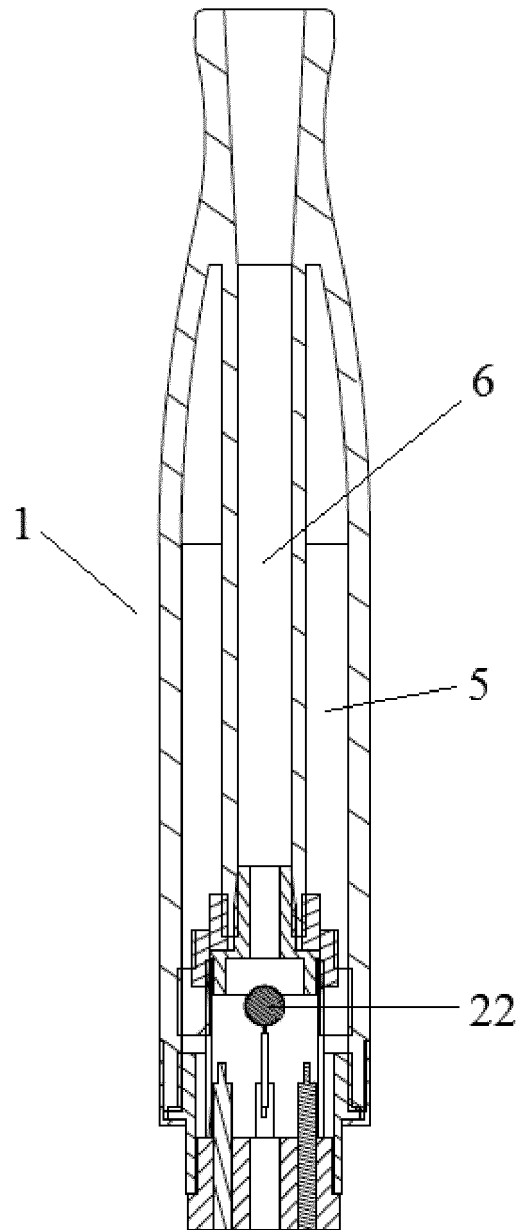


FIG.3

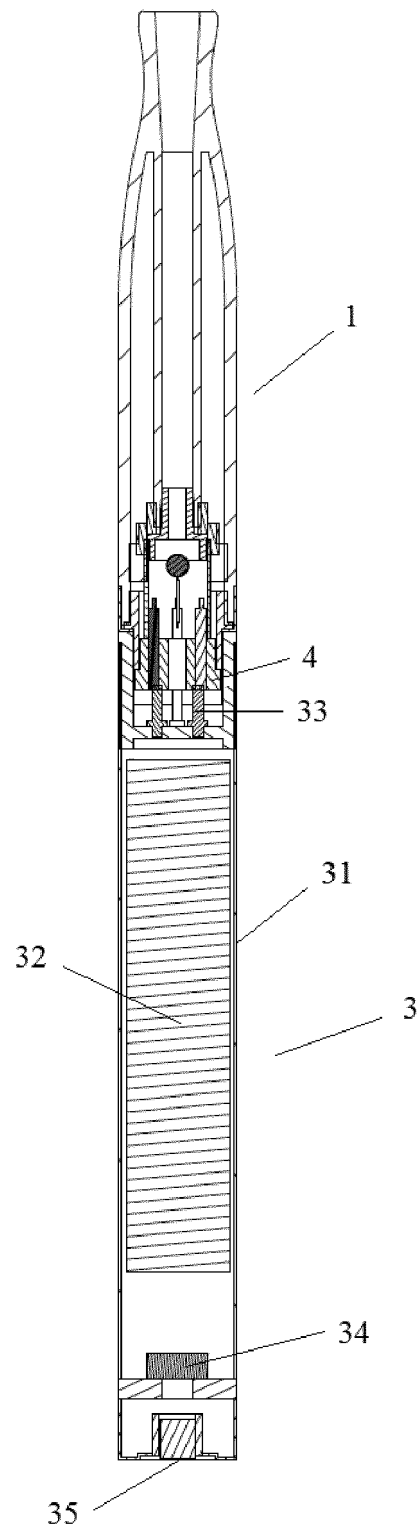


FIG.4

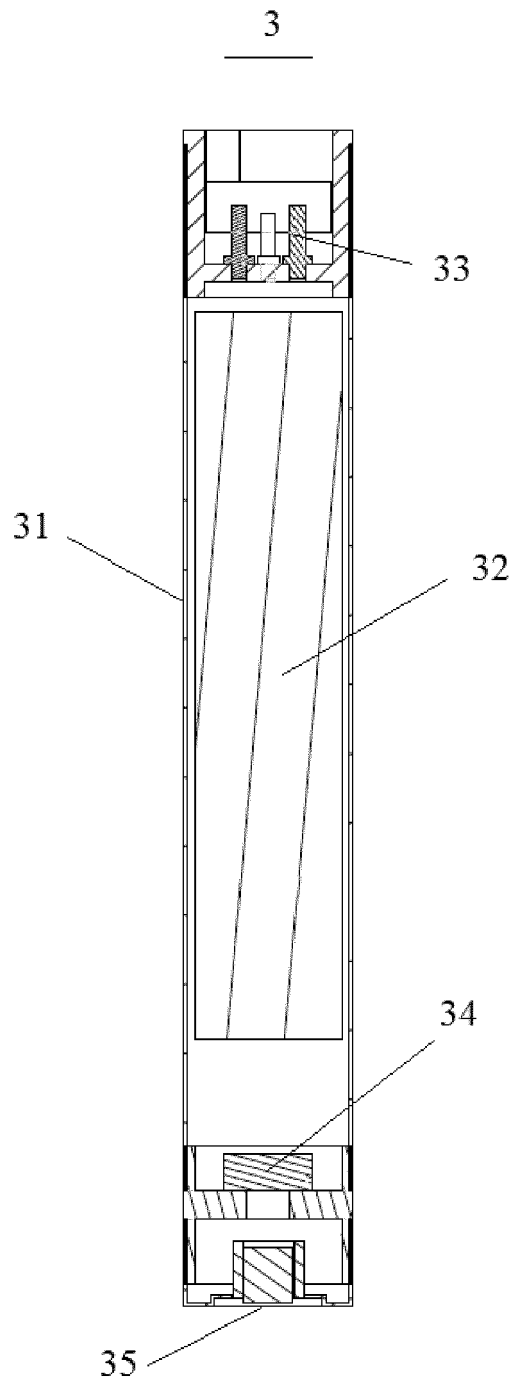


FIG.5



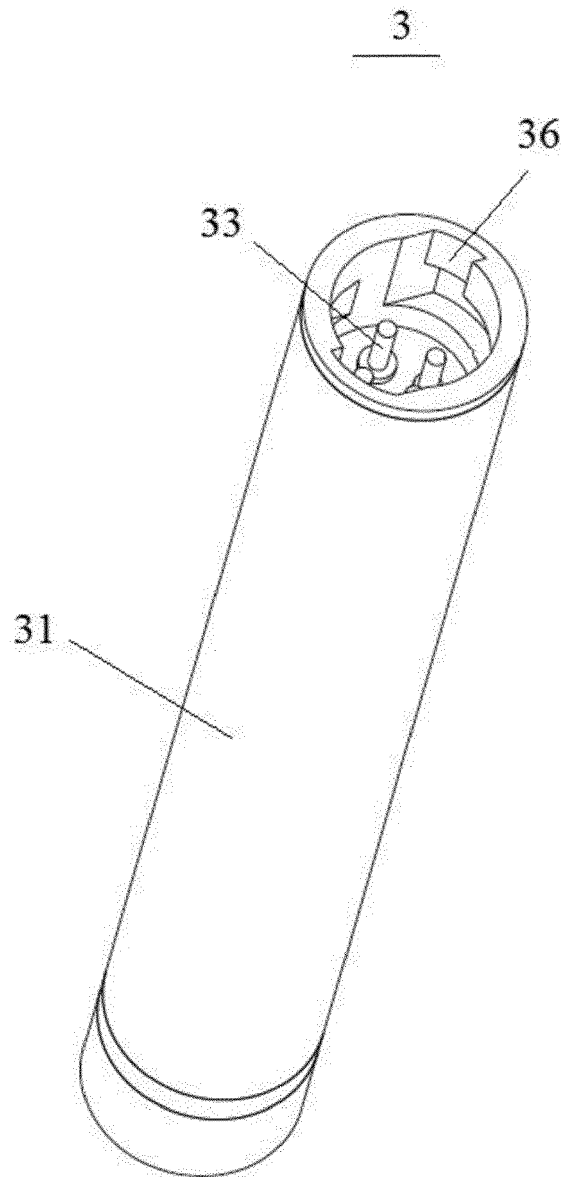


FIG.6



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