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

(11) **EP 4 559 332 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
28.05.2025 Bulletin 2025/22

(21) Application number: **24187876.8**

(22) Date of filing: **10.07.2024**

(51) International Patent Classification (IPC):
A24F 40/30 *(2020.01)* *A24F 40/40* *(2020.01)*

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

(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: **21.11.2023 CN 202323143278 U**

(71) Applicant: **Shenzhen Cigreat Technology Co., Ltd.**
Shenzhen (CN)

(72) Inventors:
- **SHEN, Minliang**
  Shenzhen (CN)
- **LI, Heng**
  Shenzhen (CN)
- **TAN, Weilong**
  Shenzhen (CN)
- **HUANG, Donghua**
  Shenzhen (CN)

(74) Representative: **Cabinet Chaillot**
16/20, avenue de l'Agent Sarre
B.P. 74
92703 Colombes Cedex (FR)

(54) ROTATABLE ELECTRONIC CIGARETTE

(57) A rotatable electronic cigarette having a battery assembly and a cartridge assembly; the cartridge assembly has a plurality of cartridges; each cartridge has an electricity conducting electrode assembly; the battery assembly has a first electricity supplying electrode assembly and a second electricity supplying electrode assembly; electricity conducting electrode assemblies of all the cartridges are circumferentially arranged and spaced apart from one another by equal distances; the first electricity supplying electrode assembly and the second electricity supplying electrode assembly are arranged along a circumferential direction and spaced apart from one another; a distance between the first electricity supplying electrode assembly and the second electricity supplying electrode assembly is the same as a distance between the electricity conducting electrode assemblies of every two adjacent cartridges; the electricity conducting electrode assembly of each cartridge includes a first electricity conducting electrode and a second electricity conducting electrode; the first electricity supplying electrode assembly has a first electricity supplying positive electrode and a first electricity supplying negative electrode; the second electricity supplying electrode assembly has a second electricity supplying positive electrode and a second electricity supplying negative electrode; the first electricity supplying negative electrode is located adjacent to the second electricity supplying positive electrode; a distance between the first electricity supplying negative electrode and the second electricity supplying positive electrode is the same as a distance between the first electricity supplying positive electrode and the first electricity supplying negative electrode; the battery assembly is rotatably connected with respect to the cartridge assembly so that the electricity conducting electrode assemblies of any two adjacent cartridges are being electrically activated simultaneously, or the electricity conducting electrode assembly of just one of any of the plurality of cartridges is being electrically activated.

EP 4 559 332 A1

Description

Technical Field

[0001] The present invention relates to a kind of rotatable electronic cigarette.

Background Art

[0002] Electronic cigarettes, also known as simulated cigarettes, are mainly used to substitute conventional cigarettes and to assist smoking cessation. Electronic cigarettes look and taste like conventional cigarettes, and they are even made with a lot more flavors than conventional cigarettes. Also, electronic cigarettes create sensational similarities of inhaling the smoke together with its flavor just like conventional cigarettes. Using electronic cigarettes in lieu of conventional cigarettes may be more healthy and environmental friendly. Generally speaking, an electronic cigarette is a micro low voltage electronic atomizing device, which heats and atomizes flavored tobacco solutions into aerosol for smoking. A vape rod of an electronic cigarette at least comprises an atomizer and electronic components.

[0003] Nowadays, an electronic cigarette commonly available in the market usually contains only one cartridge which can only accommodate one kind of e-liquid. This kind of electronic cigarette limits the use of electronic cigarette at least to a certain extent. For example, users cannot choose from two or more kinds of e-liquids of different flavors according to their own needs, thereby failing to meet the diversified demands of the users.

Disclosure of the Invention

[0004] In view of the aforesaid disadvantages now present in the prior art, the present invention provides a kind of rotatable electronic cigarette according to the technical solutions described below:

A rotatable electronic cigarette, comprising a battery assembly and a cartridge assembly; the cartridge assembly comprises a plurality of cartridges; each of the plurality of cartridges is provided with an electricity conducting electrode assembly for conducting electricity; the battery assembly comprises a first electricity supplying electrode assembly and a second electricity supplying electrode assembly; electricity conducting electrode assemblies of all the cartridges are circumferentially arranged and spaced apart from one another by equal distances; the first electricity supplying electrode assembly and the second electricity supplying electrode assembly of the battery assembly are arranged along a circumferential direction and spaced apart from one another; a distance between the first electricity supplying electrode assembly and the second electricity supplying electrode assembly of the battery assembly along said circumferential direction is the same as a distance between the electricity conducting electrode assemblies of every two adjacent cartridges along a circumferential direction which the electricity conducting electrode assemblies are arranged; the electricity conducting electrode assembly of each of the plurality of cartridges comprises a first electricity conducting electrode and a second electricity conducting electrode; the first electricity supplying electrode assembly comprises a first electricity supplying positive electrode and a first electricity supplying negative electrode; the second electricity supplying electrode assembly comprises a second electricity supplying positive electrode and a second electricity supplying negative electrode; the first electricity supplying negative electrode is located adjacent to the second electricity supplying positive electrode, wherein a distance between the first electricity supplying negative electrode and the second electricity supplying positive electrode along the circumferential direction which the first electricity supplying electrode assembly and the second electricity supplying electrode assembly are arranged is the same as a distance between the first electricity supplying positive electrode and the first electricity supplying negative electrode along the circumferential direction which the first electricity supplying electrode assembly and the second electricity supplying electrode assembly are arranged, and the distance between the first electricity supplying negative electrode and the second electricity supplying positive electrode along the circumferential direction which the first electricity supplying electrode assembly and the second electricity supplying electrode assembly are arranged is also the same as a distance between the second electricity supplying positive electrode and the second electricity supplying negative electrode along the circumferential direction which the first electricity supplying electrode assembly and the second electricity supplying electrode assembly are arranged; the battery assembly is rotatably connected with respect to the cartridge assembly so that the electricity conducting electrode assemblies of any two adjacent cartridges are being electrically activated simultaneously, or the electricity conducting electrode assembly of just one of any of the plurality of cartridges is being electrically activated.

[0005] Further, the battery assembly is provided with an air inlet hole, a first through hole, a second through hole, and a third through hole; the air inlet hole is in communication with the first through hole, the second through hole, and the third through hole; each of the plurality of cartridges is provided with an air opening; air openings of the plurality of cartridges are circumferentially arranged; the first through hole, the second through hole, and the third through hole are arranged circumferentially and spaced apart from one another; when the electricity conducting electrode assemblies of any two adjacent cartridges are in electrical contact with the first electricity supply electrode assembly and the second electricity supplying electrode assembly respectively, the air openings of the two adjacent cartridges are aligned and in communication with the first through hole

and the third through hole respectively; when the first electricity conducting electrode and the second electricity conducting electrode of the electricity conducting electrode assembly of just one of any of the plurality of cartridges are in electrical contact with the second electricity supplying positive electrode and the first electricity supplying negative electrode respectively, the air opening of the cartridge is aligned and in communication with the second through hole.

[0006] Further, the battery assembly is provided with a display device to indicate an amount of remaining battery power.

[0007] The present invention has the following beneficial effects:

According to the present invention, different cartridges can accommodate different kinds of e-liquids of different flavors. When the battery assembly is rotated with respect to the cartridge assembly such that the electricity conducting electrode assemblies of any two adjacent cartridges are aligned and in contact with the first electricity supply electrode assembly and the second electricity supplying electrode assembly respectively, the two adjacent cartridges are electrically activated to operate, so that user can inhale smoke of mixed flavors. When the battery assembly is rotated with respect to the cartridge assembly such that the first electricity conducting electrode and the second electricity conducting electrode of the electricity conducting electrode assembly of just one of any of the plurality of cartridges are in electrical contact with the second electricity supplying positive electrode and the first electricity supplying negative electrode respectively, the electricity conducting electrode assembles of other cartridges are no longer able to correspond to any of the first electricity supply electrode assembly and the second electricity supplying electrode assembly and thus not being electrically activated, therefore user can select to inhale a particular flavor from just one cartridge. The structures described above can meet the user's demand for choosing different flavors.

Brief Description of Drawings

[0008]

FIG. 1 is a schematic structural view of the rotatable electronic cigarette according to the present invention.

FIG. 2 is an exploded view of the rotatable electronic cigarette according to the present invention.

FIG. 3 is another exploded view of the rotatable electronic cigarette according to the present invention.

Best Mode for Carrying out the Invention

[0009] The technical solutions of the present invention will be described more clearly and thoroughly below with reference to the figures illustrating embodiments of the present invention. Apparently, the embodiments that will be described below are only some but not all of the possible embodiments of the present invention. Any other alternative embodiments obtainable by a person skilled in this field of art without requiring any inventive effort should also fall within the scope of protection of the present invention.

[0010] With reference to FIGs. 1 to 3, a rotatable electronic cigarette is provided, comprising a battery assembly 1 and a cartridge assembly 2; the cartridge assembly 2 comprises a plurality of cartridges 21; each of the plurality of cartridges 21 is provided with an electricity conducting electrode assembly 211 for conducting electricity; the battery assembly 1 comprises a first electricity supplying electrode assembly 11 and a second electricity supplying electrode assembly 12; electricity conducting electrode assemblies 211 of all the cartridges 21 are circumferentially arranged and spaced apart from one another by equal distances; the first electricity supplying electrode assembly 11 and the second electricity supplying electrode assembly 12 of the battery assembly 1 are arranged along a circumferential direction and spaced apart from one another; a distance between the first electricity supplying electrode assembly 11 and the second electricity supplying electrode assembly 12 of the battery assembly 1 along said circumferential direction is the same as a distance between the electricity conducting electrode assemblies 211 of every two adjacent cartridges 21 along a circumferential direction which the electricity conducting electrode assemblies 211 are arranged; the electricity conducting electrode assembly 211 of each of the plurality of cartridges 21 comprises a first electricity conducting electrode 2111 and a second electricity conducting electrode 2112; the first electricity supplying electrode assembly 11 comprises a first electricity supplying positive electrode 111 and a first electricity supplying negative electrode 112; the second electricity supplying electrode assembly 12 comprises a second electricity supplying positive electrode 121 and a second electricity supplying negative electrode 122; the first electricity supplying negative electrode 112 is located adjacent to the second electricity supplying positive electrode 121, wherein a distance between the first electricity supplying negative electrode 112 and the second electricity supplying positive electrode 121 along the circumferential direction which the first electricity supplying electrode assembly 11 and the second electricity supplying electrode assembly 12 are arranged is the same as a distance between the first electricity supplying positive electrode 111 and the first electricity supplying negative electrode 112 along the circumferential direction which the first electricity supplying electrode assembly 11 and the second electricity supplying electrode assembly 12 are arranged, and the distance between the first electricity supplying negative electrode 112 and the second electricity supplying positive electrode 121 along the circumferential direction which the first electricity supplying electrode assembly 11 and the second

electricity supplying electrode assembly 12 are arranged is also the same as a distance between the second electricity supplying positive electrode 121 and the second electricity supplying negative electrode 122 along the circumferential direction which the first electricity supplying electrode assembly 11 and the second electricity supplying electrode assembly 12 are arranged; the battery assembly 1 is rotatably connected with respect to the cartridge assembly 2 so that the electricity conducting electrode assemblies 211 of any two adjacent cartridges 21 are being electrically activated simultaneously, or the electricity conducting electrode assembly 211 of just one of any of the plurality of cartridges 21 is being electrically activated.

[0011] According to the present invention, different cartridges 21 can accommodate different kinds of e-liquids of different flavors. When the battery assembly 1 is rotated with respect to the cartridge assembly 2 such that the electricity conducting electrode assemblies 211 of any two adjacent cartridges 21 are aligned and in contact with the first electricity supply electrode assembly 11 and the second electricity supplying electrode assembly 12 respectively, the two adjacent cartridges are electrically activated to operate, so that user can inhale smoke of mixed flavors. When the battery assembly 1 is rotated with respect to the cartridge assembly 2 such that the first electricity conducting electrode 2111 and the second electricity conducting electrode 2112 of the electricity conducting electrode assembly 211 of just one of any of the plurality of cartridges 21 are in electrical contact with the second electricity supplying positive electrode 121 and the first electricity supplying negative electrode 112 respectively, the electricity conducting electrode assembles 211 of other cartridges 21 are no longer able to correspond to any of the first electricity supply electrode assembly 11 and the second electricity supplying electrode assembly 12 and thus not being electrically activated, therefore user can select to inhale a particular flavor from just one cartridge 21. The structures described above can meet the user's demand for choosing different flavors.

[0012] Further, the battery assembly 1 is provided with an air inlet hole 13, a first through hole 14, a second through hole 15, and a third through hole 16; the air inlet hole 13 is in communication with the first through hole 14, the second through hole 15, and the third through hole 16; each of the plurality of cartridges 21 is provided with an air opening 212; air openings 212 of the plurality of cartridges 21 are circumferentially arranged; the first through hole 14, the second through hole 15, and the third through hole 16 are arranged circumferentially and spaced apart from one another. When the electricity conducting electrode assemblies 211 of any two adjacent cartridges 21 are in electrical contact with the first electricity supply electrode assembly 11 and the second electricity supplying electrode assembly 12 respectively, the air openings 212 of the two adjacent cartridges 21 are aligned and in communication with the first through hole 14 and the third through hole 16 respectively. When the first electricity conducting electrode 2111 and the second electricity conducting electrode 2112 of the electricity conducting electrode assembly 211 of just one of any of the plurality of cartridges 21 are in electrical contact with the second electricity supplying positive electrode 121 and the first electricity supplying negative electrode 112 respectively, the air opening 212 of the cartridge 21 is aligned and in communication with the second through hole 15.

[0013] Further, the battery assembly 1 is provided with a display device 17 to indicate an amount of remaining battery power.

[0014] The embodiments of the preset invention are described and illustrated above, but it should be noted that, various changes, modifications, replacements and alternative configurations may be possibly made by a person skilled in the art without departing from the principle and essence of the present invention. The scope of the present invention should be limited by the claims and their equivalents.

Claims

1. A rotatable electronic cigarette, comprising a battery assembly (1) and a cartridge assembly (2); **characterized in that**:
the cartridge assembly (2) comprises a plurality of cartridges (21); each of the plurality of cartridges (21) is provided with an electricity conducting electrode assembly (211) for conducting electricity; the battery assembly (1) comprises a first electricity supplying electrode assembly (11) and a second electricity supplying electrode assembly (12); electricity conducting electrode assemblies (211) of all the cartridges (21) are circumferentially arranged and spaced apart from one another by equal distances; the first electricity supplying electrode assembly (11) and the second electricity supplying electrode assembly (12) of the battery assembly (1) are arranged along a circumferential direction and spaced apart from one another; a distance between the first electricity supplying electrode assembly (11) and the second electricity supplying electrode assembly (12) of the battery assembly (1) along said circumferential direction is the same as a distance between the electricity conducting electrode assemblies (211) of every two adjacent cartridges (21) along a circumferential direction which the electricity conducting electrode assemblies (211) are arranged; the electricity conducting electrode assembly (211) of each of the plurality of cartridges (21) comprises a first electricity conducting electrode (2111) and a second electricity conducting electrode (2112); the first electricity supplying electrode assembly (11) comprises a first electricity supplying positive electrode (111) and a first electricity supplying negative electrode

(112); the second electricity supplying electrode assembly (12) comprises a second electricity supplying positive electrode (121) and a second electricity supplying negative electrode (122); the first electricity supplying negative electrode (112) is located adjacent to the second electricity supplying positive electrode (121), wherein a distance between the first electricity supplying negative electrode (112) and the second electricity supplying positive electrode (121) along the circumferential direction which the first electricity supplying electrode assembly (11) and the second electricity supplying electrode assembly (12) are arranged is the same as a distance between the first electricity supplying positive electrode (111) and the first electricity supplying negative electrode (112) along the circumferential direction which the first electricity supplying electrode assembly (11) and the second electricity supplying electrode assembly (12) are arranged, and the distance between the first electricity supplying negative electrode (112) and the second electricity supplying positive electrode (121) along the circumferential direction which the first electricity supplying electrode assembly (11) and the second electricity supplying electrode assembly (12) are arranged is also the same as a distance between the second electricity supplying positive electrode (121) and the second electricity supplying negative electrode (122) along the circumferential direction which the first electricity supplying electrode assembly (11) and the second electricity supplying electrode assembly (12) are arranged; the battery assembly (1) is rotatably connected with respect to the cartridge assembly (2) so that the electricity conducting electrode assemblies (211) of any two adjacent cartridges (21) are being electrically activated simultaneously, or the electricity conducting electrode assembly (211) of just one of any of the plurality of cartridges (21) is being electrically activated.

2. The rotatable electronic cigarette of claim 1, wherein the battery assembly (1) is provided with an air inlet hole (13), a first through hole (14), a second through hole (15), and a third through hole (16); the air inlet hole (13) is in communication with the first through hole (14), the second through hole (15), and the third through hole (16); each of the plurality of cartridges (21) is provided with an air opening (212); air openings (212) of the plurality of cartridges (21) are circumferentially arranged; the first through hole (14), the second through hole (15), and the third through hole (16) are arranged circumferentially and spaced apart from one another; when the electricity conducting electrode assemblies (211) of any two adjacent cartridges (21) are in electrical contact with the first electricity supply electrode assembly (11) and the second electricity supplying electrode assembly (12) respectively, the air openings (212) of the two adjacent cartridges (21) are aligned and in communication with the first through hole (14) and the third through hole (16) respectively; when the first electricity conducting electrode (2111) and the second electricity conducting electrode (2112) of the electricity conducting electrode assembly (211) of just one of any of the plurality of cartridges (21) are in electrical contact with the second electricity supplying positive electrode (121) and the first electricity supplying negative electrode (112) respectively, the air opening (212) of the cartridge (21) is aligned and in communication with the second through hole (15).

3. The rotatable electronic cigarette of claim 1 or 2, wherein the battery assembly (1) is provided with a display device (17) to indicate an amount of remaining battery power.

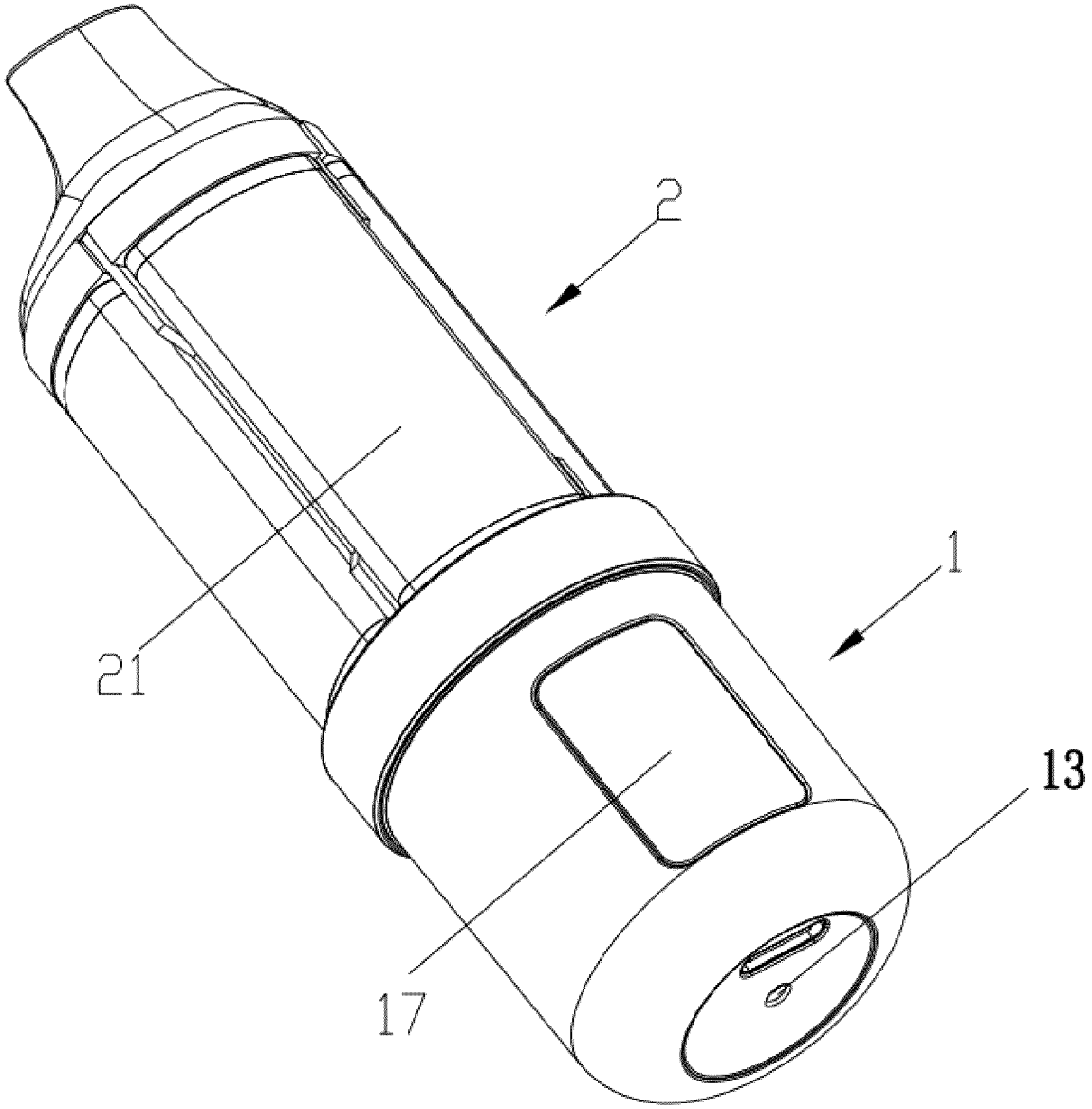

FIG.1

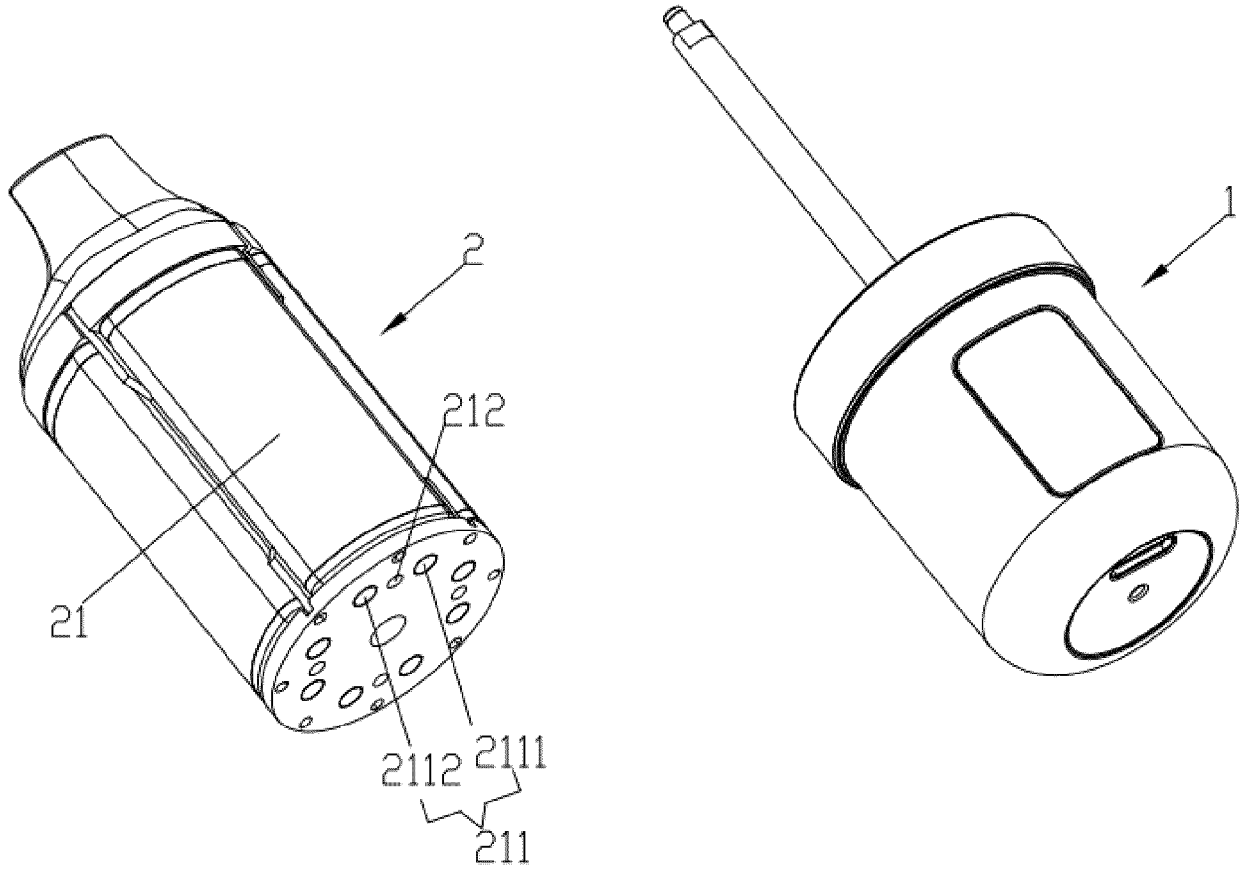

FIG.2

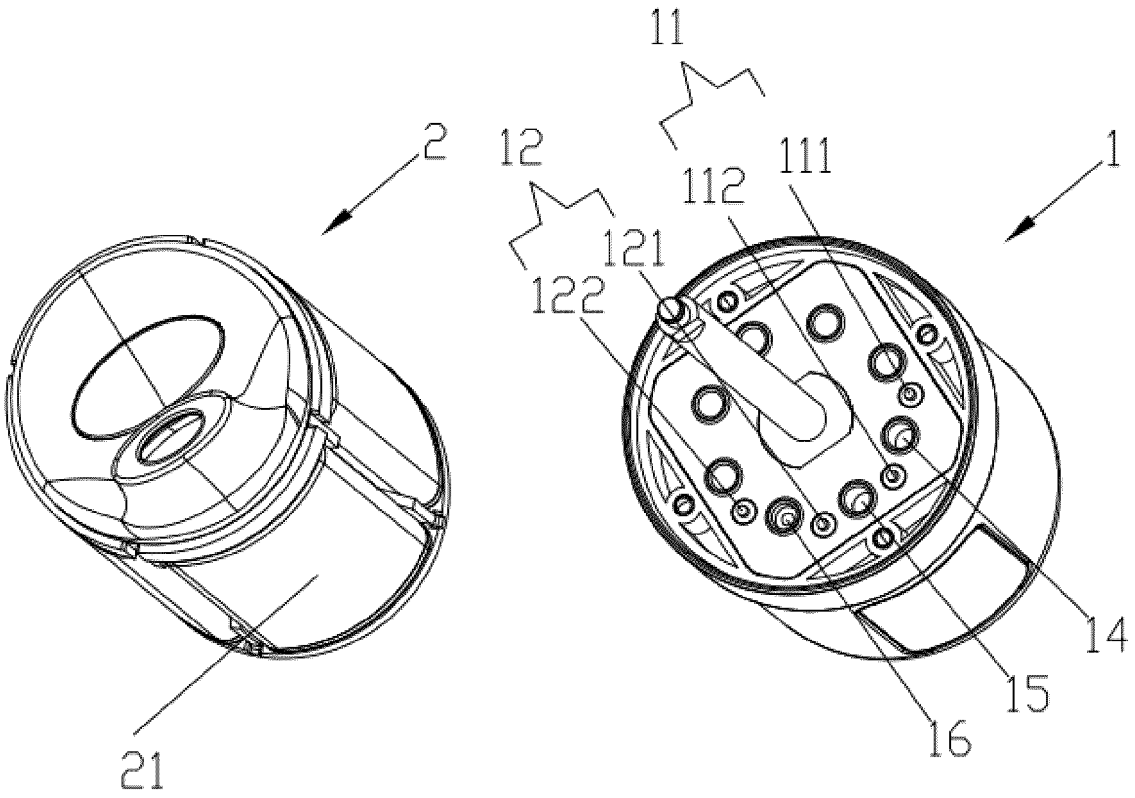

FIG.3

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 24 18 7876

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	CN 113 786 007 A (SHENZHEN LAOSIWEIBO TECH CO LTD) 14 December 2021 (2021-12-14) * the whole document *	1-3	INV. A24F40/30 ADD. A24F40/40
A	CN 116 268 595 A (ATMOSPHERE INT CO LTD) 23 June 2023 (2023-06-23) * the whole document *	1-3	
A	CN 211 268 656 U (OU JUNBIAO) 18 August 2020 (2020-08-18) * the whole document *	1-3	
A	CN 214 547 196 U (DONGGUAN RUIHONG HARDWARE CO LTD) 2 November 2021 (2021-11-02) * the whole document *	1-3	
A	WO 2023/082098 A1 (SHENZHEN QIWEI TECH CO LTD [CN]) 19 May 2023 (2023-05-19) * the whole document *	1-3	

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	14 January 2025	Sylvestre, Jonathan

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 18 7876

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.

14-01-2025

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CN 113786007 A	14-12-2021	NONE	
CN 116268595 A	23-06-2023	CN 116268595 A	23-06-2023
		EP 4449913 A1	23-10-2024
		EP 4454498 A1	30-10-2024
		GB 2631076 A	25-12-2024
CN 211268656 U	18-08-2020	NONE	
CN 214547196 U	02-11-2021	NONE	
WO 2023082098 A1	19-05-2023	NONE	

EPO FORM P0459

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