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(54) Atomizer and electronic cigarette having same

(57) An exemplary atomizer includes a housing, a solution reservoir, and an atomizing part. The housing defines an air inlet, an air outlet, and an air passage communicating the air inlet and the air outlet. The solution reservoir is received in the housing and is configured for reserving tobacco solution. The atomizing part is configured for atomizing the tobacco solution. The atomizing part includes an atomizing cup with an atomizing cavity, and an atomizing unit received in the atomizing cavity. The atomizer further includes a first solution guiding component between the solution reservoir and the atomizing part. The first solution guiding component is configured for conveying the tobacco solution from the solution reservoir to the atomizing cup for atomization. The first solution guiding component includes a porous ceramic body. The tobacco solution is absorbed and stored in the porous ceramic body, and is then conveyed to the atomizing unit for atomization.

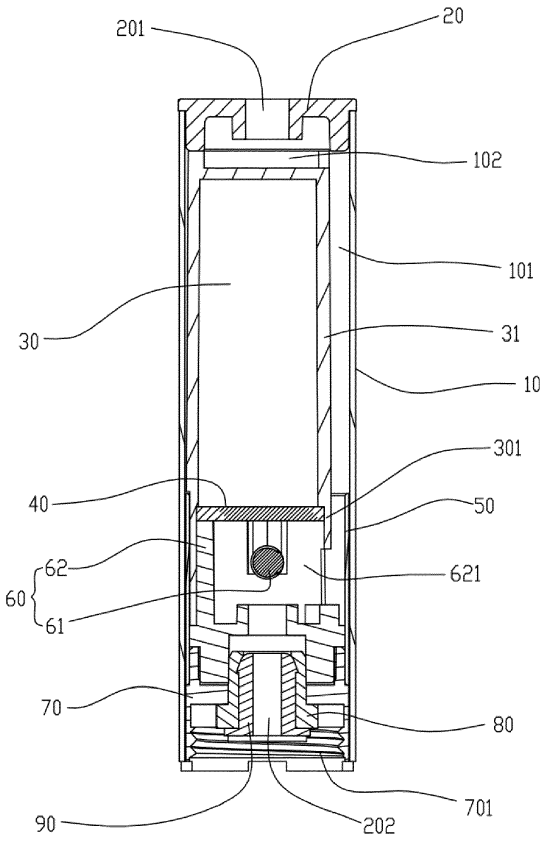

FIG. 3

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Description

TECHNICAL FIELD

[0001] The present invention relates to electronic cigarettes, and particularly to an atomizer and an electronic cigarette using same.

BACKGROUND ART

[0002] An atomizer for an electronic cigarette in related art includes: an opaque housing, a solution reservoir arranged in the housing and integrally formed with the housing, an atomizing device in the housing including a heating wire and an atomizing cup, a solution guiding pipe configured for guiding a tobacco solution to the atomizing device, and a mouthpiece cover at one end of the housing. One end of the solution guiding pipe is inserted into the solution reservoir, while the other end of the solution guiding pipe extends to the atomizing device. The tobacco solution flows from the solution guiding pipe to the atomizing device. Electrical leads at two ends of the heating wire are welded with a positive electrode and a negative electrode of the atomizer, respectively.

[0003] The above described atomizer of the electronic cigarette has some shortages that the solution guiding pipe has to be inserted into the solution reservoir through a small hole, thus to assemble the solution guiding pipe is inconvenient, and the entire configuration may be complicated. In addition, in order to prevent the tobacco solution from leaking out, a precision of the small hole is highly required, which makes the assembly more difficult.

[0004] What is needed, therefore, are an atomizer and an electronic cigarette using same, which can overcome the above shortcomings.

SUMMARY

[0005] An exemplary atomizer includes a housing, a solution reservoir, and an atomizing part. The housing defines an air inlet, an air outlet, and an air passage communicating the air inlet and the air outlet. The solution reservoir is received in the housing and is configured for reserving a tobacco solution. The atomizing part is configured for atomizing the tobacco solution. The atomizing part includes an atomizing cup with an atomizing cavity, and an atomizing unit received in the atomizing cavity. The atomizer further includes a first solution guiding component between the solution reservoir and the atomizing part. The first solution guiding component is configured for conveying the tobacco solution from the solution reservoir to the atomizing cup for atomization. The first solution guiding component includes a porous ceramic body. The tobacco solution is absorbed and stored in the porous ceramic body, and is then conveyed to the atomizing unit for atomization.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] Many aspects of the present disclosure 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 atomizer and electronic cigarette. Moreover, in the drawings, like reference numerals designate corresponding parts throughout the several views.

FIG. 1 is a front view of an atomizer according to a first embodiment;
FIG. 2 is a top view of the atomizer of FIG. 1;
FIG. 3 is a cross-sectional view of the atomizer of FIG. 1 taken along the line A-A;
FIG. 4 is a structural view of a solution cup of FIG. 3;
FIG. 5 is a perspective exploded view of the atomizer of FIG. 1;
FIG. 6 is a front view of an atomizer according to a second embodiment;
FIG. 7 is a top view of the atomizer of FIG. 6;
FIG. 8 is a cross-sectional view of the atomizer of FIG. 6, taken along the line B-B; and
FIG. 9 is a schematic view of an electronic cigarette according to a third embodiment of the present utility model.

DETAILED DESCRIPTION

[0007] Embodiments of the present disclosure will now be described in detail below and with references to the drawings.

[0008] Referring to FIGS. 1-2, an atomizer 11 for an electronic cigarette includes a housing 10, a mouthpiece cover 20 at one end of the housing 10. The mouthpiece cover 20 defines an air outlet 201. Then referring to FIGS. 3 and 5, an atomizing part 60 for atomizing a tobacco solution and a solution cup 31 are disposed in the housing 10. The solution cup 31 defines a solution reservoir 30 for reserving the tobacco solution. The atomizing part 60 includes an atomizing cup 62 with an atomizing cavity 621, and an atomizing unit 61 arranged in the atomizing cavity 621. The housing 10 defines an air inlet 202, an aerosol outlet 102, and an air passage 101 communicating with the air inlet 202 and the aerosol outlet 102. The mouthpiece cover 20 is arranged at one end of the housing 10 with the aerosol outlet 102. The air outlet 201 communicates with the aerosol outlet 102. A first solution guiding component 40 is arranged between the solution reservoir 30 and the atomizing part 60. The atomizing part 60 is configured for conducting the tobacco solution from the solution reservoir 30 to the atomizing cup 62, and is capable of preventing the tobacco solution from leaking out. In the present embodiment, the first solution guiding component 40 is a porous ceramic body. The first solution guiding component 40 absorbs the tobacco solution stored in the solution reservoir 30 by capillary

action, holds the tobacco solution, and prevents the tobacco solution from leaking out. After the tobacco solution permeates the first solution guiding component 40, the tobacco solution is stored in the first solution guiding component 40, and is then provided to the atomizing unit 61 for atomization. In the present embodiment, the solution cup 31 is substantially cylindrical, the air passage 101 is a gap formed between the solution cup 31 and the housing 10, and the first solution guiding component 40 is plate shaped.

[0009] Because the first solution guiding component 40 is arranged between the solution reservoir 30 and the atomizing part 60, and the first solution guiding component 40 is made of porous ceramic, the first solution guiding component 40 can convey the tobacco solution from the solution reservoir 30 to the atomizing cup 62 for atomization by the capillary action due to porous characteristics. The first solution guiding component 40 can prevent the tobacco solution in the solution reservoir 30 from leaking out. Thus, the first solution guiding component 40 conducts the tobacco solution well, and has the effect of preventing the tobacco solution from leaking out. Furthermore, the present atomizer 11 has the advantage of simple assembly.

[0010] Referring to FIG. 3, a connecting tube 50 for fixing the solution cup 31 is fixed in the housing 10. The atomizing part 60 is received in the connecting tube 50. Also referring to FIG. 4, the solution reservoir 30 includes an opening end 301. The first solution guiding component 40 is disposed in the opening end 301, and abuts against one end of the atomizing cup 62 with the atomizing cavity.

[0011] A first electrode 70 and a second electrode 90, which are configured for connecting to an external power source 12 (referring to FIG. 9), are further arranged in the housing 10. An insulator 80 is disposed between the first electrode 70 and the second electrode 80, and the insulator 80 makes the first electrode 70 insulated from the second electrode 80. In the present embodiment, the insulator 80 is an insulated ring nesting the second electrode 90, and is made of silica gel. The insulator 80 makes the first electrode 70 not in contact with the second electrode 90. Referring to FIG. 5, the atomizing unit 61 includes a heating wire 612 and a second solution guiding component 611. One end of the heating wire 612 is electrically connected to the first electrode 70 of the atomizer 11, and the other end of the heating wire 612 is electrically connected to the second electrode 90 of the atomizer 11. The second solution guiding component 611 is in contact with the first solution guiding component 40 so that the tobacco solution reserved in the first solution guiding component 40 is conveyed to the heating wire 612 for atomization. In the present embodiment, the first electrode 70 is electrically connected to a negative electrode of the power source 12, and the second electrode 90 is electrically connected to a positive electrode of the power source 12. The first electrode 70 includes screws for connecting with the external power source 12, and the screws are internal screws 701. The air inlet 202 is formed in the second electrode 90.

[0012] In the present embodiment, the second solution guiding component 611 is made of glass fiber, the housing 10 is made of a partially transparent housing, and the solution cup 31 is made of transparent material. Because the quantity of the tobacco solution in the solution reservoir 30 can be clearly seen through a transparent part of the housing 10, it is prevented that the heating wire 612 keeps heating after the tobacco solution is used up. In other embodiments, the second solution guiding component 611 may also be made of porous ceramic, and the entire solution cup 31 and the entire housing 10 may be made of transparent material.

[0013] Referring to FIGS. 6-8, the present embodiment mainly differentiates the first embodiment in that: an housing 10' and the solution cup 31 of the first embodiment are integrally formed; a solution reservoir 30' has an annular structure, defines an air passage 101' centrally located within the solution reservoir 30', and the air passage 101' functions similarly as the air passage 101; a first solution guiding component 40' includes a porous ceramic body 402 and a cotton cloth 404 formed on the bottom of the porous ceramic body 402. The cotton cloth can further prevent the tobacco solution from leaking out. In the present embodiment, screws for connecting the external power source 12 are external screws 702. The housing 10' is an entirely transparent shell. The mouthpiece cover 20' is made of semi-transparent material.

[0014] Referring to FIG. 9, an electronic cigarette includes an atomizer 11 according to the first embodiment, and a power source 12. The atomizer 11 and the power source 12 are connected via screw threads. The power source 12 is configured for supplying power for the atomizer 11. In other embodiments, the atomizer 11 can also be replaced by the atomizer 10' as described in the second embodiment.

[0015] 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 atomizer for an electronic cigarette, comprising:

a housing defining an air inlet, an air outlet, and an air passage communicating the air inlet and the air outlet;

a solution reservoir received in the housing and configured for reserving tobacco solution; and

an atomizing part configured for atomizing the tobacco solution, the atomizing part comprising an atomizing cup with an atomizing cavity, and an atomizing unit received in the atomizing cav-

ity;
wherein the atomizer further comprises a first solution guiding component positioned between the solution reservoir and the atomizing part, the first solution guiding component is configured for conveying the tobacco solution from the solution reservoir to the atomizing cup for atomization, the first solution guiding component comprises a porous ceramic body, the tobacco solution is absorbed and stored in the porous ceramic body, and is then conveyed to the atomizing unit for atomization.

2. The atomizer of claim 1, wherein the solution reservoir comprises an opening end facing the atomizing cup, the first solution guiding component is disposed in the opening end, and abuts against one end of the atomizing cup with the atomizing cavity.

3. The atomizer according to any of claims 1-2, wherein the atomizing unit comprises a second solution guiding component and a heating wire in contact with the second solution guiding component, and the second solution guiding component contacts the first solution guiding component, so that the tobacco solution is conveyed to the heating wire for atomization.

4. The atomizer of claim 3, wherein the second solution guiding component is made of a glass fiber material.

5. The atomizer of claim 3, further comprising a first electrode and a second electrode arranged in the housing, wherein two opposite ends of the heating wire are connected with the first and the second electrodes respectively, the first and the second electrodes are configured for electrically connecting to an external power source.

6. The atomizer according to any of claims 1-5, further comprising a solution cup in the housing, wherein the solution reservoir is formed by the solution cup, and the air passage is a gap between the solution cup and the housing.

7. The atomizer of claim 6, further comprising a connecting tube fixed in the housing, wherein the connecting tube is configured for fixing the solution cup, and the atomizing part is received in the connecting tube.

8. The atomizer of claim 1, wherein the solution reservoir has an annular structure, the air passage is centrally defined within the solution reservoir.

9. The atomizer of claim 1, wherein the housing and the solution cup are integrally formed.

10. The atomizer according to any of claims 1-9, wherein the first solution guiding component further comprises a cotton cloth formed on a bottom of the porous ceramic body.

11. The atomizer according to any of claims 1-10, wherein the housing is partially transparent.

12. An electronic cigarette, comprising:

an atomizer; and
a power source configured for supplying power to the atomizer, the atomizer comprising:

a housing, the housing defining an air inlet, an air outlet, and an air passage communicating the air inlet and the air outlet;
a solution reservoir received in the housing and configured for reserving tobacco solution; and
an atomizing part configured for atomizing the tobacco solution, the atomizing part comprising an atomizing cup with an atomizing cavity, and an atomizing unit received in the atomizing cavity;

wherein the atomizer further comprises a first solution guiding component between the solution reservoir and the atomizing part, the first solution guiding component is configured for conveying the tobacco solution from the solution reservoir to the atomizing cup for atomization, the first solution guiding component comprises a porous ceramic body, the tobacco solution is absorbed and stored in the porous ceramic body, and is then conveyed to the atomizing unit for atomization.

13. The electronic cigarette of claim 12, wherein the solution reservoir comprises an opening end facing the atomizing cup, the first solution guiding component is disposed in the opening end, and abuts against one end of the atomizing cup with the atomizing cavity.

14. The electronic cigarette according to any of claims 12-13, wherein the atomizing unit comprises a second solution guiding component and a heating wire in contact with the second solution guiding component, and the second solution guiding component contacts the first solution guiding component, so that the tobacco solution is conveyed to the heating wire for atomization.

15. The electronic cigarette of claim 14, wherein the second solution guiding component is made of glass fiber material.

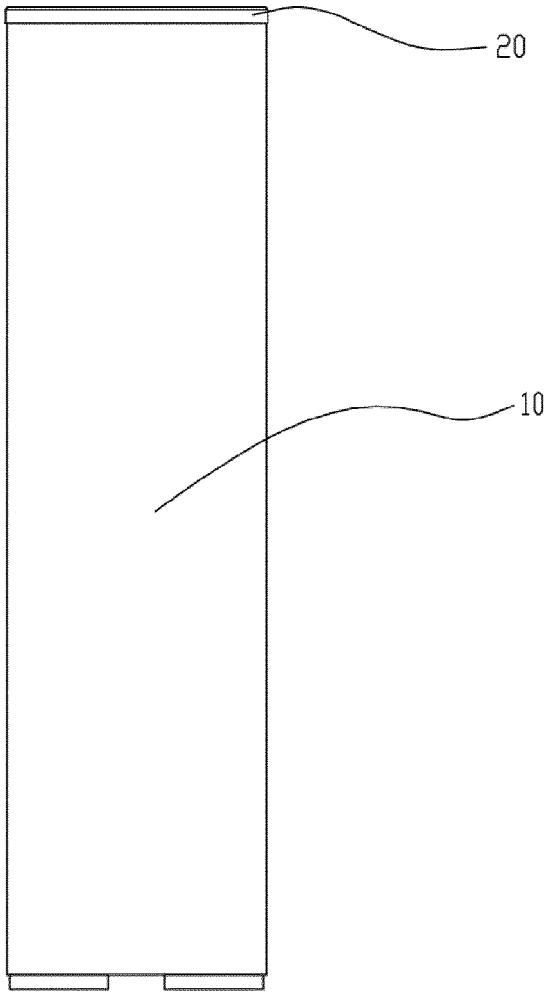

FIG. 1

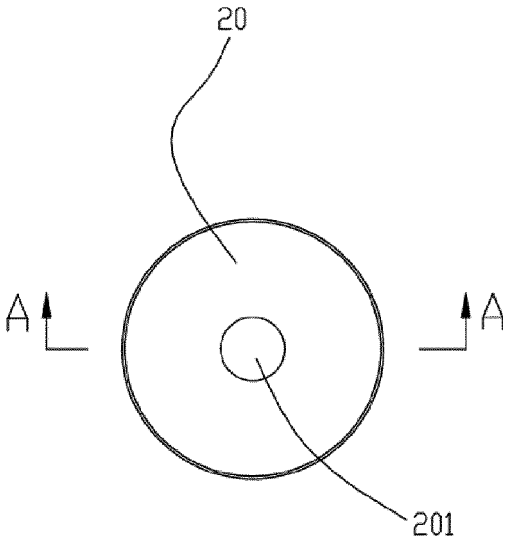

FIG. 2

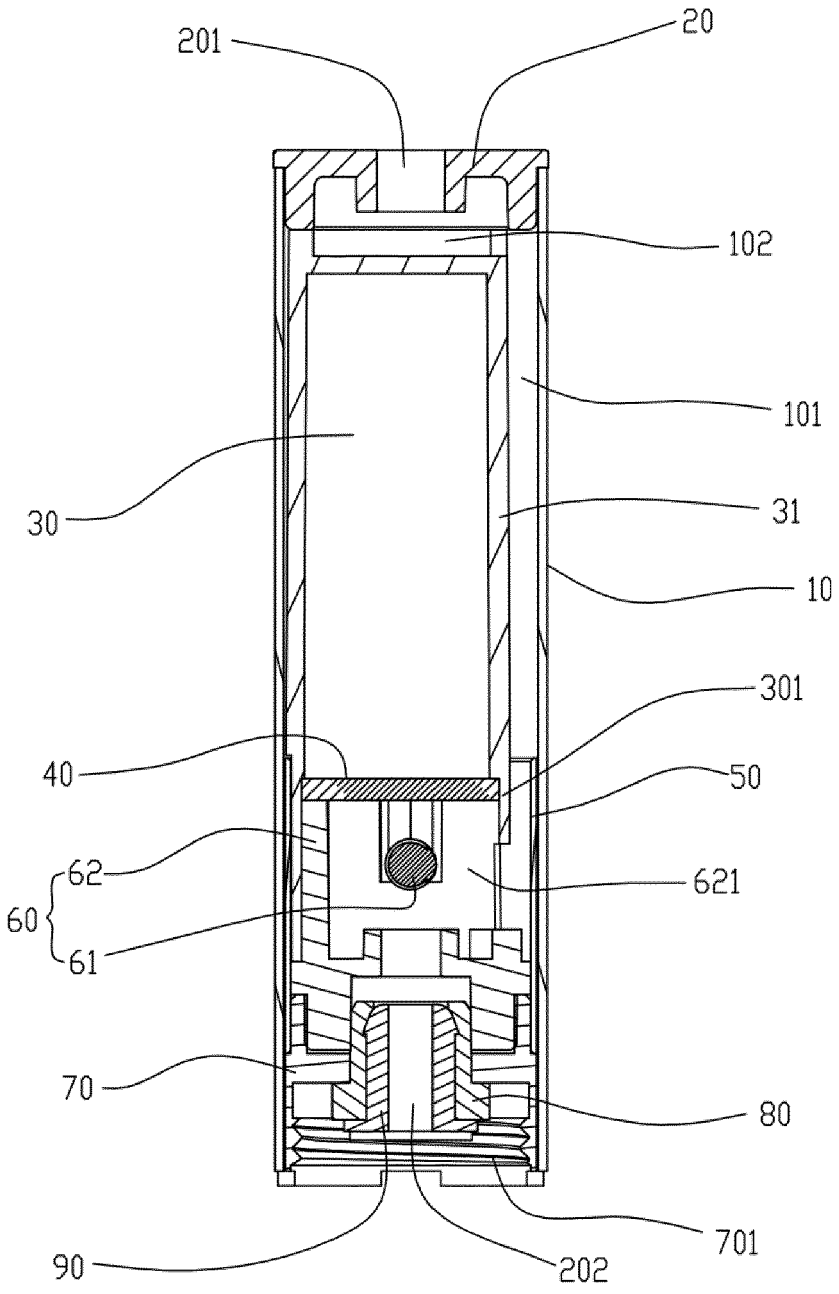

FIG. 3

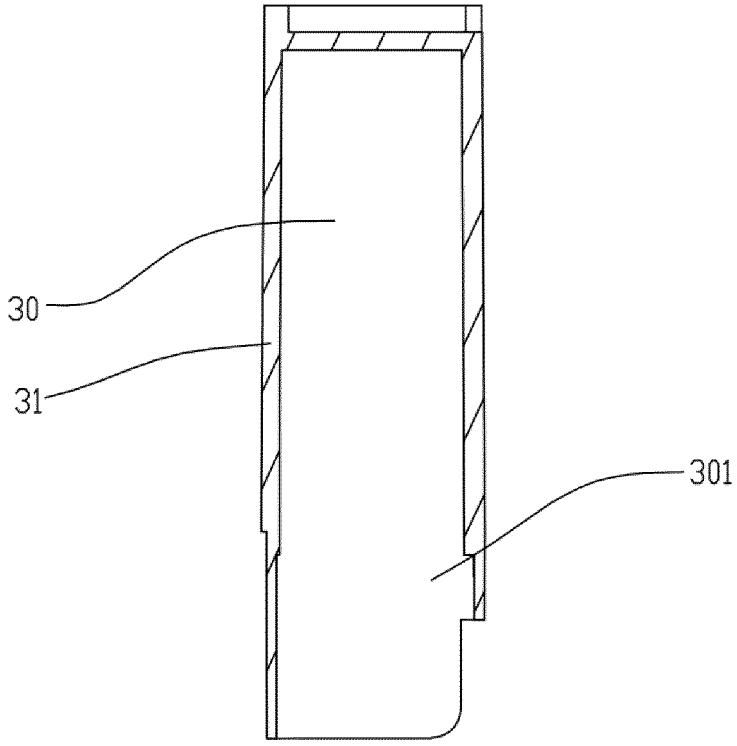

FIG. 4

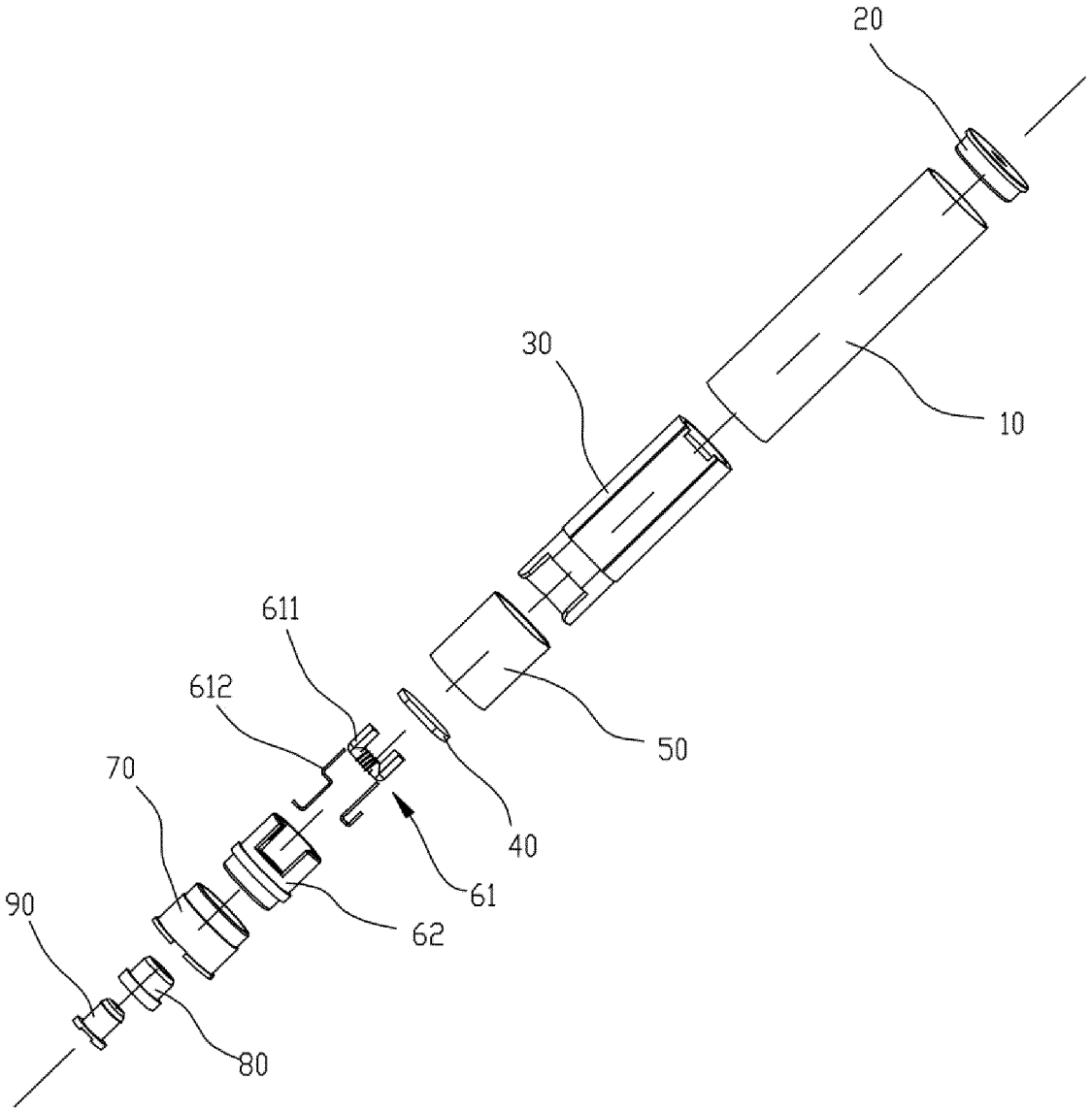

FIG. 5

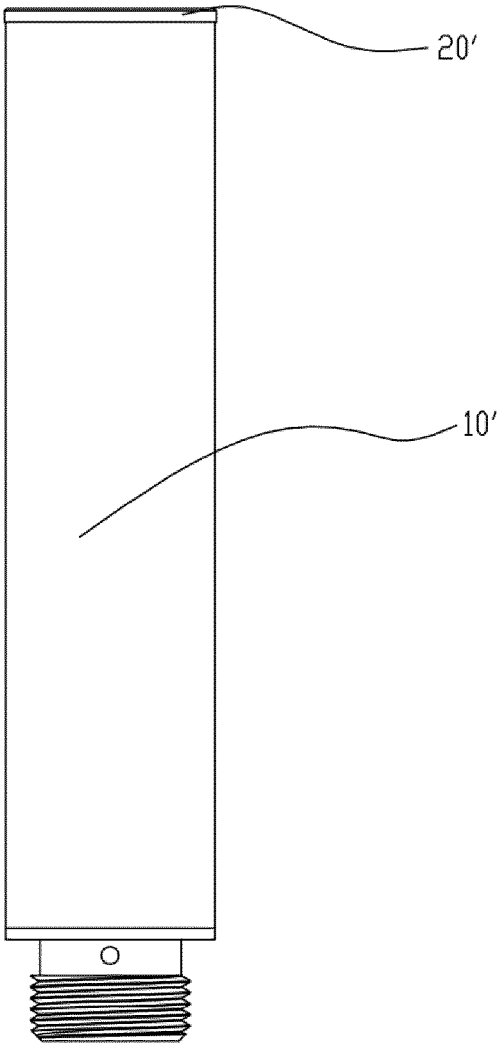

FIG. 6

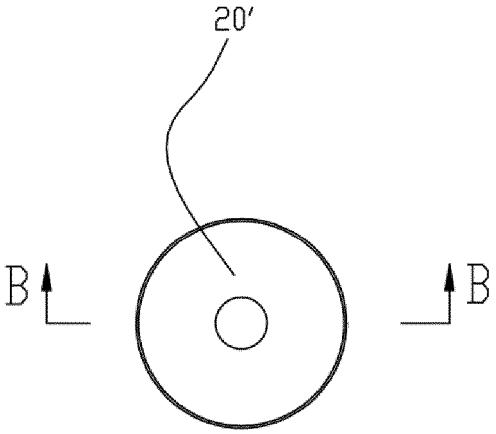

FIG. 7

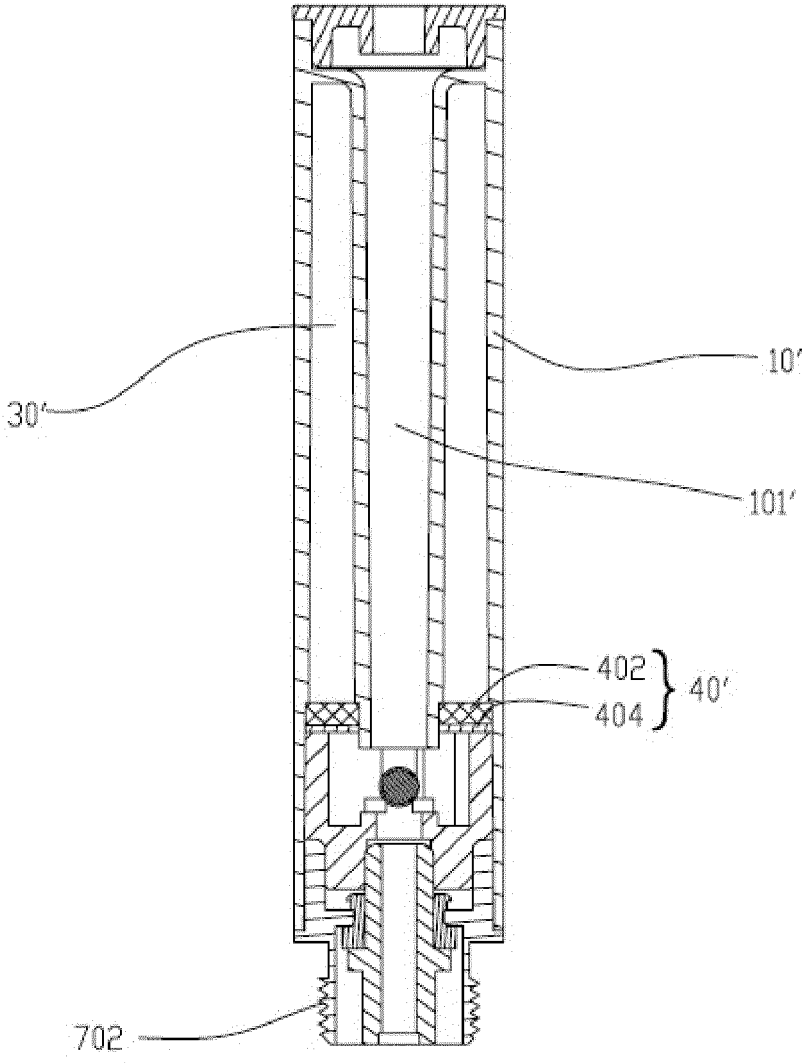

FIG. 8

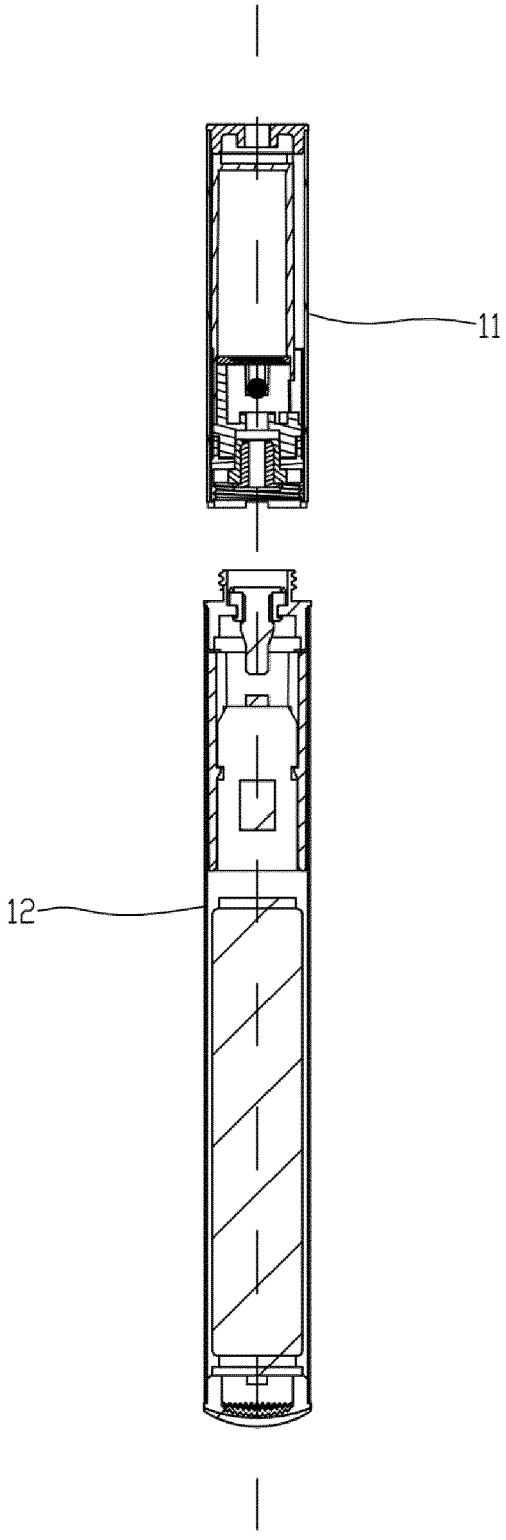

FIG. 9

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EUROPEAN SEARCH REPORT

Application Number
EP 14 17 8446

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 2 489 391 A1 (JOYETECH CHANGZHOU ELECTRONICS CO LTD [CN]) 22 August 2012 (2012-08-22) * the whole document *	1-15	INV. A24F47/00
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TECHNICAL FIELDS SEARCHED (IPC)

A24F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	4 November 2015	MacCormick, Duncan

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 14 17 8446

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