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(54) **VAPORIZATION DEVICE AND CARTRIDGE THEREOF**

(57) The utility relates to a vaporization device and a cartridge thereof. The vaporization device comprises a body with a power supply therein; the cartridge comprises an atomization base, wherein an airflow channel passing through the atomization base is arranged in the cartridge; the atomization base defines at least one ventilation hole, a ventilation pipe extends from the ventilation hole, resulting in one end of the ventilation pipe extending into the airflow channel, and the other end being in fluid communication with a puff sensor in the body. The ventilation pipe extends from the ventilation hole into the airflow channel to locate above a surface of the atomization base, so if the cartridge has a liquid leakage, it is not easy to enter into the ventilation pipe, such that the risk of entering from the ventilation pipe into the body can be reduced.

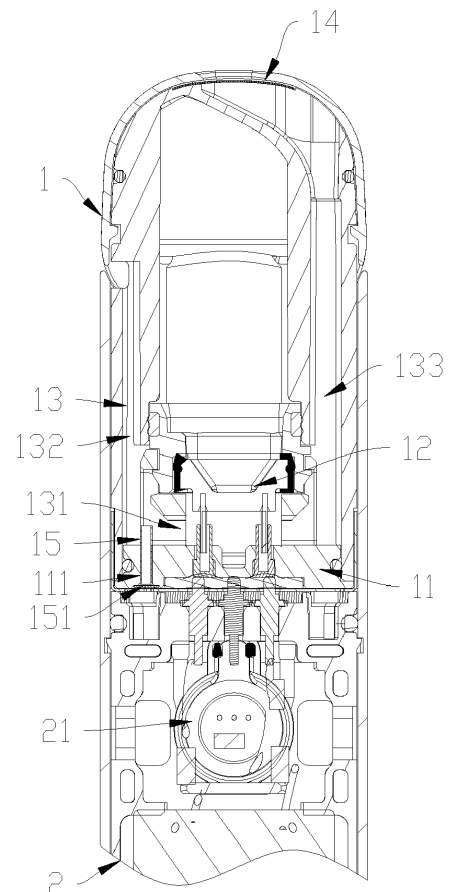


FIG. 2

Description

TECHNICAL FIELD

[0001] The utility relates to the field of cigarette substitutes, and specifically to a vaporization device and a cartridge thereof.

BACKGROUND ART

[0002] The electronic cigarette is also called as a virtual cigarette or a vaporization device. As a substitute of the cigarette, the electronic cigarette is mostly used for smoking cessation. The electronic cigarette has similar appearance and taste with the cigarette, but often does not contain other harmful ingredients, such as, tar, suspended particles, and the like, in the cigarette.

[0003] The vaporization device is mainly formed of a cartridge and a body with a power supply and a puff sensor therein. Condensate produced during drawing by a user is accumulated on a ventilation hole. During drawing, aerosol-generating substrate (usually a liquid) has the phenomenon of frying oil due to atomization, and the aerosol-generating substrate is sputtered onto the ventilation hole at an atomizer base. If placed for a long time, the vaporization device also has the phenomenon of liquid leakage due to action of a negative pressure. The leakage liquid can be leaked to the outside of the vaporization device through the ventilation hole, and/or flow to the body, which causes damage to the body and the puff sensor thereof and brings a bad usage experience to the user.

[0004] In addition, since the previous ventilation hole is disposed under an atomizing core, more condensate is often accumulated under the atomizing core, and During drawing, due to issue of accumulation of the condensate, airflow of the ventilation hole is affected by the condensate, causing blockage of the airflow.

SUMMARY OF THE UTILITY

[0005] The technical problem to be solved by the utility is to provide a vaporization device and a cartridge thereof capable of preventing condensed liquid from flowing to a body.

[0006] The technical solution of the utility adopted to solve the technical problem is to construct a cartridge applied to a vaporization device, the vaporization device comprises a body with a power supply therein, wherein; the cartridge comprises an atomization base, wherein an airflow channel passing through the atomization base is arranged in the cartridge; the atomization base defines at least one ventilation hole, a ventilation pipe extends from the ventilation hole, resulting in one end of the ventilation pipe extending into the airflow channel, and the other end being in fluid communication with a puff sensor in the body.

[0007] Preferably, the ventilation pipe is disposed on

the atomization base, and the ventilation pipe is higher than a surface of the atomization base.

[0008] Preferably, the cartridge further comprises an atomization assembly disposed on the atomization base for heating and atomizing aerosol-generating substrate, and the ventilation pipe and the atomization assembly are staggered in a flow direction of the airflow channel.

[0009] Preferably, the airflow channel comprises an atomization channel passing through the atomization base, and an air inlet channel and an air outlet channel respectively in communication with two ends of the atomization channel, and the ventilation pipe and the atomization assembly are arranged along a flow direction of the air inlet channel towards the air outlet channel.

[0010] Preferably, the ventilation pipe is made of a metal material.

[0011] Preferably, the ventilation pipe is an elongated pipe with an inner diameter from 0.6 mm to 1.0 mm, and a length from 3 mm to 8 mm.

[0012] Preferably, the ventilation pipe is further provided with a breathable separator that prevents liquid from flowing out via the ventilation pipe.

[0013] Preferably, the ventilation pipe comprises a breathable cotton or a breathable membrane.

[0014] Preferably, a gap is reserved between one end of the ventilation pipe away from the airflow channel and an end surface of the connecting end, wherein an airflow slot in communication with the ventilation pipe is provided in the end surface of the connecting end.

[0015] A vaporization device, comprising:

a cartridge comprising an atomization base, and an airflow channel passing through the atomization base is arranged in the cartridge;

a body, with a power supply configured to electrically connect with the cartridge and supply power to the cartridge; and

the atomization base defines at least one ventilation hole; a ventilation pipe extends from the ventilation hole, resulting in one end of the ventilation pipe extending into the airflow channel, and the other end being in fluid communication with a puff sensor in the body.

[0016] Preferably, the airflow channel comprises an air inlet channel, an atomization channel and an air outlet channel; wherein the environment air flows through the air inlet channel, the atomization channel and the air outlet channel when a user draws.

[0017] Preferably, the atomization base comprises a ventilation pipe, wherein one end of the ventilation pipe is in fluid communication with the atomization channel, and the other end of the ventilation pipe is in fluid communication with the puff sensor.

[0018] Preferably, a side of the atomization channel is formed by a surface of the atomization base, and the ventilation pipe is higher than the surface of the atomization base.

[0019] Preferably, the cartridge further comprises an atomization assembly disposed on the atomization base for heating and atomizing aerosol-generating substrate, and the ventilation pipe and the atomization assembly are staggered in a flow direction of the airflow channel.

[0020] Preferably, the ventilation pipe is made of a metal material.

[0021] Preferably, the ventilation pipe is further provided with a breathable separator that prevents liquid from flowing out via the ventilation pipe.

[0022] Implementing the vaporization device and the cartridge thereof in the utility has the following advantageous effects: the ventilation pipe extends from the ventilation hole into the airflow channel to locate above a surface of the atomization base, so if the cartridge has a liquid leakage, it is not easy to enter into the ventilation pipe, such that the risk of entering from the ventilation pipe into the body and the puff sensor thereof can be reduced.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] Hereinafter, the utility is further described with reference to the accompanying drawings and embodiments. In the drawings:

FIG. 1 is a structural diagram of a vaporization device in one embodiment of the utility.

FIG. 2 is a diagram of a sectional structure of the vaporization device in FIG. 1.

FIG. 3 is a sectional diagram of a cartridge in FIG. 2.

DETAILED EMBODIMENT OF THE UTILITY

[0024] To clearly understand technical features, objects and effects of the utility, now detailed embodiments of the utility are explicitly explained with reference to the accompanying drawings.

[0025] As shown in FIGS. 1-3, a vaporization device in one preferable embodiment of the utility comprises a cartridge 1 and a body 2. The body 2 comprises a power supply configured to electrically connect with the cartridge 1 and supply power to the cartridge 1. The cartridge 1 comprises a connecting end butted with the body 2, and after the connecting end is butted with the body 2, the body 2 can power the cartridge 1.

[0026] The cartridge 1 comprises an atomization base 11, and an atomization assembly 12 disposed on the atomization base 11 for heating and atomizing aerosol-generating substrate (usually a liquid), and the cartridge 1 is provided with an airflow channel 13 passing through the atomization base 11. When gas flows, an aerosol produced by the atomization assembly 12 on the atomization base 11 for heating aerosol-generating substrate is brought to a suction nozzle 14 for user drawing.

[0027] The atomization base 11 defines at least one ventilation hole 111. A ventilation pipe 15 extends from the ventilation hole 111, resulting in one end of the ven-

tilation pipe 15 extending into the airflow channel 13, and the other end being in fluid communication with a puff sensor 21 in the body 2. The puff sensor 21 is a microphone arranged in the body 2, and when the puff sensor 21 senses a gas flowing and transmits a signal to a controller, the body 2 is turned on to power the cartridge 1.

[0028] The ventilation pipe 15 is disposed on the atomization base 11, and extends into the airflow channel 13 to locate above a surface of the atomization base 11, wherein the surface of the atomization base 11 defines at least a side of airflow channel 13. That is, the ventilation pipe 15 is higher than the surface of the atomization base 11. So if the cartridge 1 has a liquid leakage, it is not easy to enter into the ventilation pipe 15, such that the risk of entering from the ventilation pipe 15 into the body 2 can be reduced.

[0029] The ventilation pipe 15 is an independent component, and the ventilation pipe 15 is plugged into the atomization base 11 to make production and installation simpler. Generally, the ventilation pipe 15 is made of a metal material, preferably, stainless steel, which is easily formed and prevents rust.

[0030] The ventilation pipe 15 and the atomization assembly 12 are staggered in a flow direction of the airflow channel 13, for example, the ventilation pipe 15 isn't located right below the atomization assembly 12 in this embodiment, so as to avoid condensed liquid below the atomization assembly 12 from directly falling into the ventilation pipe 15, to reduce the risk of the liquid flowing from the ventilation pipe 15 to one side of the body 2, and to reduce the risk of blockage of the ventilation pipe 15 by the liquid, so as to improve smoothness of the airflow.

[0031] The airflow channel 13 comprises an atomization channel 131 passing through the atomization base 11, and an air inlet channel 132 and an air outlet channel 133 respectively in communication with two ends of the atomization channel 131. When a user draws, the environment air flows sequentially through the air inlet channel 132, the atomization channel 131, and the air outlet channel 133 to the suction nozzle 14, bringing the aerosol atomized by the atomization assembly 12 to be drawn by the user.

[0032] The ventilation pipe 15 and the atomization assembly 12 are arranged along a flow direction of the air inlet channel 132 towards the air outlet channel 133, such that the ventilation pipe 15 is on one side of the atomization base 11. Before reaching the atomization assembly 12, a part of gas flows to the body 2 via the ventilation pipe 15, to turn on the puff sensor 21, and another part of other gas flows to the atomization assembly 12 to participate in heating and atomizing. Therefore, gas has flown to the body 2 before reaching the atomization assembly 12, and the ventilation pipe is above the atomization base 11, so that it won't have aerosol-generating substrate flowing into the ventilation pipe 15, which reduces influence of the condensate on the airflow. In this embodiment, the atomization channel 131 transversely

passes through the atomization base 11, and an extending direction of the atomization channel 131 is perpendicular to an axial direction of the vaporization device.

[0033] Disposing the ventilation pipe 15 on one side of the atomization base 11 makes airflow of the entire cartridge 1 more smooth. Disposing the ventilation pipe 15 on one side of the atomization base 11 can reduce influence of the condensate on the airflow, so as to make the airflow more smooth, and have a better atomization effect.

[0034] In other embodiments, when there are a plurality of ventilation holes 111 and ventilation pipes 15, respectively, the ventilation pipes 15 also can be respectively disposed on two sides of the atomization base 11, or the plurality of ventilation pipes 15 are on the same side of the atomization base 11.

[0035] The ventilation pipe 15 is an elongated pipe. As the ventilation pipe 15 is thin and long, little condensate is attached on the ventilation pipe 15 because of surface tension, and does not easily enter into the body 2. Since the ventilation pipe is thin and long, and is above a surface of the atomization base 11, when the atomization base 11 has liquid leakage, it is also not easy to enter into the ventilation pipe 15 even if shaking in transportation.

[0036] In some embodiments, the ventilation pipe 15 has an inner diameter from 0.6 mm to 1.0 mm, such as, 0.6 mm, 0.7 mm, 0.8 mm, 0.9 mm, or the like, and a length from 3 mm to 8 mm, such as, 3 mm, 4 mm, 5 mm, 6 mm, 7 mm, 8 mm, or the like. In these ranges, ventilation effect can be ensured, and liquid leakage also can be effectively prevented.

[0037] In some embodiments, the ventilation pipe 15 is further provided with a breathable separator 151 that prevents liquid from flowing out via the ventilation pipe 15. When there are more condensate, the separator 151 can further prevent leaking liquid and condensate from flowing to the body 2. Preferably, the separator 151 comprises a breathable cotton or a breathable membrane disposed on one end of the ventilation pipe 15 close to the body 2, which can breathe, and also can prevent liquid from flowing.

[0038] Preferably, a gap is reserved between one end of the ventilation pipe 15 away from the airflow channel 13 and an end surface of the connecting end, where an airflow slot 16 in communication with the ventilation pipe 15 in the end surface of the connecting end is provided, to enable gas to flow to the puff sensor 21 through the ventilation pipe 15.

[0039] It shall be understood that the above respective technical features can be combined optionally for use without limitation.

[0040] The disclosures are only embodiments of the utility, rather than limiting the extent of the utility. Any equivalent structures or equivalent flow changes using the specification and the drawings of the utility, or directly or indirectly application in other relevant technical fields shall also be included in the extent of protection of the utility.

Claims

1. A cartridge (1) applied to a vaporization device, the vaporization device comprises a body (2) with a power supply therein, wherein;
the cartridge (1) comprises an atomization base (11), and an airflow channel (13) passing through the atomization base (11) is arranged in the cartridge (1); the atomization base (11) defines at least one ventilation hole (111); a ventilation pipe (15) extends from the ventilation hole (111), resulting in one end of the ventilation pipe (15) extending into the airflow channel (13), and the other end being in fluid communication with a puff sensor (21) in the body (2).
2. The cartridge (1) according to claim 1, **characterized in that** the ventilation pipe (15) is disposed on the atomization base (11), and the ventilation pipe (15) is higher than a surface of the atomization base (11).
3. The cartridge (1) according to claim 1, **characterized in that** the cartridge (1) further comprises an atomization assembly (12) disposed on the atomization base (11) for heating and atomizing aerosol-generating substrate, and the ventilation pipe (15) and the atomization assembly (12) are staggered in a flow direction of the airflow channel (13).
4. The cartridge (1) according to claim 1, **characterized in that** the airflow channel (13) comprises an atomization channel (131) passing through the atomization base (11), and an air inlet channel (132) and an air outlet channel (133) respectively in communication with two ends of the atomization channel (131), and the ventilation pipe (15) and the atomization assembly (12) are arranged along a flow direction of the air inlet channel (132) towards the air outlet channel (133).
5. The cartridge (1) according to any one of claims 1 to 4, **characterized in that** the ventilation pipe (15) is made of a metal material.
6. The cartridge (1) according to any one of claims 1 to 4, **characterized in that** the ventilation pipe (15) is an elongated pipe with an inner diameter from 0.6 mm to 1.0 mm, and a length from 3 mm to 8 mm.
7. The cartridge (1) according to any one of claims 1 to 4, **characterized in that** the ventilation pipe (15) is further provided with a breathable separator (151) that prevents liquid from flowing out via the ventilation pipe (15);
8. The cartridge (1) according to any one of claims 1 to 4, **characterized in that** a gap is reserved between one end of the ventilation pipe (15) away from

the airflow channel (13) and an end surface of the connecting end, wherein an airflow slot (16) in communication with the ventilation pipe (15) is provided in the end surface of the connecting end.

(15) is further provided with a breathable separator (151) that prevents liquid from flowing out via the ventilation pipe (15).

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9. A vaporization device, comprising:

a cartridge (1) comprising an atomization base (11), and an airflow channel (13) passing through the atomization base (11) is arranged in the cartridge (1);
 a body (2), with a power supply configured to electrically connect with the cartridge (1) and supply power to the cartridge (1); and
 the atomization base (11) defines at least one ventilation hole (111); and a ventilation pipe (15) extends from the ventilation hole (111), resulting in one end of the ventilation pipe (15) extending into the airflow channel (13), and the other end being in fluid communication with a puff sensor (21) in the body (2).

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10. A vaporization device according to claim 9, wherein the airflow channel (13) comprises an air inlet channel (132), an atomization channel (131) and an air outlet channel (133); wherein the environment air flows through the air inlet channel (132), the atomization channel (131) and the air outlet channel (133) when a user draws.

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11. A vaporization device according to claim 10, wherein a ventilation pipe (15) is disposed on the atomization base (11), wherein one end of the ventilation pipe (15) is in fluid communication with the atomization channel (131), and the other end of the ventilation pipe (15) is in fluid communication with the puff sensor (21).

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12. A vaporization device according to claim 10, wherein a side of the atomization channel (131) is formed by a surface of the atomization base (11), and the ventilation pipe (15) is higher than the surface of the atomization base (11).

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13. A vaporization device according to claim 10, **characterized in that** the cartridge (1) further comprises an atomization assembly (12) disposed on the atomization base (11) for heating and atomizing aerosol-generating substrate, and the ventilation pipe (15) and the atomization assembly (12) are staggered in a flow direction of the airflow channel (13).

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14. A vaporization device according to any one of claims 9 to 13, **characterized in that** the ventilation pipe (15) is made of a metal material.

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15. A vaporization device according to any one of claims 9 to 13, **characterized in that** the ventilation pipe

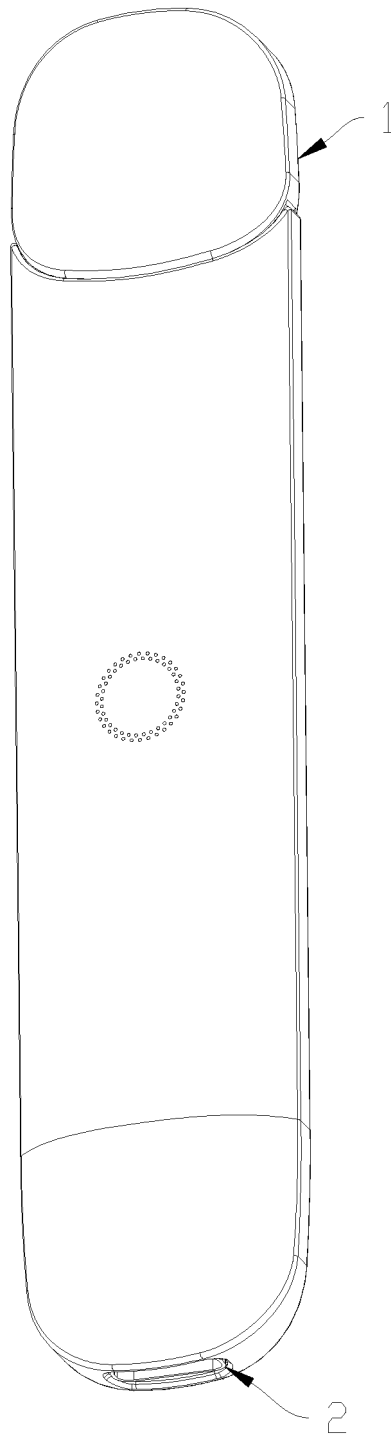


FIG. 1

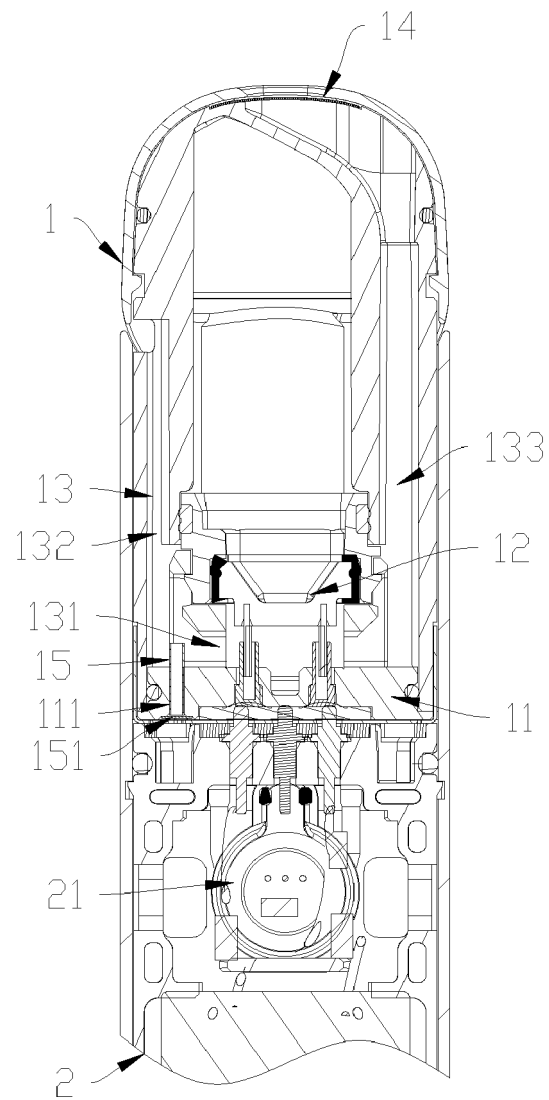


FIG. 2

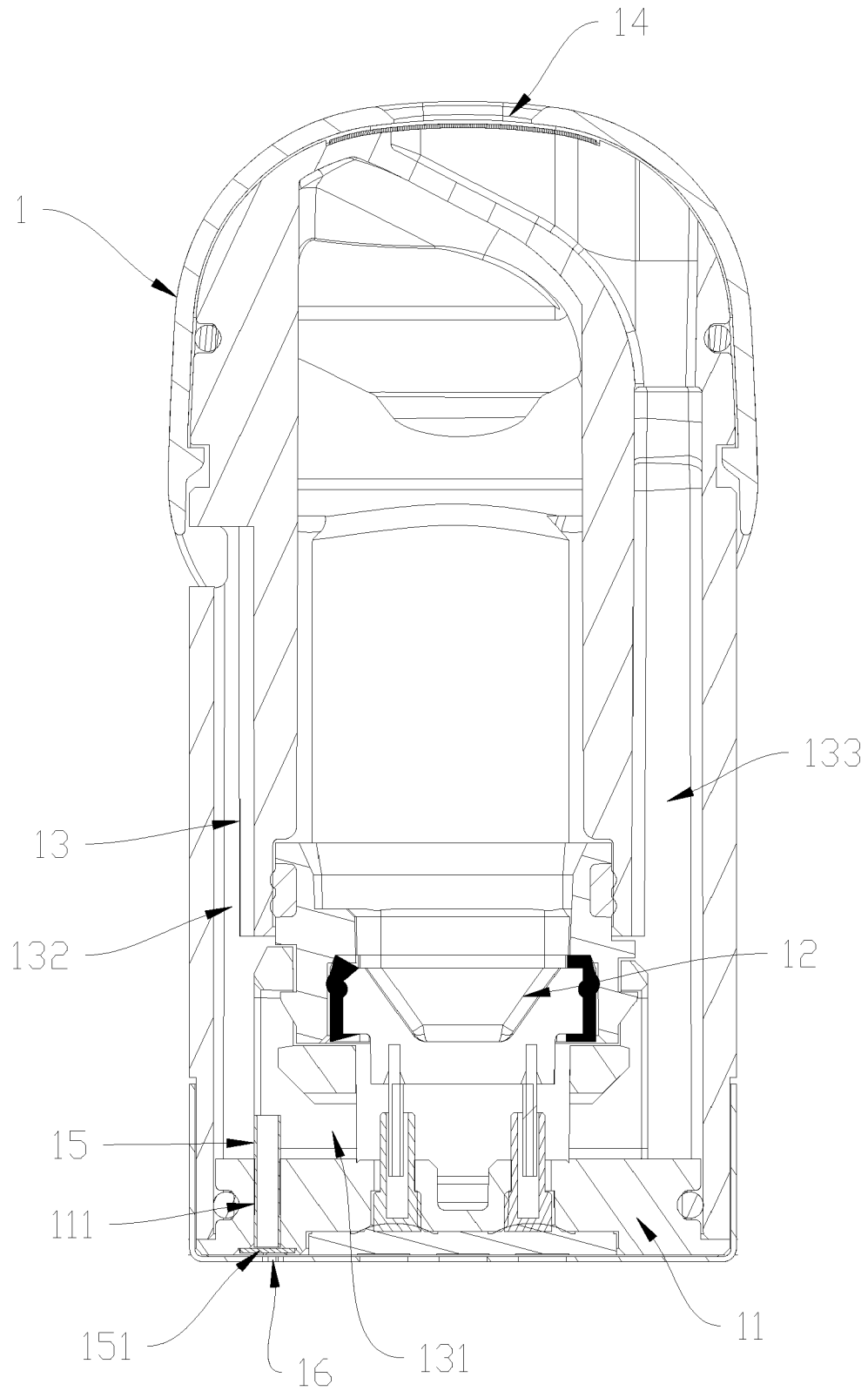


FIG. 3



EUROPEAN SEARCH REPORT

Application Number
EP 19 19 7173

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 12 February 2020	Examiner Escudero, Raquel
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			

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EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 19 19 7173

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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