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(54) **Electronic cigarette**

(57) An electronic cigarette includes an atomizing device and a battery assembly. The atomizing device is connected to the battery assembly via magnetic attraction. In a preferred embodiment, one of the atomizing device and the battery assembly includes a receiving space and a magnetic member positioned in the receiving space, the other one of the atomizing device and the battery assembly includes a connecting portion protruded from an end thereof and made of a magnetic material or a magnetizable material. The connecting portion is inserted in the receiving space and magnetically attracted by the magnetic member.

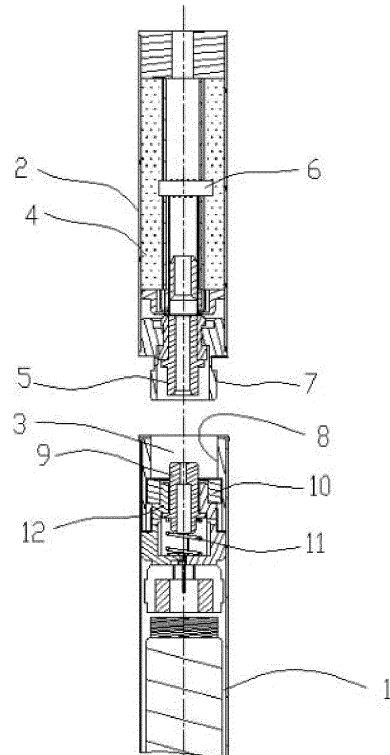


FIG. 1

Description

1. Technical Field

[0001] The present invention relates to an electronic cigarette.

2. Description of Related Art

[0002] Referring to FIG. 6 a typical electronic cigarette includes a battery assembly 1 and an atomizing device 2 arranged on the battery assembly 1. The atomizing device 2 has tobacco solution and a heating assembly 6 for heating the tobacco solution. Currently, in order to make good electrical connection between the battery assembly 1 and the atomizing device 2, a long distance of threads is used at a connection end of each of the battery assembly 1 and the atomizing device 2, resulting that dismounting the atomizing device 2 and the battery assembly 1 from each other is inconvenient.

[0003] What is needed, therefore, is an electronic cigarette which can overcome the above shortcomings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] Many aspects of the present 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 electronic cigarette. Moreover, in the drawings, like reference numerals designate corresponding parts throughout the several views.

[0005] FIG. 1 is a cross sectional view of a battery assembly and an atomizing device in accordance with a first embodiment.

[0006] FIG. 2 is an isometric view of a battery assembly and an atomizing device in accordance with a first embodiment.

[0007] FIG. 3 is an assembled view of FIG. 1.

[0008] FIG. 4 is a cross sectional cut-away view of a battery assembly and an atomizing device in accordance with a second embodiment.

[0009] FIG. 5 is a cross sectional cut-away view of a battery assembly and an atomizing device in accordance with a third embodiment.

[0010] FIG. 6 is a cross sectional view of a conventional battery assembly and atomizing device.

DETAILED DESCRIPTION

[0011] Embodiments of the present electronic cigarette will now be described in detail below and with references to the drawings.

[0012] Referring to FIGS. 1 to 3, an electronic cigarette in accordance with a first embodiment is provided. The electronic cigarette includes a battery assembly 1 and an atomizing device 2.

[0013] The atomizing device 2 has a tobacco solution containing space 4, and a heating assembly 6 configured for heating the tobacco solution. The atomizing device 2 further has a connecting portion 7 protruded from an end thereof. The connecting portion 7 is ring-shaped, and has an electrode ring 5 positioned therein. In the present embodiment, an outer wall of the connecting portion 7 is flat and smooth, and the connecting portion 7 is made of a ferromagnetic material, such as iron, cobalt, nickel which can be magnetized and can be electrically conductive.

[0014] The battery assembly 1 includes a receiving space 3 defined at an end thereof, an electrode ring 9 positioned in the receiving space 3, a magnetic block 10 and an insulated ring 12. The magnetic block 10 is positioned in the receiving space 3 around the electrode ring 9, and the insulated ring 12 is located between the electrode ring 9 and the magnetic block 10. The magnetic block 10 can be a permanent magnet.

[0015] In assembly, when the connecting portion 7 of the atomizing device 2 is inserted in the receiving space 3 of the battery assembly 1, due to magnetic attraction between the connecting portion 7 and the magnetic block 10, the atomizing device 2 and the battery assembly 1 can be connected quickly, therefore the electrode ring 5 can contact the electrode ring 9 for electrical connection, and the heating assembly 6 can work for heating the tobacco solution in the atomizing device 2.

[0016] In the present embodiments, the receiving space 3 is provided by a ring-shaped magnetizable member 8, such as an iron member or magnetic ceramic, thereby a magnetic force of the battery assembly 1 can be enhanced. An inner wall of the receiving space 3 is flat and smooth. The magnetizable member 8 can be electrically conductive, or insulated. When the magnetizable member 8 is electrically conductive, the connecting portion 7 of the atomizing device 2 can be electrically connected to the magnetizable member 8. When the magnetizable member 8 is insulated, the connecting portion 7 of the atomizing device 2 can be electrically connected to a metallic battery sleeve of the battery assembly 1.

[0017] In other embodiments, the receiving space 3 can be directly provided by a battery sleeve of the battery assembly 1.

[0018] In addition, in the present embodiment, an elastic member 11 is applied to the electrode ring 9 of the battery assembly 1, that is, the electrode ring 9 is fixed by the elastic member 11 in the insulated ring 12. The elastic member 11 can be selected from a group consisting of spring, resilient sheet and silicon rubber ring. Due to the elasticity of the elastic member 11, the electrode ring 9 can stretch out and draw back, such that a contact between the electrode ring 5 and the electrode ring 9 can be tightly, and therefore a good electrical connection between the electrode ring 5 and the electrode ring 9 can be attained. In addition, due to stretchable elastic member 11, a connection depth between the battery assembly 1 and the atomizing device 2 can be adjusted.

[0019] Referring to FIG.4, an electronic cigarette in accordance with a second embodiment is provided. The electronic cigarette of the second embodiment is essentially similar to the electronic cigarette of the first embodiment, only differs that an atomizing device 2 of the electronic cigarette of the second embodiment also has a magnetic block 10, and the magnetic block 10 is arranged near a connecting portion 7 of the atomizing device 2.

[0020] Referring to Fig. 5, an electronic cigarette in accordance with a third embodiment is provided. In the present embodiment, a battery assembly 1 has a connecting portion 71 protruded from an end thereof, and an atomizing device 2 has a magnetizable member 81 having a receiving space 31. The connecting portion 71 is preferably made of a permanent magnet. In assembly, the battery assembly 1 is inserted into the receiving space 31 of the atomizing device 2, and the connecting portion 71 is quickly magnetically attracted by the magnetizable member 81. A magnetic block 10 can be avoided in present embodiment.

[0021] By the above magnetic connection, threaded connection can be avoided. However, in some situations, upon the magnetic connection, a short distance of threads is not excluded to each of the battery assembly 1 and the atomizing device 2 to enhance the connection.

[0022] It is understood that the above-described embodiments are intended to illustrate rather than limit the disclosure. Variations may be made to the embodiments and methods without departing from the spirit of the disclosure. Accordingly, it is appropriate that the appended claims be construed broadly and in a manner consistent with the scope of the disclosure.

Claims

1. An electronic cigarette comprising an atomizing device and a battery assembly, wherein the atomizing device is connected to the battery assembly via magnetic attraction.
2. The electronic cigarette of claim 1, wherein the atomizing device comprises a connecting portion protruded from an end thereof and made of a magnetizable material, and the battery assembly comprises a receiving space and a magnetic block mounted in the receiving space, the connecting portion being inserted in the receiving space and magnetically attracted by the magnetic block.
3. The electronic cigarette of claim 2, wherein the magnetic block is a permanent magnet, and the connecting portion is made of an iron material.
4. The electronic cigarette of claim 2 or 3, wherein each of the atomizing device and battery assembly comprises an electrode ring, the connecting portion being ring-shaped and receiving one of the electrode rings

therein, the magnetic block being ring-shaped and receiving the other one the electrode rings therein.

5. The electronic cigarette of claim 4, further comprising an insulated ring arranged between the electrode ring and the magnetic block.
6. The electronic cigarette of claim 4 or 5, wherein the battery assembly further comprises an elastic member connected to and supporting the electrode ring.
7. The electronic cigarette of any one of claims 2 to 6, further comprising a magnetizable member mounted in the battery assembly, and the receiving space is formed in the magnetizable member.
8. The electronic cigarette of any one of claims 1 to 7, wherein the atomizing device comprises a connecting portion protruded from an end thereof, and a first magnetic block arranged near the connecting portion, and the battery assembly comprises a receiving space and a second magnetic block mounted in the receiving space, when the connecting portion is inserted in the receiving space, the first magnetic block is magnetically attracted by the second magnetic block.
9. The electronic cigarette of any one of claims 1 to 8, wherein the atomizing device comprises a ring-shaped magnetizable member having a receiving space, and the battery assembly comprises a connecting portion protruded from an end thereof and made of a permanent magnet, the connecting portion being inserted in the receiving space and magnetically attracted by the permanent magnet.
10. An electronic cigarette comprising an atomizing device and a battery assembly, wherein one of the atomizing device and the battery assembly comprises a receiving space and a magnetic member positioned in the receiving space, the other one of the atomizing device and the battery assembly comprises a connecting portion protruded from an end thereof and made of a magnetic material or a magnetizable material, the connecting portion being inserted in the receiving space and magnetically attracted by the magnetic member.
11. The electronic cigarette of claim 10, further comprising a magnetizable member mounted in the battery assembly, and the receiving space is formed in the magnetizable member.
12. The electronic cigarette of claim 10 or 11, wherein each of the atomizing device and battery assembly comprises an electrode ring, the connecting portion being ring-shaped and receiving one of the electrode rings therein, the magnetic member being ring-

shaped and receiving the other one the electrode rings therein.

13. The electronic cigarette of claim 12, further comprising an insulated ring arranged between the electrode ring and the magnetic member. 5
14. The electronic cigarette of claim 12 or 13, wherein the battery assembly further comprises an elastic member connected to and supporting the electrode ring. 10

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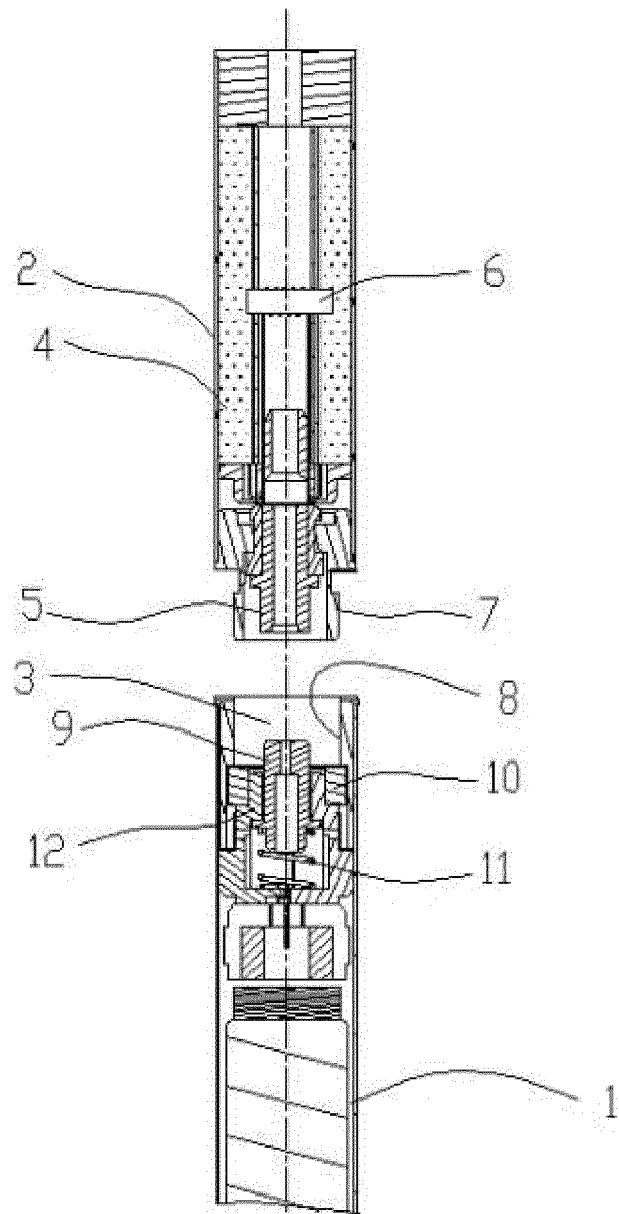


FIG. 1

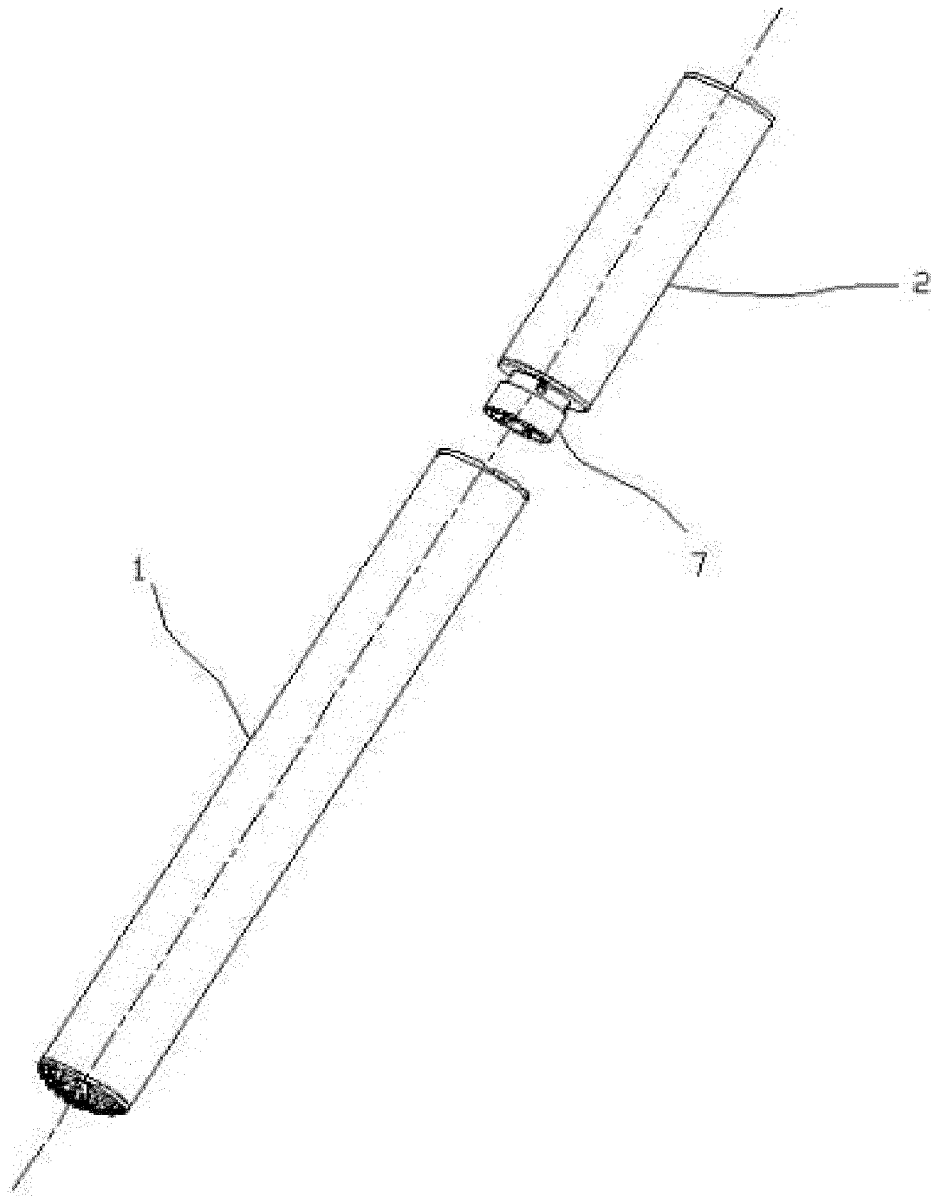


FIG. 2

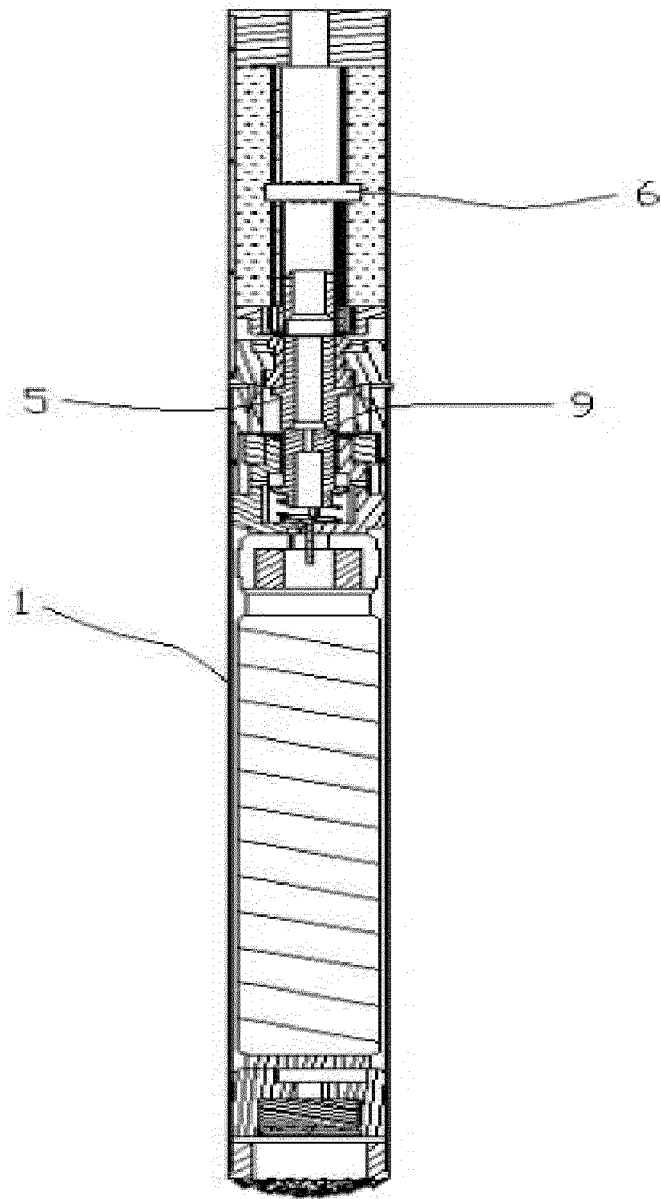


FIG. 3

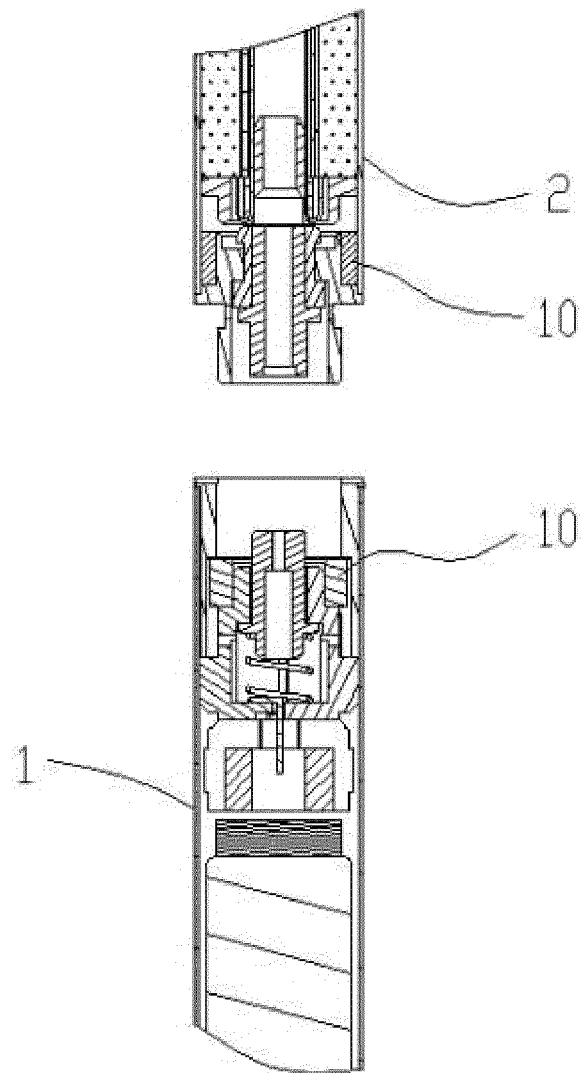


FIG. 4

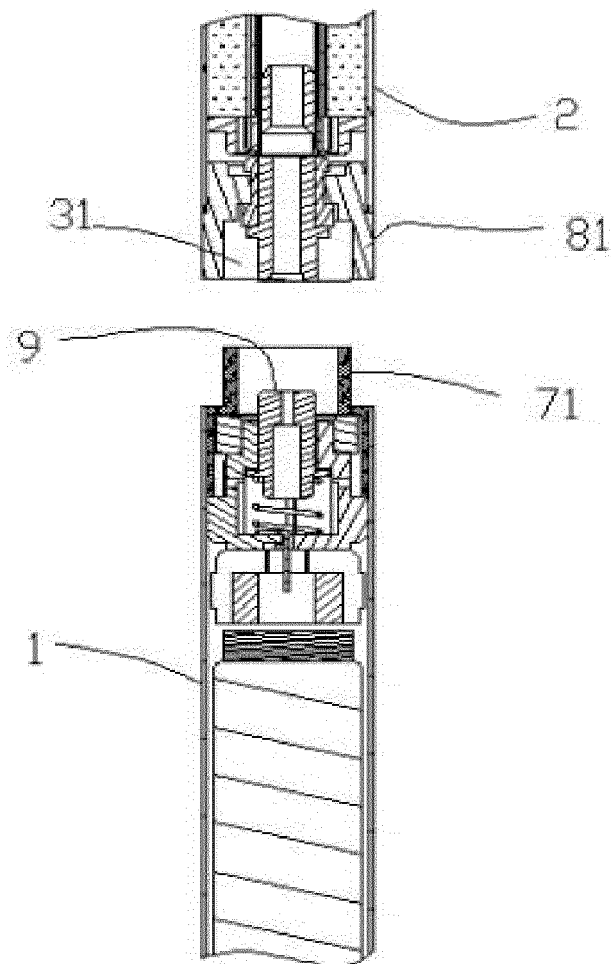


FIG. 5

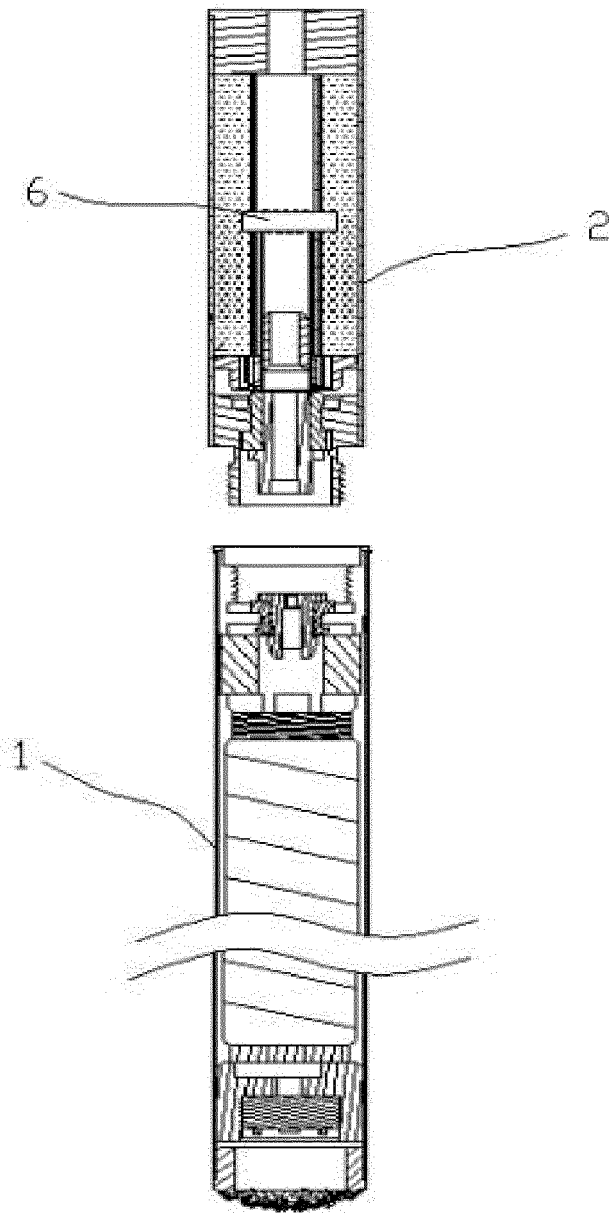


FIG. 6



EUROPEAN SEARCH REPORT

Application Number
EP 13 18 3745

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	Kimree: "KIMREE Magnet E-Cigarette Wins Electronic Cigarette Industry Design Award -- NEW YORK, Jan. 7, 2013 /PRNewswire/ --", 7 January 2013 (2013-01-07), XP055164761, Retrieved from the Internet: URL: http://www.prnewswire.com/news-releases/kimree-magnet-e-cigarette-wins-electronic-cigarette-industry-design-award-185857942.html [retrieved on 2015-01-26]	1	INV. A24F47/00
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X	Anonymous: "KIMREE Magnet Electronic Cigarette: the Magic Wand in the Electronic Cigarette", 29 November 2012 (2012-11-29), XP055164806, Retrieved from the Internet: URL: http://www.prweb.com/releases/2012/11/prweb10184465.htm [retrieved on 2015-01-26] * the whole document *	1	TECHNICAL FIELDS SEARCHED (IPC) A24F
Y	CN 102 894 485 A (SHENZHEN HEYUAN TECHNOLOGY CO LTD) 30 January 2013 (2013-01-30)	2-14	
A	* figure 9 *	1	
A	US 2010/031968 A1 (SHEIKH TARIQ [GB] ET AL) 11 February 2010 (2010-02-11) * abstract; figure 1 *	1	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 27 January 2015	Examiner Kock, Søren
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 13 18 3745

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82