(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 461 147 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
13.11.2024 Bulletin 2024/46

(21) Application number: **24164472.3**

(22) Date of filing: **19.03.2024**

(51) International Patent Classification (IPC):
A24F 40/10 *(2020.01)* ***A24F 40/30*** *(2020.01)*
A24F 40/40 *(2020.01)* ***A24F 40/42*** *(2020.01)*
A24F 40/485 *(2020.01)* ***A24F 40/60*** *(2020.01)*

(52) Cooperative Patent Classification (CPC):
A24F 40/40; A24F 40/10; A24F 40/30; A24F 40/42; A24F 40/485; A24F 40/60

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
GE KH MA MD TN

(30) Priority: **12.05.2023 CN 202321163867 U**

(71) Applicants:
- **Shenzhen First Union Technology Co., Ltd.**
  Shenzhen, Guangdong 518000 (CN)
- **IVG Compliance Limited**
  Preston PR1 1NT (GB)

(72) Inventors:
- **LI, Junjie**
  Shenzhen (CN)
- **SUN, Zhongyuan**
  Shenzhen (CN)
- **XU, Zhongli**
  Shenzhen (CN)
- **LI, Yonghai**
  Shenzhen (CN)

(74) Representative: **Jacob, Reuben Ellis et al**
Maucher Jenkins
Seventh Floor Offices
Artillery House
11-19 Artillery Row
London SW1P 1RT (GB)

(54) **AEROSOL GENERATION DEVICE**

(57) This application relates to an aerosol generation device, including: a cartridge assembly (A), including a shell (3) and a plurality of cartridges (2), where two longitudinally opposite ends of the shell (3) are a near end and a far end of the shell (3), the plurality of cartridges (2) are accommodated in the shell (3), and each cartridge (2) is provided with a first channel for airflow to pass through and an accommodation cavity (21) for accommodating a liquid substrate; an end cap (7), connected to the near end of the shell (3), where the end cap (7) is provided with a plurality of second channels, the first channel of each cartridge (2) is correspondingly in exclusive fluid communication with one second channel, and the end cap (7) is provided with a first rotating portion (72); and a mouthpiece (1), provided with a second rotating portion (11), where the second rotating portion (11) is configured to be rotatably connected to the first rotating portion (72), to cause the mouthpiece (1) to be in fluid communication with one second channel, where an elastic member (8) is fixed on at least one of the mouthpiece (1) and the end cap (7), and the elastic member (8) is configured to provide resistance to rotation of the mouthpiece (1) relative to the end cap (7).

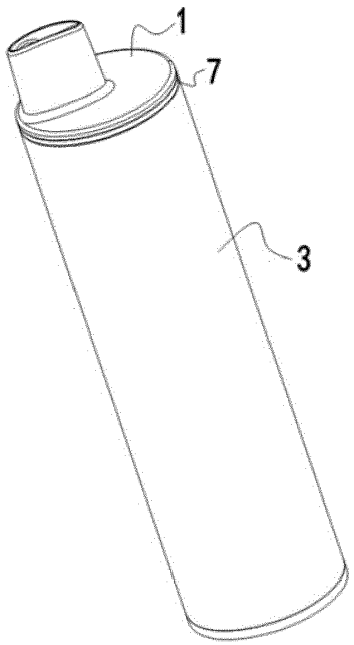

FIG. 1

EP 4 461 147 A1

Description

TECHNICAL FIELD

[0001] Embodiments of this application relate to the field of aerosol generation technologies, and in particular, to an aerosol generation device.

BACKGROUND

[0002] An aerosol generation device is a device that can atomize liquid preparations to form aerosol. However, in some exemplary existing technologies, the aerosol generation device often has only one cartridge for storing the liquid preparations. Due to a limitation of a volume of a single cartridge, a capacity and a type of a liquid substrate stored in the aerosol generation device are limited, affecting user experience.

SUMMARY

[0003] This application aims to provide an aerosol generation device, to have a large liquid substrate storage capacity.

[0004] An aerosol generation device provided in an embodiment of this application includes:

a cartridge assembly, including a shell and a plurality of cartridges, where the shell is provided with a near end and a far end that are longitudinally opposite, the plurality of cartridges are accommodated in the shell, and each cartridge is provided with a first channel for airflow to pass through and an accommodation cavity for accommodating a liquid substrate;
an end cap, connected to the near end of the shell, where the end cap is provided with a plurality of second channels, the first channel of each cartridge is correspondingly in exclusive fluid communication with one second channel, and the end cap is provided with a first rotating portion; and
a mouthpiece, provided with a second rotating portion, where the second rotating portion is configured to be rotatably connected to the first rotating portion, to cause the mouthpiece to be selectively in fluid communication with one second channel.

[0005] In an example, an elastic member is fixed on at least one of the mouthpiece and the end cap, and the elastic member is configured to provide resistance to rotation of the mouthpiece relative to the end cap.

[0006] In an example, the elastic member is arranged around the second rotating portion.

[0007] In an example, at least part of the elastic member is longitudinally squeezed by the mouthpiece and the end cap.

[0008] In an example, the elastic member is provided with a through hole, the end cap is provided with a convex column, and at least part of the convex column is embedded into the through hole, to fix the elastic member.

[0009] In an example, there are a plurality of convex columns, and the plurality of second channels are respectively arranged in different convex columns; and there are a plurality of through holes, the plurality of convex columns are respectively embedded into different through holes, and the elastic member elastically abuts against the mouthpiece, to isolate the plurality of second channels from each other.

[0010] In an example, the elastic member is provided with a plurality of annular ribs, each annular rib surrounds one through hole, and the annular rib elastically abuts against the mouthpiece.

[0011] In an example, the end cap is provided with a support platform, and the support platform always abuts against the mouthpiece, and is slidably connected to the mouthpiece when the mouthpiece rotates relative to the end cap.

[0012] In an example, a side of the end cap toward the mouthpiece is provided with a groove recessed relative to the support platform, and at least part of the elastic member is accommodated in the groove.

[0013] In an example, a prompting mechanism is arranged on the aerosol generation device, and the prompting mechanism is configured to provide tactile feedback when the mouthpiece rotates to a position at which the mouthpiece is in airflow communication with one second channel.

[0014] In an example, the end cap is provided with a support platform and a plurality of second airways, one of the support platform and the mouthpiece is provided with bumps in a one-to-one correspondence with the plurality of second airways, the other one is provided with at least one pit, and when the mouthpiece rotates to be in fluid communication with one second airway, at least one bump is embedded into one pit, to generate tactile feedback.

[0015] In an example, the first rotating portion includes a rotating hole, the second rotating portion includes an elastic piece and a claw connected to the elastic piece, at least part of the elastic piece is located in the rotating hole, an outer diameter of the claw is greater than a hole diameter of at least part of the rotating hole, and the claw is configured to grip the first rotating portion.

[0016] In an example, each cartridge includes an atomizer in fluid communication with the accommodation cavity in the cartridge, the atomizer is configured to atomize the liquid substrate to generate aerosol, and the first airway in the cartridge is in fluid communication with the atomizer corresponding to the cartridge to transmit the aerosol.

[0017] In an example, the aerosol generation device further includes a power supply assembly, a second electrode set is arranged on the power supply assembly, the cartridge assembly includes a plurality of first electrode sets, and the atomizer of each cartridge is electrically connected to different first electrode sets; and
the cartridge assembly is rotatably connected to the pow-

er supply assembly, and the second electrode set is configured to be in electrical communication with a first electrode set that is rotated to and that abuts against the second electrode set.

[0018] In an example, the aerosol generation device further includes a power supply assembly and a control switch electrically connected to the power supply assembly, and the control switch is configured to control the power supply assembly to be in electrical communication with an atomizer of one cartridge. In an example, the aerosol generation device further includes a plurality of airflow channels in a one-to-one correspondence with the plurality of cartridges, each airflow channel is in fluid communication with a first channel of a corresponding cartridge, the control switch is arranged in each airflow channel, and the control switch is configured to control, based on an airflow speed or an atmospheric pressure in the airflow channel, the cartridge corresponding to the airflow channel to be in electrical communication with the power supply assembly.

[0019] In an example, the aerosol generation device further includes a power supply assembly, the power supply assembly includes a plurality of battery cores, and the plurality of battery cores are electrically connected to atomizers of different cartridges respectively and correspondingly.

[0020] An aerosol generation device provided in an embodiment of this application includes:

a cartridge assembly, including a shell and a plurality of cartridges, where the shell is provided with a near end and a far end that are longitudinally opposite, the plurality of cartridges are accommodated in the shell, and each cartridge is provided with a first channel for airflow to pass through and an accommodation cavity for accommodating a liquid substrate;

an end cap, connected to the near end of the shell, where the end cap is provided with a first rotating portion; and

a mouthpiece, provided with a second rotating portion, where the second rotating portion is configured to be rotatably connected to the first rotating portion, where

the first rotating portion includes a rotating hole, the second rotating portion includes an elastic piece and a claw connected to the elastic piece, at least part of the elastic piece is located in the rotating hole, an outer diameter of the claw is greater than a hole diameter of at least part of the rotating hole, and the claw is configured to grip the first rotating portion.

[0021] The aerosol generation device includes a cartridge assembly including a plurality of cartridges, each cartridge is provided with an accommodation cavity for accommodating a liquid substrate and a first airway for airflow to pass through, and a suction nozzle is rotatably connected to an end cap connected to the cartridge assembly, so that the suction nozzle can be in fluid communication with one second channel on the end cap by making the suction nozzle and the cartridge assembly relatively rotate, to cause the suction nozzle to be in fluid communication with a first channel of one cartridge. Therefore, the cartridge in communication with the suction nozzle can be selected by making the suction nozzle and the cartridge assembly relatively rotate, to break through a volume limitation of a single cartridge, and there is no need to disassemble the cartridge to switch to different cartridges. This improves user experience and facilitates use of users while helping to increase a storage capacity of the liquid substrate.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] To describe the technical solutions in specific embodiments of this application or in existing technologies more clearly, the following briefly describes drawings required for describing the embodiments or the existing technologies. In all drawings, similar elements or portions are generally identified by similar reference numerals. In the drawings, the elements or portions are not necessarily drawn to actual scale.

FIG. 1 is a schematic diagram of an aerosol generation device according to an embodiment of this application;

FIG. 2 is an exploded view of an aerosol generation device according to an embodiment of this application;

FIG. 3 is a cross-sectional view of an aerosol generation device according to an embodiment of this application;

FIG. 4 is an exploded view of an aerosol generation device according to another embodiment of this application;

FIG. 5 is a schematic diagram of a power supply assembly according to an embodiment of this application;

FIG. 6 is another cross-sectional view of an aerosol generation device according to an embodiment of this application; and

FIG. 7 is a schematic diagram of a mouthpiece according to an embodiment of this application.

[0023] In the drawings:

1: mouthpiece; 11: second rotating portion; 111: elastic piece; 112: claw; 12: base plate; 13: suction nozzle;

A: cartridge assembly;

2: cartridge; 21: accommodation cavity; 22: first airway; 23: atomizer; 24: first electrode set;

3: shell;

4: power supply assembly; 41: battery core; 42: second electrode set;

5: connecting support;

6: airflow channel;

7: end cap; 71: second channel; 72: first rotating portion; 721: rotating hole; 73: convex column; 74: groove; 75: support platform;
8: elastic member; 81: through hole; 82: annular rib; 83: positioning hole;
B: control switch; C: striking portion; and D: striking member.

DETAILED DESCRIPTION

[0024] The following clearly and completely describes the technical solutions in the embodiments of this application with reference to the drawings in the embodiments of this application. Apparently, the described embodiments are some embodiments of this application rather than all of the embodiments. All other embodiments obtained by a person skilled in the art based on the embodiments of this application without creative efforts shall fall within the protection scope of this application.

[0025] In this application, terms "first", "second", and "third" are used merely for the purpose of description, and shall not be construed as indicating or implying relative importance or implying a quantity of indicated technical features. All directional indications (such as up, down, left, right, front, back, ...) in the embodiments of this application are only used to explain relative positional relationship, moving conditions, or the like between components in a specific posture (as shown in the drawings). If the specific posture changes, the directional indications also change accordingly. In addition, the terms "include", "have", and any variant thereof are intended to cover a non-exclusive inclusion. For example, a process, method, system, product, or device that includes a series of steps or units is not limited to the listed steps or units; and instead, further optionally includes a step or unit that is not listed, or further optionally includes another step or unit that is intrinsic to the process, method, product, or device.

[0026] "Embodiment" mentioned in this specification means that particular features, structures, or characteristics described with reference to the embodiment may be included in at least one embodiment of this application. The term appearing at different locations of this specification may not refer to the same embodiment or an independent or alternative embodiment that is mutually exclusive with another embodiment. A person skilled in the art explicitly or implicitly understands that the embodiments described in this specification may be combined with other embodiments.

[0027] It should be noted that, when an element is referred to as "being fixed to" another element, the element may be directly on the other element, or an intervening element may be present. When an element is considered to be "connected to" another element, the element may be directly connected to the other element, or one or more intervening elements may be present. Terms "vertical", "horizontal", "left", and "right" and similar expressions used in this specification are merely used for the purpose of description, and are not a unique implementation.

[0028] Referring to FIG. 1 to FIG. 3, an embodiment of this application provides an aerosol generation device. The aerosol generation device includes a mouthpiece 1 and a cartridge assembly A including a plurality of cartridges 2. Each cartridge 2 may be provided with an accommodation cavity 21, the accommodation cavity 21 is for accommodating a liquid substrate that can be atomized to generate aerosol, and a volume of the accommodation cavity 21 may not exceed 5 ml. Each cartridge 2 is provided with a first airway 22. The mouthpiece 1 may rotate relative to the cartridge assembly, to cause the mouthpiece 1 to be a first airway 22 of one cartridge 2 by making the mouthpiece 1 rotate relative to the cartridge assembly. The first airway 22 is for transmitting aerosol to the mouthpiece 1, and at least part of the mouthpiece 1 may be held by a user in the mouth, so that the user can inhale the aerosol by inhaling the mouthpiece 1.

[0029] Referring to FIG. 2, the cartridge assembly A further includes a shell 3. The plurality of cartridges 2 described above may be held in the shell 3 in parallel with each other. The "plurality of" refers to two or more than two. In the embodiment shown in FIG. 2, there are four cartridges 2. However, this is not limited thereto. At least two cartridges 2 in the plurality of cartridges 2 may be for accommodating different liquid substrates. Different liquid substrates include liquid substrates with different tastes or include liquid substrates with different compositions and ratios, so that different sensory experience can be provided to the user by switching a cartridge 2 in communication with the mouthpiece 1. Certainly, in an embodiment, liquid substrates accommodated in all cartridges 2 may be the same.

[0030] The liquid substrate may include tobacco substance-containing liquid including volatile tobacco flavor components, or may be liquid including non-tobacco substances. The liquid substrate may include water, medicinal liquid, solvent, ethanol, plant extract, spices, flavouring agents, vitamin mixtures, or the like. The spices may include areca nut extract, menthol, peppermint, spearmint oil, various fruity aroma ingredients, and the like, but are not limited thereto. The flavouring agents may include ingredients that can provide various aromas or flavors to the user. The vitamin mixture may be a mixture having at least one of vitamin A, vitamin B, vitamin C, and vitamin E mixed therein, but is not limited thereto. Based on different properties of the liquid substrates, the aerosol generation device may be used in different fields, such as medical treatment, and electronic aerosol atomization.

[0031] At least part of the shell 3 arranged on a periphery of the plurality of cartridges 2 may be transparent, so that the cartridges 2 inside can be visually observed through the shell 3. At least part of a wall used to define the accommodation cavity 21 in the cartridge 2 may also be transparent, so that the inside of the cartridge 2 can be visually observed through the shell 3 and the wall de-

fining the accommodation cavity 21 in turn. For example, the remaining amount of the liquid substrate in the cartridge 2 is observed, to provide a basis of switching the cartridge 2 in communication with the mouthpiece 1 to the user.

[0032] In an embodiment, referring to FIG. 3, each cartridge 2 further includes an atomizer 23, the atomizer 23 is in fluid communication with the accommodation cavity 21, and the atomizer 23 is configured to atomize the liquid substrate. The atomizer 23 may include a liquid-absorbing element and a heating element. The liquid-absorbing element may be a porous body or fiber, capable of absorbing the liquid substrate and guiding the liquid substrate into an atomization range of the heating element. The heating element is configured to atomize at least part of the liquid substrate on the liquid-absorbing element, to form the aerosol. The heating element may be combined with the liquid-absorbing element, so that the heating element and the heating element can form one unity. In an example, the cartridge 2 may be provided with an atomization compartment in fluid communication with the accommodation cavity 21, the atomizer 23 is accommodated in the atomization compartment, and the first channel 22 is in fluid communication with the atomization compartment. Alternatively, in another example, referring to FIG. 3, at least part of the atomizer 23 is arranged in the first channel 22.

[0033] The aerosol generation device further includes a power supply assembly 4.

[0034] The power supply assembly 4 may include any suitable battery core. In an embodiment, a battery core 41 is a lithium-ion battery. Alternatively, the battery core 41 may be a nickel metal hydride battery, a nickel-cadmium battery, or a lithium-based battery, such as a lithium cobalt, lithium iron phosphate, lithium titanate, or lithium polymer battery. The power supply assembly 4 may include a circuit board and one or more control circuits arranged on the circuit board. The control circuit may control output of the battery core 41, for example, cause the battery core 41 to output an alternating current, a direct current, or the like; or for example, cause the battery core 41 to output a current, a voltage, or the like in a pulse form.

[0035] The control circuit may be provided with one or more controllers. The controller may control an entire operation of the aerosol generation device. Specifically, the controller controls operations of the battery core and the cartridge, and may also control an operation of another element in the aerosol generation device. In addition, the controller may determine, by checking a status of an element of the aerosol generation device, whether the aerosol generation device can perform an operation.

[0036] Based on this, in an embodiment, referring to FIG. 4 and FIG. 5, the cartridge assembly includes a first electrode set 24, and a second electrode set 42 is arranged on the power supply assembly 4. There are a plurality of first electrode sets 24. The atomizer 23 of each cartridge 2 is exclusively and electrically connected to one first electrode set 24, that is, one atomizer 23 is electrically connected to only one first electrode set 24, and simultaneously, one first electrode set 24 is electrically connected to only one atomizer 23, so that a plurality of atomizers 23 are respectively electrically connected to different first electrode sets 24. A quantity of second electrode sets 42 is less than a quantity of first electrode sets 24, and the cartridge assembly A is rotatably connected to the power supply assembly 4. When the cartridge assembly A rotates relative to the power supply assembly 4, a first electrode set 24 rotates relative to a second electrode set 42, and at least one second electrode set 42 may be configured to electrically abut against different first electrode sets 24 in turn in a process in which the cartridge assembly A rotates relative to the power supply assembly 4.

[0037] In an example, there is only one second electrode set 42. The second electrode set 42 is configured to be in electrical communication with a first electrode set 24 that is rotated to and that abuts against the second electrode set 24, so that the power supply assembly 4 can supply power to an atomizer 23 of only one cartridge 2 at the same moment. It should be noted that, in another example, there may be a plurality of second electrode sets, and the mouthpiece can also be in fluid communication with first airways in the plurality of cartridges simultaneously, so that the power supply assembly can simultaneously supply electric energy to atomizers of the plurality of cartridges, and the user can simultaneously inhale aerosol provided by the plurality of cartridges from the mouthpiece. For example, when there are two second electrode sets, the two second electrode sets may electrically abut against two first electrode sets respectively, so that the power supply assembly simultaneously supplies electric energy to atomizers of two cartridges. In this example, the mouthpiece can be simultaneously in fluid communication with first channels of the two cartridges, so that the user can simultaneously inhale aerosol generated by the two cartridges from the mouthpiece.

[0038] The first electrode set 24 and the second electrode set 42 each include at least two electrodes, which may be, for example, an anode and a cathode.

[0039] In an embodiment, the aerosol generation device further includes a power supply assembly 4 and a control switch electrically connected to the power supply assembly 4. The control switch is configured to control the power supply assembly 4 to be in electrical communication with an atomizer 23 of one cartridge 2, so that the atomizer 23 of the cartridge 2 in electrical communication with the power supply assembly 4 can work to atomize a liquid substrate in the cartridge 2, and generated aerosol is transmitted to the mouthpiece 1 through a first channel 22 of the cartridge 2. However, other cartridges 2 in the cartridge assembly are in a state of electrical disconnection from the power supply assembly 4.

[0040] Based on this, in an example, referring to FIG. 3, the power supply assembly 4 includes a plurality of

battery cores 41. A quantity of battery cores 41 may be consistent with a quantity of cartridges 2, and the plurality of battery cores 41 are electrically connected to atomizers 23 of different cartridges 2 respectively, so that the plurality of battery cores 41 can independently supply power to the plurality of atomizers 23 respectively in a one-to-one correspondence manner. Therefore, there are a plurality of control switches, or the control switch is a selection switch, so that one battery core 41 can be controlled to supply power to an atomizer 23 electrically connected to the battery core 41, and simultaneously, other battery cores 41 and atomizers 23 electrically connected to the battery cores 41 respectively are in an open circuit state. Based on this example, the aerosol generation device may further include a plurality of connecting supports 5, each connecting support 5 is maintained with one battery core 41 and a cartridge 2 corresponding to the battery core 41, and the battery core 41 and the cartridge 2 corresponding to the battery core 41 form a unity under action of the connecting support 5. For example, if the aerosol generation device includes four cartridges 2 and four battery cores 41, there may be four connecting supports 5, to form four unities. The battery core 41 and the cartridge 2 are assembled in the shell 3 as a whole, to facilitate improving assembly efficiency of the aerosol generation device. It should be noted that, in some embodiments, the cartridge assembly A may be configured to be incapable of rotating relative to the power supply assembly 4. For example, referring to FIG. 3, the shell 3 of the cartridge assembly A is provided with a near end and a far end that are oppositely arranged. The near end is adjacent to or close to the mouthpiece 1, and the far end continues to extend in a direction away from the near end, so that the power supply assembly 4 is also accommodated in the shell 3.

[0041] Alternatively, in another example, referring to FIG. 3, the aerosol generation device further includes a plurality of airflow channels 6 in a one-to-one correspondence with the plurality of cartridges 2, and each first airway 22 is in exclusive fluid communication with one airflow channel 6. When the user inhales the mouthpiece 1, a first airway 22 in communication with the mouthpiece 1 causes an airflow channel 6 in fluid communication with the first airway 22 to have a large airflow speed or a negative pressure. A control switch B is arranged in each airflow channel 6. The control switch B may be configured to be capable of detecting an airflow speed or a negative pressure of the airflow channel 6, for example, the control switch B may be an atmospheric pressure sensor or an airflow sensor, and the control switch B may be configured to be capable of controlling, based on the airflow speed or the negative pressure of the airflow channel 6, a cartridge 2 in fluid communication with the airflow channel 6 to be in electrical communication with the power supply assembly 4. Therefore, after the mouthpiece 1 is in fluid communication with a first airway 22 of one cartridge 2, when a corresponding airflow channel 6 has airflow with a rapid speed or has a large negative pressure by inhaling the mouthpiece 1, the control switch B can automatically control the power supply assembly 4 to supply electric energy to the cartridge 2 in fluid communication with the mouthpiece 1, so that an atomizer 23 of the cartridge 2 atomizes a liquid substrate in the cartridge 2. It should be noted that, in this example, the cartridge assembly A may be configured to be incapable of rotating relative to the power supply assembly 4.

[0042] Referring to FIG. 1 to FIG. 3, the aerosol generation device further includes an end cap 7, the end cap 7 is connected to the near end of the shell 3, the mouthpiece 1 is rotatably connected to the end cap 7, and the mouthpiece 1 rotates relative to the end cap 7 to implement rotation relative to the cartridge assembly A.

[0043] The end cap 7 is provided with a plurality of second channels 71, the first channel 22 of each cartridge 2 is in exclusive fluid communication with one second channel 71, and the mouthpiece 1 rotates relative to the end cap 7 to be in fluid communication one second channel 71 on the end cap 7, so that the mouthpiece 1 is in fluid communication with a first channel 22 in fluid communication with the second channel 71.

[0044] More specifically, referring to FIG. 3 and FIG. 6, the end cap 7 is provided with a first rotating portion 72, the mouthpiece 1 is provided with a second rotating portion 11, and the second rotating portion 11 is configured to be rotatably connected to the first rotating portion 72, so that the mouthpiece 1 can rotate relative to the end cap 7.

[0045] In an embodiment, referring to FIG. 3 and FIG. 6, the first rotating portion 72 includes a rotating hole 721, and the second rotating portion 11 includes an elastic piece 111 and a claw 112 connected to the elastic piece 111. At least part of the elastic piece 111 is located in the rotating hole 721, and the elastic piece 111 may rotate around a central axis of the rotating hole 721 in the rotating hole 721. An outer diameter of the claw 112 is greater than a hole diameter of at least part of the rotating hole 721, and the claw 112 is configured to grip the first rotating portion 72, so that the second rotating portion 11 can be prevented from being separated from the rotating hole 721. The elastic piece 111 on the second rotating portion 11 may be gathered in a direction of the central axis of the rotating hole 721 in a process in which the second rotating portion 11 is inserted into the rotating hole 721, and the claw 112 arranged on the elastic piece 111 approaches the central axis of the rotating hole 721 accordingly. This helps the second rotating portion 72 to be inserted into the rotating hole 721, and facilitates assembly the mouthpiece 1 and the end cap 7 into a unity. After the second rotating portion 11 is inserted into place, under spread of elastic force of the elastic piece 111, the claw 112 arranged on the elastic piece 111 abuts against the first rotating portion 72 and grips the first rotating portion 72. The elastic piece 111 and the claw 112 on the second rotating portion 11 can limit displacement of the second rotating portion 11 along the central axis of the rotating hole 721 in an up-down direction. In an example,

the claw 112 may always keep tightly griping the first rotating portion 72. For example, referring to FIG. 7, an angle θ between an outer surface of the elastic piece 111 and a near end surface of the claw 112 is an acute angle or a right angle. For another example, an extension length of the elastic piece 111 along the central axis of the rotating hole 721 is less than or equal to a hole depth of the rotating hole 721 on the central axis.

[0046] Based on this, in an example, the rotating hole is a through hole, and the claw passes through the rotating hole and grips a far end of the first rotating portion outside the rotating hole, that is, the outer diameter of the claw is greater than a hole diameter of any part of the rotating hole. In this example, an extension length of the elastic piece along the central axis of the rotating hole may be equal to the hole depth of the rotating hole on the central axis. In an example, the rotating hole is a through hole or a blind hole, and the claw grips the first rotating portion in the rotating hole, that is, the outer diameter of the claw is greater than only a hole diameter of near end area of the rotating hole or hole diameters of the near end area and a middle area of the rotating hole. In this example, an extension length of the elastic piece along the central axis of the rotating hole may be less than or equal to the hole depth of the rotating hole on the central axis.

[0047] In other embodiments, the second rotating portion may include a rotating hole, and the first rotating portion may include an elastic piece and a claw connected to the elastic piece. At least part of the elastic piece is located in the rotating hole, and the elastic piece may rotate around a central axis of the rotating hole in the rotating hole. An outer diameter of the claw is greater than a hole diameter of at least part of the rotating hole, and the claw is configured to grip the second rotating portion, so that the first rotating portion can be prevented from being separated from the rotating hole.

[0048] It may be understood that, in other embodiments, an extension length of the elastic piece along the central axis of the rotating hole may be greater than a hole depth of the rotating hole on the central axis, so that the mouthpiece can have specific displacement relative to the end cap along the central axis of the rotating hole in an up-down direction.

[0049] Referring to FIG. 7, the mouthpiece 1 includes a base plate 12 and a suction nozzle 13, the suction nozzle 13 and the second rotating portion 11 are respectively arranged on two opposite sides of the base plate 12, at least part of the suction nozzle 13 may be held by the user in the mouth, and the base plate 12, the suction nozzle 13, and the second rotating portion 11 may be integrally injection-molded. The suction nozzle 13 is arranged away from a central area of the base plate 12, to ensure that the suction nozzle 13 is in fluid communication with a first airway 22 of only one cartridge 2 by making the mouthpiece 1 rotate relative to the cartridge assembly. The second rotating portion 11 may be arranged in the central area of the base plate 12.

[0050] A thickness of the base plate 12, that is, a minimum distance between a surface of the base plate 12 adjacent to the suction nozzle 13 and a surface of the base plate 12 adjacent to the second rotating portion 11 may be between 0.5 mm to 3 mm, for example, may be approximately 1.5 mm, so that the base plate 12 has a smaller thickness, and damage to surface consistency of the aerosol generation device is reduced after the mouthpiece 1 is combined with the cartridge assembly.

[0051] Referring to FIG. 2, the aerosol generation device further includes an elastic member 8. At least part of the elastic member 8 is arranged between the end cap 7 and the mouthpiece 1. The elastic member 8 may be configured to provide resistance to rotation of the mouthpiece 1 relative to the end cap 7, to prevent the mouthpiece 1 from rotating relative to the end cap 7 when it is not necessary to rotate relative to the end cap 7.

[0052] In an embodiment, referring to FIG. 6, the elastic member 8 is arranged around the second rotating portion 11, and elastically squeezes the second rotating portion 11 transversely. Specifically, the elastic member 8 is fixed on the end cap 7, and the second rotating portion 11 rubs the elastic member 8 when rotating relative to the first rotating portion 72; or the elastic member 8 is fixed on the mouthpiece 1, and the first rotating portion 72 rubs the elastic member 8 when the second rotating portion 11 rotates relative to the first rotating portion 72. The elastic member 8 has a larger friction coefficient than the first rotating portion 72 and the second rotating portion 11, so that the elastic member 8 can provide resistance to rotation of the second rotating portion 11 relative to the first rotating portion 72.

[0053] In an embodiment, referring to FIG. 6, at least part of the elastic member 8 is longitudinally squeezed by the mouthpiece 1 and the end cap 7. Specifically, the elastic member 8 is fixed on the end cap 7, and the mouthpiece 1 rubs the elastic member 8 when rotating relative to the end cap 7; or the elastic member 8 is fixed on the mouthpiece 1, and the end cap 7 rubs the elastic member 8 when the mouthpiece 1 rotates relative to the end cap 7.

[0054] In the embodiment shown in FIG. 2, the end cap 7 is provided with a convex column 73, the elastic member 8 is provided with a through hole 81 corresponding to the convex column 73, and at least part of the convex column 73 is embedded into the through hole 81. Through interference fit between the through hole 81 and the convex column 73, the elastic member 8 is fixed on the end cap 7.

[0055] A quantity of convex columns 73 may be equal to or greater than a quantity of second channels 71, and the plurality of second channels 71 are respectively arranged in different convex columns 73. Corresponding to the plurality of convex columns 73, there may also be a plurality of through holes 81, and the plurality of convex columns 73 are respectively embedded into different through holes 81. The elastic member 8 surrounding the convex columns 73 elastically abuts against the mouthpiece 1, for example, abuts against the base plate 12 of

the mouthpiece 1, so that the elastic member 8 rubs the base plate 12 when the mouthpiece 1 rotates relative to the end cap 7, so that the plurality of second channels 71 can also be isolated from each other when resistance to relative rotation between the mouthpiece 1 and the end cap 7 is provided, to ensure that the suction nozzle 13 on the mouthpiece 1 can be in fluid communication with only one second channel 71 simultaneously.

[0056] In an example, referring to FIG. 2 and FIG. 3, the elastic member 8 may be provided with a plurality of annular ribs 82, each annular rib 82 surrounds one through hole 81, and the elastic member 8 elastically abuts against the mouthpiece 1 mainly through the annular ribs 82, for example, elastically abuts against the base plate 12 of the mouthpiece 1. The base plate 12 may be provided with a flat abutting surface, the plurality of annular ribs 82 elastically abut against the abutting surface simultaneously, and the plurality of annular ribs 82 are slidably connected to the abutting surface, so that when the mouthpiece 1 rotates relative to the end cap 7, the plurality of annular ribs 82 can simultaneously rub the abutting surface. Under action of the plurality of annular ribs 82 elastically abutting against the abutting surface simultaneously, the plurality of second channels 71 are isolated from each other on a side toward the mouthpiece 1.

[0057] The elastic member 8 may also be provided with a positioning hole 83, and the second rotating portion 11 may pass through the positioning hole 83 and then rotate and cooperate with the first rotating portion 72. Therefore, the second rotating portion 11 may rotate around a central axis of the positioning hole 83, and the positioning hole 83 may interfere with the second rotating portion 11, so that the elastic member 8 can provide transverse elastic abutting action force to the second rotating portion 11. The end cap 7 may be provided with a groove 74, the groove 74 is configured to receive at least part of the elastic member 8, and the groove 74 also helps to fix the elastic member 8 on the end cap 7. The end cap 7 may be provided with a support platform 75 recessed relative to the groove 74. The support platform 75 is arranged on a periphery of the groove 74. The support platform 75 may define at least part of a boundary of the groove 74. An inner side surface of the support platform 75 may elastically abut against the elastic member 8.

[0058] A near end of the support platform 75 may support and abut the base plate 12 of the mouthpiece 1, and in a process in which the mouthpiece 1 rotates relative to the end cap 7 and in a process in which the mouthpiece 1 is still relative to the end cap 7, mutual cooperation between the first rotating portion 72 and the second rotating portion 11 can ensure that the support platform 75 always abuts against the base plate 12 of the mouthpiece 1, and the mutual cooperation between the first rotating portion 72 and the second rotating portion 11 can also ensure that the elastic member 8 always elastically abuts against the base plate 12 of the mouthpiece 1.

[0059] In an example, referring to FIG. 2, the support platform 75 is annular and surrounds a periphery of the elastic member 8. The support platform 75 can hide the elastic member 8, to prevent the elastic member 8 from being exposed to a surface of the aerosol generation device, and can make the elastic member 8 invisible.

[0060] A prompting mechanism may be arranged on the aerosol generation device. The prompting mechanism can send out a prompt signal when the mouthpiece 1 rotates relative to the end cap 7 to be in airflow communication with one second channel 71 on the end cap 7. The prompt signal may include a sound signal, a light signal, a vibration signal, or the like.

[0061] In an embodiment, the prompting mechanism can provide tactile feedback. Referring to FIG. 2 and FIG. 7, one of the support platform 75 of the end cap 7 and the base plate 12 of the mouthpiece 1 is provided with striking portions C in a one-to-one correspondence with the plurality of second airways 71, and the other one is provided with at least one striking member D. A quantity of one of striking portions C and striking members D is consistent with a quantity of second airways 71, and a quantity of the other one is one. In the process in which the mouthpiece 1 rotates relative to the end cap 7, the at least one striking member D can strike at least one striking portion C, to emit sound (auditory feedback) and/or generate vibration (tactile feedback). The user may determine, based on the sound (auditory feedback) and/or the vibration (tactile feedback), a rotational position of the mouthpiece 1 relative to the end cap 7, and determine whether the suction nozzle 13 of the mouthpiece 1 is being in fluid communication with one second airway 71. Therefore, after the user senses the prompt signal, continued rotation of the mouthpiece 1 relative to the end cap 7 can be stopped.

[0062] Based on this, in an example, referring to FIG. 2 and FIG. 7, the striking member D may be a hemispherical bump or an elastic steel ball, and the striking portion C may be a hemispherical pit. When at least part of the bump or the elastic steel ball is embedded into the pit through rotation, striking between the bump and the pit produces clicking sound, and simultaneously, the mouthpiece 1 and/or the end cap 7 may generate sensible vibration.

[0063] It may be understood that, in other examples, when the mouthpiece rotates relative to the end cap to be in airflow communication with one second channel on the end cap, the prompting mechanism can generate a change in an electrical parameter or a magnetic parameter. The circuit board controls a buzzer, a player, an LED light, a vibrator, and the like to issue prompts when detecting the change in the electrical parameter or the magnetic parameter.

[0064] It should be noted that, this specification of this application and the drawings thereof illustrate preferred embodiments of this application, but are not limited to the embodiments described in this specification, furthermore, a person of ordinary skill in the art may make improvements or variations according to the above descrip-

tions, and such improvements and variations shall all fall within the protection scope of the appended claims of this application.

Claims

1. An aerosol generation device, comprising:

   a cartridge assembly (A), comprising a shell (3) and a plurality of cartridges (2), wherein the shell is provided with a near end and a far end that are longitudinally opposite, the plurality of cartridges are accommodated in the shell, and each cartridge is provided with a first channel for airflow to pass through and an accommodation cavity (21) for accommodating a liquid substrate;
   an end cap (7), connected to the near end of the shell, wherein the end cap is provided with a plurality of second channels, the first channel of each cartridge is correspondingly in exclusive fluid communication with one second channel, and the end cap is provided with a first rotating portion (72); and
   a mouthpiece (1), provided with a second rotating portion (11), wherein the second rotating portion is configured to be rotatably connected to the first rotating portion (72), to cause the mouthpiece to be selectively in fluid communication with one second channel.

2. The aerosol generation device according to claim 1, wherein an elastic member (8) is fixed on at least one of the mouthpiece (1) and the end cap (7), and the elastic member (8) is configured to provide resistance to rotation of the mouthpiece relative to the end cap.

3. The aerosol generation device according to claim 2, wherein:

   the elastic member (8) is arranged around the second rotating portion (11);
   at least part of the elastic member (8) is longitudinally squeezed by the mouthpiece (1) and the end cap (7); or
   the elastic member is provided with a through hole (81), the end cap (7) is provided with a convex column (73), and at least part of the convex column is embedded into the through hole, to fix the elastic member.

4. The aerosol generation device according to claim 3, wherein there are a plurality of convex columns (73), and the plurality of second channels are respectively arranged in different convex columns; and
   there are a plurality of through holes (81), the plurality of convex columns are respectively embedded into different through holes, and the elastic member elastically abuts against the mouthpiece, to isolate the plurality of second channels from each other.

5. The aerosol generation device according to claim 3, wherein the elastic member (8) is provided with a plurality of annular ribs (82), each annular rib surrounds one through hole, and the annular rib elastically abuts against the mouthpiece.

6. The aerosol generation device according to claim 2, wherein the end cap (7) is provided with a support platform (75), and the support platform always abuts against the mouthpiece, and is slidably connected to the mouthpiece when the mouthpiece rotates relative to the end cap.

7. The aerosol generation device according to claim 6, wherein a side of the end cap (7) toward the mouthpiece is provided with a groove (74) recessed relative to the support platform, and at least part of the elastic member is accommodated in the groove.

8. The aerosol generation device according to claim 1, wherein a prompting mechanism is arranged on the aerosol generation device, and the prompting mechanism is configured to provide tactile feedback when the mouthpiece (1) rotates to a position at which the mouthpiece is in airflow communication with one second channel.

9. The aerosol generation device according to claim 8, wherein the end cap (7) is provided with a support platform (75) and a plurality of second airways, one of the support platform and the mouthpiece is provided with bumps in a one-to-one correspondence with the plurality of second airways, the other one is provided with at least one pit, and when the mouthpiece rotates to be in fluid communication with one second airway, at least one bump is embedded into one pit, to generate tactile feedback.

10. The aerosol generation device according to claim 1, wherein the first rotating portion comprises a rotating hole (721), the second rotating portion comprises an elastic piece (111) and a claw (112) connected to the elastic piece, at least part of the elastic piece is located in the rotating hole, an outer diameter of the claw is greater than a hole diameter of at least part of the rotating hole, and the claw is configured to grip the first rotating portion (72).

11. The aerosol generation device according to claim 1, wherein each cartridge (2) comprises an atomizer (23) in fluid communication with the accommodation cavity (21) in the cartridge, the atomizer is configured to atomize the liquid substrate to generate aerosol,

and the first airway in the cartridge is in fluid communication with the atomizer corresponding to the cartridge to transmit the aerosol.

12. The aerosol generation device according to claim 11, wherein:

the aerosol generation device further comprises a power supply assembly (4), a second electrode set (42) is arranged on the power supply assembly, the cartridge assembly comprises a plurality of first electrode sets (24), and the atomizer of each cartridge is electrically connected to different first electrode sets, and
the cartridge assembly (A) is rotatably connected to the power supply assembly (4), and the second electrode set (42) is configured to be in electrical communication with a first electrode set (24) that is rotated to and that abuts against the second electrode set; or
the aerosol generation device further comprises a power supply assembly and a control switch (B) electrically connected to the power supply assembly, and the control switch is configured to control the power supply assembly to be in electrical communication with an atomizer (23) of one cartridge (2); or
the aerosol generation device further comprises a power supply assembly (4), the power supply assembly comprises a plurality of battery cores (41), and the plurality of battery cores are electrically connected to atomizers of different cartridges respectively and correspondingly.

13. The aerosol generation device according to claim 12, wherein the aerosol generation device further comprises a plurality of airflow channels (6) in a one-to-one correspondence with the plurality of cartridges (2), each airflow channel is in fluid communication with a first channel of a corresponding cartridge, the control switch (B) is arranged in each airflow channel, and the control switch is configured to control, based on an airflow speed or an atmospheric pressure in the airflow channel, the cartridge corresponding to the airflow channel to be in electrical communication with the power supply assembly.

14. An aerosol generation device, comprising:

a cartridge assembly (A), comprising a shell (3) and a plurality of cartridges (2), wherein the shell is provided with a near end and a far end that are longitudinally opposite, the plurality of cartridges are accommodated in the shell, and each cartridge is provided with a first channel for airflow to pass through and an accommodation cavity (21) for accommodating a liquid substrate;
an end cap (7), connected to the near end of the shell, wherein the end cap is provided with a first rotating portion (72); and
a mouthpiece (1), provided with a second rotating portion (11), wherein the second rotating portion is configured to be rotatably connected to the first rotating portion, wherein
the first rotating portion (72) comprises a rotating hole (721), the second rotating portion comprises an elastic piece (111) and a claw (112) connected to the elastic piece, at least part of the elastic piece is located in the rotating hole, an outer diameter of the claw is greater than a hole diameter of at least part of the rotating hole, and the claw is configured to grip the first rotating portion.

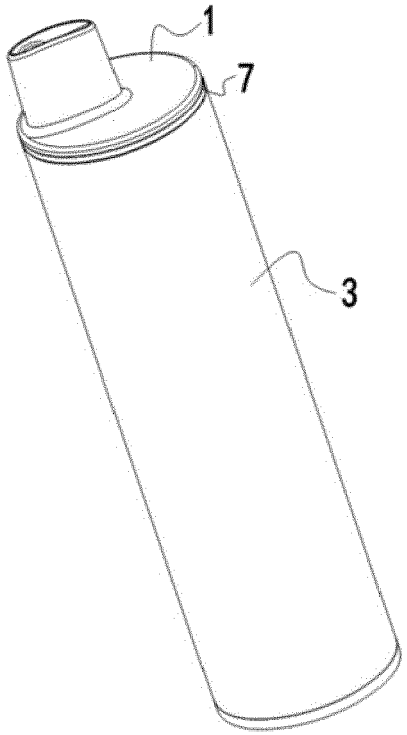

FIG. 1

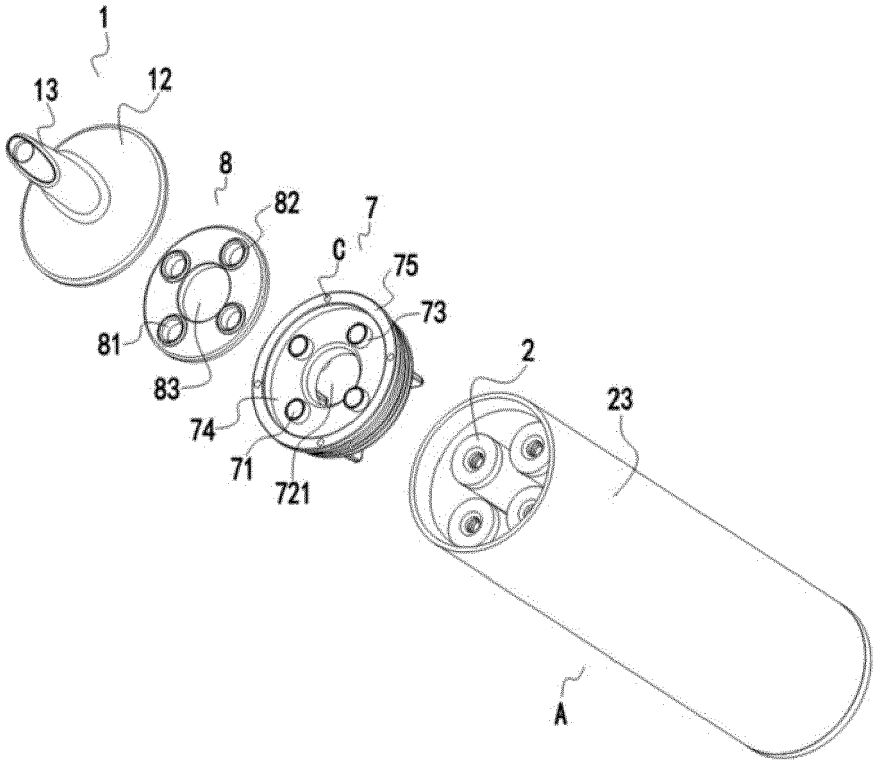

FIG. 2

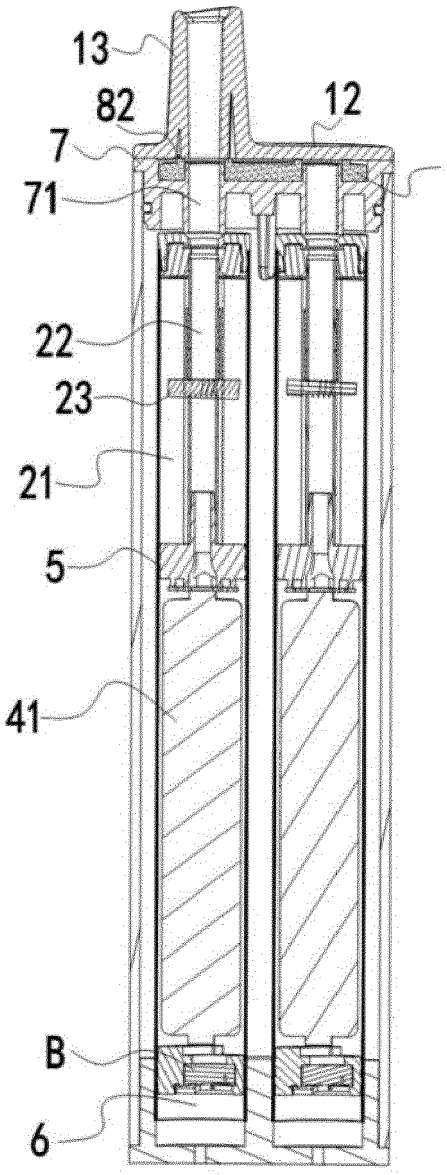

FIG. 3

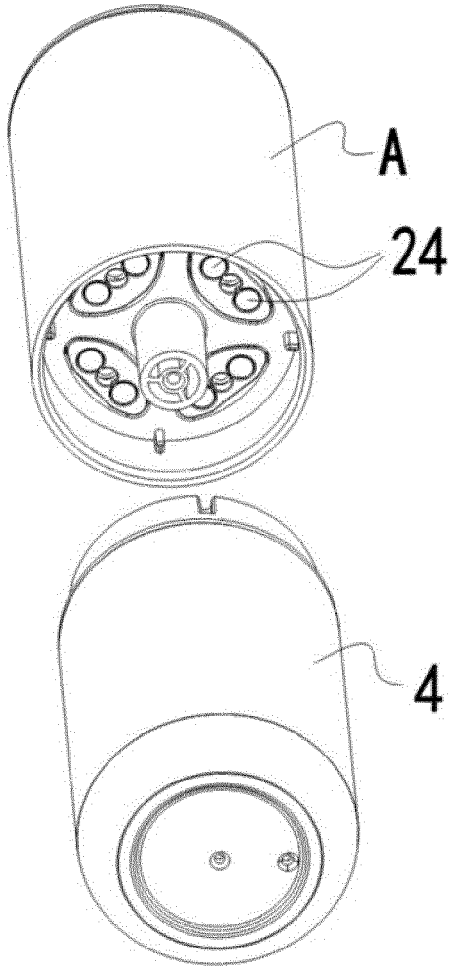

FIG. 4

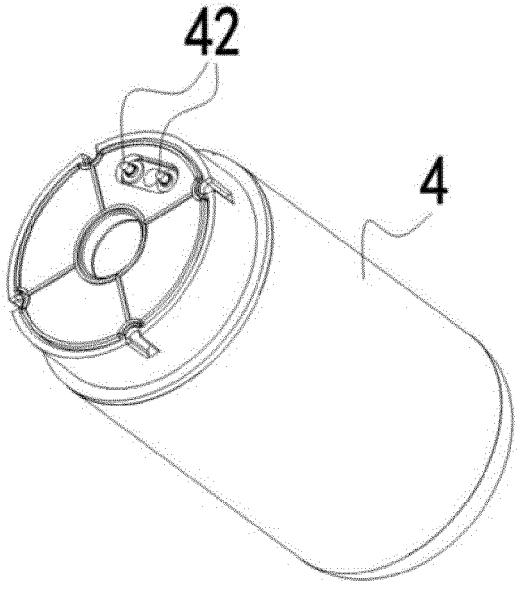

FIG. 5

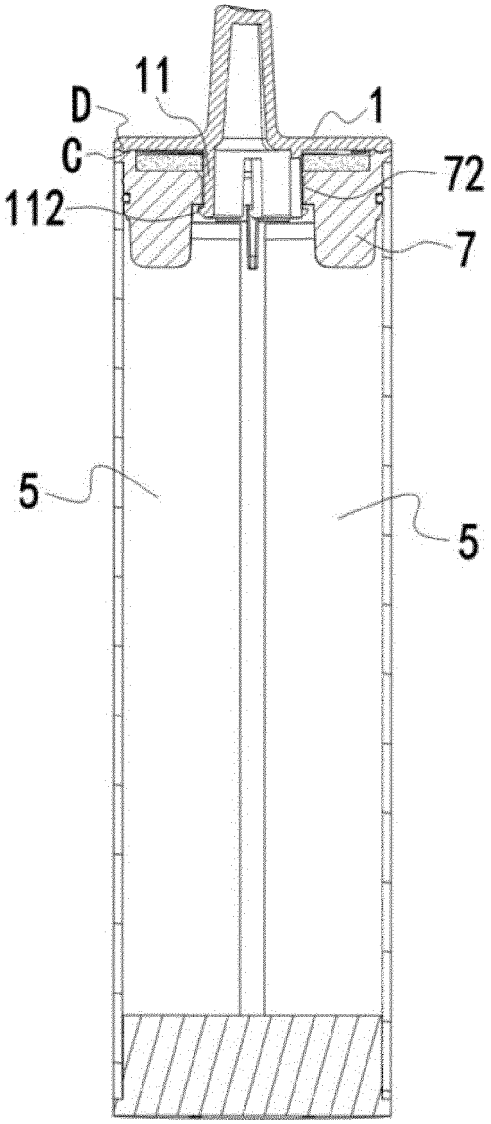

FIG. 6

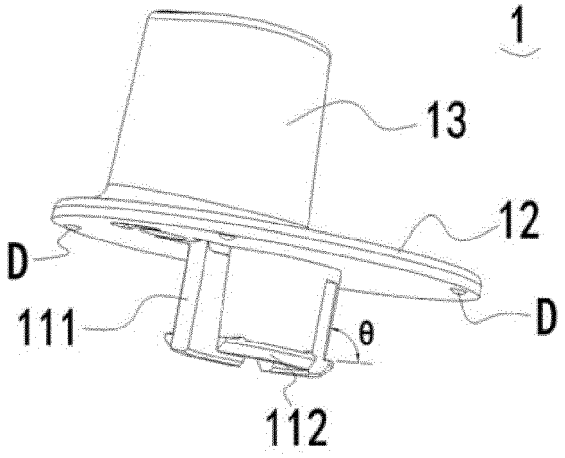

FIG. 7

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 24 16 4472

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	US 2020/093184 A1 (CRESPO FERNANDO HIRAM [US]) 26 March 2020 (2020-03-26) * paragraphs [0053], [0054], [0056], [0057], [0061], [0063], [0064]; figures 1,2,4 *	1-14	INV. A24F40/10 A24F40/30 A24F40/40 A24F40/42 A24F40/485 A24F40/60
A	US 2023/000151 A1 (LEE JONG SUB [KR] ET AL) 5 January 2023 (2023-01-05) * paragraphs [0044], [0047], [0052], [0070], [0081], [0082], [0085], [0099]; figures 1,2,3,4 *	1-14	
A	CN 212 678 364 U (SHENZHEN AILEMI TECH CO LTD) 12 March 2021 (2021-03-12) * paragraph [0015] - paragraph [0021]; figure 1 *	1-14	

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	5 August 2024	Ettlinger, Mark

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 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 24 16 4472

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

05-08-2024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2020093184 A1	26-03-2020	US 2020093184 A1	26-03-2020
		WO 2020069052 A1	02-04-2020
US 2023000151 A1	05-01-2023	CA 3123785 A1	06-08-2021
		EP 3890524 A1	13-10-2021
		JP 7250159 B2	31-03-2023
		JP 2022525027 A	11-05-2022
		US 2023000151 A1	05-01-2023
CN 212678364 U	12-03-2021	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82