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

(11) **EP 4 091 466 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
23.11.2022 Bulletin 2022/47

(21) Application number: **21741957.1**

(22) Date of filing: **15.01.2021**

(51) International Patent Classification (IPC):
A24F 40/10 *(2020.01)*

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

(86) International application number:
PCT/CN2021/072202

(87) International publication number:
WO 2021/143860 (22.07.2021 Gazette 2021/29)

(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 MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(30) Priority: **17.01.2020 CN 202020113367 U**

(71) Applicant: **Changzhou Patent Electronic Technology Co., Ltd**
Changzhou, Jiangsu 213125 (CN)

(72) Inventors:
- **QIU, Weihua**
  hangzhou, Jiangsu 213125 (CN)
- **LIU, Yinglai**
  hangzhou, Jiangsu 213125 (CN)

(74) Representative: **Zaboliene, Reda**
Metida
Business center Vertas
Gyneju str. 16
01109 Vilnius (LT)

(54) LIQUID INJECTION STRUCTURE, ATOMIZER AND AEROSOL GENERATION DEVICE THEREOF

(57) A liquid injection structure, comprising a sleeve (31), an elastic member (34), a positioning member (32) provided in the sleeve (31), and a liquid injection pipe (33) slidably provided between the sleeve (31) and the positioning member (32); one end of the elastic member (34) abuts against the sleeve (31), the other end of the elastic member (34) abuts against the liquid injection pipe (33), the sleeve (31) is provided with a first liquid injection opening (312), and the liquid injection pipe (33) is provided with a second liquid injection opening (336); and when the liquid injection pipe (33) abuts against the positioning member (32), the first liquid injection opening (312) is not in communication with the second liquid injection opening (336); and when the liquid injection pipe (33) slides relative to the positioning member (32), the first liquid injection opening (312) is in communication with the second liquid injection opening (336). The positioning member (32) is provided in the sleeve (31) and the liquid injection pipe (33) is slidably provided between the sleeve (31) and the positioning member (32), and by sliding the liquid injection pipe (33) in the sleeve (31) relative to the positioning member (32), a liquid injection operation can be performed, allowing a simple operation and facilitating liquid injection.

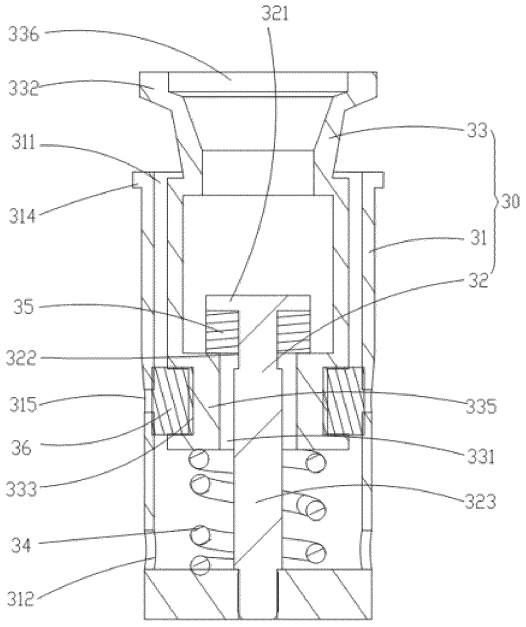

FIG. 3

EP 4 091 466 A1

Description

TECHNICAL FIELD

[0001] The present disclosure relates to the technical field of simulated smoking, in particular to a liquid injection structure, an atomizer and an aerosol generation device having the liquid injection structure.

BACKGROUND

[0002] The aerosol generation device includes an atomizer and a power supply device electrically connected to the atomizer. The atomizer is provided with a liquid storage chamber and an atomizing assembly. Under the electric driving of the power supply device, the atomizing assembly heats the aerosol-forming substrate supplied by the liquid storage chamber to form smoke for the user to inhale. When the aerosol-forming substrate in the aerosol generation device is used up, the e-liquid can be injected into the liquid storage chamber through the liquid injection structure on the aerosol generation device. However, in the existing aerosol generation device, the liquid injection tube needs to be pressed into the liquid storage chamber before liquid injection, and the aerosol-forming substrate in the liquid storage chamber affects the aerosol-forming substrate in the liquid injection tube to flow out from the liquid injection tube, thereby causing liquid injection being not smooth.

SUMMARY

[0003] In view of above, the present disclosure provides a liquid injection structure, an atomizer and an aerosol generation device that can be prevented from being easily opened by children.

[0004] The technical solution adopted by the present disclosure to solve the problem is: a liquid injection structure includes a sleeve, an elastic member, a positioning member disposed in the sleeve and fixedly connected to the sleeve, and a liquid injection tube slidably arranged between the sleeve and the positioning member; wherein one end of the elastic member abuts against the sleeve, the other end of the elastic member abuts against the liquid injection tube, the sleeve is provided with a first liquid injection port, one end of the liquid injection tube away from the first liquid injection port is provided with a second liquid injection port; when the liquid injection tube abuts against the positioning member, the first liquid injection port is not communicated with the second liquid injection port; by sliding the liquid injection tube relative to the positioning member, the liquid injection tube compresses the elastic member, and the sealing of the positioning member to the liquid injection tube is removed such that the first liquid injection port is communicated with the second liquid injection port.

[0005] Further, the liquid injection tube is provided with a sliding portion, the positioning member is provided with a sealing portion configured for sealing the sliding portion.

[0006] Further, the positioning member further includes a positioning main body, the sealing portion is provided at one end of the positioning main body, the sealing portion and the positioning main body form a T-shaped structure, the sliding portion is a protrusion protruding from one end of the liquid injection tube, the sliding portion is provided with a penetrating hole, a diameter of the penetrating hole is between an outer diameter of the positioning main body and an outer diameter of the sealing portion, the liquid injection tube is sleeved at the outside of the positioning main body, the gap between an inner wall of the penetrating hole and an outer wall of the positioning main body forms a liquid inlet passage, the liquid inlet passage can be sealed by the sealing portion.

[0007] Further, the liquid injection structure further includes a first sealing member, the first sealing member is sleeved at the outside the positioning main body and is located near the sealing portion, an outer diameter of the first sealing member is larger than the diameter of the penetrating hole.

[0008] Further, the liquid injection structure further includes a second sealing member, and the second sealing member is sandwiched between the sleeve and the liquid injection tube.

[0009] Further, an outer peripheral wall of the liquid injection tube is recessed to form an accommodation groove along a circumferential direction of the liquid injection tube, an inner ring of the second sealing member is accommodated in the accommodation groove, an outer ring of the second sealing member is sandwiched between the sleeve and the liquid injection tube.

[0010] Further, the sleeve is provided with an air exhaust port, and one end of the sleeve is opened to form an open end, by sliding the liquid injection tube relative to the positioning member, the air exhaust port is communicated with the open end.

[0011] Further, the elastic member is a spring, and the elastic member is sleeved at the outside of the positioning member.

[0012] An atomizer includes the liquid injection structure described above, wherein the atomizer further includes a liquid storage assembly, the liquid storage assembly includes a liquid storage shell with a liquid storage chamber, the

liquid injection structure is mounted to the liquid storage shell, the sleeve is provided with an air exhaust port, both the air exhaust port and the first liquid injection port communicate with the liquid storage chamber.

[0013] An aerosol generation device includes the atomizer described above.

[0014] The beneficial effects of the present disclosure are: in the liquid injection structure, the atomizer or the aerosol generation device provided by the present disclosure, by setting the positioning member in the sleeve and slidably setting the liquid injection tube between the sleeve and the positioning member, the liquid injection operation can be performed by sliding the liquid injection tube relative to the positioning member in the sleeve. Therefore, the operation is simple and the liquid injection is convenient.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The following further describes the present disclosure with reference to the accompanying drawings and embodiments.

FIG. 1 is a schematic diagram of the atomizer of the present disclosure (in the state of not injecting liquid);
FIG. 2 is another schematic diagram of the atomizer shown in FIG. 1 (in the liquid injection state);
FIG. 3 is a schematic diagram of the liquid injection structure of the atomizer shown in FIG. 1;
FIG. 4 is a schematic diagram of the liquid injection structure of the atomizer shown in FIG. 2.

[0016] The part names and reference signs shown in the figures are as follows:

atomizer 100	liquid storage assembly 10	liquid storage shell 11
electrode connecting member 12	liquid storage casing 111	end cover 112
liquid storage chamber 113	vent tube 114	mounting groove 115
air inlet hole 1121	connecting member 13	atomizing assembly 20
atomizing tube 21	atomizing chamber 211	liquid inlet hole 212
sleeve 31	positioning member 32	liquid injection tube 33
liquid inlet passage 334	open end 311	first liquid injection port 312
inner sleeve 214	abutting edge 314	air exhaust port 315
step surface 1151	sealing portion 321	accommodating groove 322
accommodation groove 333	penetrating hole 331	flange 332
first sealing member 35	through hole 131	elastic member 34
second sealing member 36	smoke outlet port 116	heating structure 22
outer sleeve 213	sliding portion 335	second liquid injection port 336
positioning main body 323		

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0017] The present disclosure will now be described in detail with reference to the accompanying drawings. These figures are simplified schematic diagrams, which only illustrate the basic structure of the present disclosure in a schematic manner, so they only show the structures related to the present disclosure.

[0018] As shown in FIG. 1, the present disclosure provides an aerosol generation device, the aerosol generation device includes an atomizer 100 and a power supply device electrically connected to the atomizer 100. In use, the power supply device supplies power to the atomizer 100, so that the aerosol-forming substrate stored in the atomizer 100 is atomized to generate smoke for the user to inhale.

[0019] Referring to FIG. 1 and FIG. 2, the atomizer 100 includes a liquid storage assembly 10, an atomizing assembly 20 accommodated in the liquid storage assembly 10, and a liquid injection structure 30 disposed on the liquid storage assembly 10.

[0020] The liquid storage assembly 10 includes a liquid storage shell 11 and two electrode connecting members 12 arranged on the liquid storage shell 11. The liquid storage shell 11 includes a liquid storage casing 111 and an end cover 112 disposed at one end of the liquid storage casing 111. The liquid storage casing 111 is a hollow cylindrical structure

with one open end. The liquid storage casing 111 is hollow inside to form a liquid storage chamber 113. An inner wall of one end of the liquid storage casing 111 away from the end cover 112 extends toward the end cover 112 to form a vent tube 114, and the liquid storage casing 111 is provided with a smoke outlet port 116 that communicates with the inner cavity of the vent tube 114. The end cover 112 is located at the open end of the liquid storage casing 111 to seal the liquid storage chamber 113. The end cover 112 is recessed to form a mounting groove 115 communicating with the liquid storage chamber 113. The inner wall of the mounting groove 115 is provided with a step surface 1151. The end cover 112 is provided with an air inlet hole 1121. The two electrode connecting members 12 are arranged on the end cover 112. One of the electrode connecting members 12 is electrically connected to one of the positive and negative electrodes of the power supply device. The other electrode connecting member 12 is electrically connected to the other electrode of the positive and negative electrodes of the power supply device.

[0021] In one specific embodiment, the liquid storage assembly 10 further includes a connecting member 13. The connecting member 13 is accommodated in the open end of the liquid storage casing 111. The connecting member 13 is provided with a through hole 131 and a communication hole. The through hole 131 communicates with the mounting groove 115. The communication hole communicates with the air inlet hole 1121. By providing the connecting member 13, the sealing between the end cover 112 and the liquid storage casing 111 can be enhanced to prevent the aerosol-forming substrate in the liquid storage chamber 113 from leaking from the gap between the end cover 112 and the liquid storage casing 111. It can be understood that, in this embodiment, the connecting member 13 is made of a sealing material such as silicone or rubber.

[0022] The atomizing assembly 20 includes an atomizing tube 21 and a heating structure 22 accommodated in the atomizing tube 21.

[0023] The atomizing tube 21 is accommodated in the liquid storage chamber 113. One end of the atomizing tube 21 is connected with the connecting member 13, the other end of the atomizing tube 21 is connected with the vent tube 114. The inside of the atomizing tube 21 is hollow to form an atomizing chamber 211. The atomizing chamber 211 is in communication with the air inlet hole 1121 and the inner cavity of the vent tube 114. A liquid inlet hole 212 is provided at the side wall of the atomizing tube 21. The liquid inlet hole 212 communicates with both the liquid storage chamber 113 and the atomizing chamber 211.

[0024] The heating structure 22 is accommodated in the atomizing chamber 211. The heating structure 22 includes a liquid guiding member and a heating member that are in contact with each other. The liquid guiding member is used to absorb the aerosol-forming substrate. The heating member is used for heating the aerosol-forming substrate absorbed by the liquid guiding member. The liquid guiding member is in contact with the atomizing tube 21. The heating member is provided with two pins, one of the pins corresponds to and is electrically connected to one of the electrode connecting members 12, so that the heating member is electrically connected to the power supply device. During use, the aerosol-forming substrate in the liquid storage chamber 113 enters the atomizing chamber 211 through the liquid inlet hole 212, the liquid guiding member absorbs and stores the aerosol-forming substrate; when the aerosol generation device is activated, the heating member heats the aerosol-forming substrate to generate smoke under the electric driving of the power supply device. When the user inhales, the external air enters the atomizing chamber 211 through the air inlet hole 1121 and mixes with the smoke, and the mixed air enters the user's mouth through the inner cavity of the vent tube 114 and the smoke outlet port 116. It can be understood that in this embodiment, the liquid guiding member can be any one of cotton, fiber rope, porous ceramics, porous graphite or foamed metal; the heating member can be any one of a heating wire, a heating sheet or a heating cylinder.

[0025] In one specific embodiment, the atomizing tube 21 includes an outer sleeve 213 and an inner sleeve 214 accommodated in the outer sleeve 213. The outer sleeve 213 and the inner sleeve 214 are both hollow cylinders with open ends. The atomizing chamber 211 is formed by the inner cavity of the inner sleeve 214. The liquid inlet hole 212 is provided in the outer sleeve 213. The inner sleeve 214 is provided with a flow hole communicating with the liquid inlet hole 212. A gap for temporarily storing the aerosol-forming substrate is formed between the inner sleeve 214 and the outer sleeve 213. The aerosol-forming substrate in the liquid storage chamber 113 is prevented from flowing into the atomizing chamber 211 in large quantities and cannot be atomized in time by the heating structure 22.

[0026] The liquid injection structure 30 includes a sleeve 31, an elastic member 34, a positioning member 32 disposed in the sleeve 31 and fixedly connected to the sleeve 31, and a liquid injection tube 33 slidably arranged between the sleeve 31 and the positioning member 32. One end of the elastic member 34 abuts against the sleeve 31, the other end of the elastic member 34 abuts against the liquid injection tube. It should be noted that the sleeve 31 and the positioning member 32 are detachably connected or non-detachably connected. The detachable connection can be screwing connection, snapping connection, etc. The non-detachably connection can be tight fitting connection, welding, etc. Alternatively, the sleeve 31 and the positioning member 32 can be integrally formed.

[0027] As shown in FIG. 1, FIG. 3 and FIG. 4, the sleeve 31 has a substantially hollow cylindrical structure. One end of the sleeve 31 is opened to form an open end 311. The sleeve 31 is sequentially provided with an air exhaust port 315 and a first liquid injection port 312 from a direction close to the open end 311 to a direction away from the open end 311. An abutting edge 314 is protruded at the outer wall of the sleeve 31. The sleeve 31 is mounted in the mounting groove

115. The air exhaust port 315 and the first liquid injection port 312 are both communicated with the liquid storage chamber 113. The abutting edge 314 abuts against the step surface 1151, so as to limit the position when installing the sleeve 31.

[0028] One end of the positioning member 32 is connected to the bottom wall of the inner cavity of the sleeve 31, the other end of the positioning member 32 is accommodated in the sleeve 31. The positioning member 32 includes a positioning main body 323 and a sealing portion 321 disposed at one end of the positioning main body 323. The sealing portion 321 is disposed at one end of the positioning main body 323 away from the bottom wall of the sleeve 31. In this embodiment, the sealing portion 321 and the positioning main body 323 form a T-shaped structure. The positioning main body 323 is radially recessed near the sealing portion 321 to form an accommodating groove 322. The liquid injection structure 30 further includes a first sealing member 35, the first sealing member 35 is sleeved at the outside of the positioning main body 323 and accommodated in the accommodating groove 322. In this embodiment, the positioning member 32 is integrally formed with the sleeve 31. It can be understood that, in other embodiments not shown, the positioning member 32 and the sleeve 31 may be formed separately. The bottom wall of the sleeve 31 is provided with a receiving groove for installing the positioning member 32. The positioning member 32 is provided to prevent the liquid injection tube 33 from being separated from the positioning member 32 when the liquid injection tube 33 slides away from the positioning member 32.

[0029] The liquid injection tube 33 is roughly in the form of a hollow cylindrical structure with an opening at one end. One end of the liquid injection tube 33 is provided with a sliding portion 335. One end of the liquid injection tube 33 away from the sliding portion 335 is opened to form a second liquid injection port 336. That is, one end of the liquid injection tube 33 away from the first liquid injection port 312 is provided with a second liquid injection port 336. In this embodiment, the sliding portion 335 is a protrusion protruding from one end of the liquid injection tube 33. A penetrating hole 331 is defined in the sliding portion 335. The diameter of the penetrating hole 331 is between the outer diameter of the positioning main body 323 and the outer diameter of the sealing portion 321, and the diameter of the penetrating hole 331 is smaller than the outer diameter of the first sealing member 35. The other end of the liquid injection tube 33 is provided with a flange 332. The diameter of the flange 332 is larger than the diameter of the sleeve 31. The outer peripheral wall of the liquid injection tube 33 is recessed to form an accommodation groove 333 along the circumferential direction of the liquid injection tube 33. The liquid injection structure 30 further includes a second sealing member 36. The second sealing member 36 is sleeved at the outside of the liquid injection tube 33. The inner ring of the second sealing member 36 is accommodated in the accommodation groove 333. The outer ring of the second sealing member 36 is sandwiched between the sleeve 31 and the liquid injection tube 33, so that the second sealing member 36 is sandwiched between the sleeve 31 and the liquid injection tube 33. The liquid injection tube 33 is accommodated in the sleeve 31, the sliding portion 335 is slidably sleeved at the outside of the positioning main body 323 through the penetrating hole 331. The gap between the inner wall of the penetrating hole and the outer wall of the positioning main body 323 forms a liquid inlet passage 334. The liquid inlet passage 334 communicates with the inner cavity of the sleeve 31.

[0030] The elastic member 34 is accommodated in the cavity of the sleeve 31. One end of the elastic member 34 abuts against the bottom wall of the sleeve 31, the other end of the elastic member 34 abuts against the liquid injection tube 33. In this embodiment, the elastic member 34 is a spring, the elastic member 34 is sleeved at the outside of the positioning main body 323.

[0031] When the aerosol generation device is in the normal suction state by the user, the liquid inlet passage 334 is sealed by the sealing portion 321, that is, the sliding portion 335 is sealed by the sealing portion 321. When injecting liquid into the aerosol generation device, as shown in FIG. 2 and FIG. 4, an external force is applied to move the liquid injection tube 33 along the axial direction of the sleeve 31 toward the liquid storage chamber 113, and the liquid injection tube 33 compresses the elastic member 34, the air in the inner cavity of the sleeve 31 is discharged into the liquid storage chamber 113 through the first liquid injection port 312. When the sliding portion 335 is located far away from the sealing portion 321, the inner cavity of the liquid injection tube 33 communicates with the inner cavity of the sleeve 31 through the liquid inlet passage 334, and the liquid injection operation can be performed at this time. The aerosol-forming substrate in the inner cavity of the liquid injection tube 33 is injected into the inner cavity of the sleeve 31 through the liquid inlet passage 334, and then flows into the liquid storage chamber 113 through the first liquid injection port 312. The second sealing member 36 is located below the air exhaust port 315, and the gas in the liquid storage chamber 113 is discharged to the outside of the liquid injection structure 30 through the air exhaust port 315 and the open end 311 in sequence, so as to balance the air pressure inside and outside the liquid storage chamber 113, and accordingly, prevent the aerosol-forming substrate from being unable to be injected into the liquid storage chamber 113 due to air pressure problems. When the external force is removed, under the elastic restoring force of the elastic member 34, the liquid injection tube 33 moves upward until the liquid injection tube 33 abuts against the second sealing member 36, that is, the sealing portion 321 is sealed by the sliding portion 335, the liquid injection tube 33 stops moving upward, and the liquid inlet passage 334 is sealed by the second sealing member 36. At this time, the first sealing member 35 seals the air exhaust port 315, thereby sealing the liquid storage chamber 113 again.

[0032] In this embodiment, the setting of the flange 332 is convenient for the user to press the liquid injection tube 33 to perform liquid injection operation. When the liquid injection tube 33 is caused to slide downward along the axial

direction of the sleeve 31, the flange 332 abuts against the upper end surface of the sleeve 31 to limit the sliding distance of the liquid injection tube 33.

[0033] It can be understood that, in this embodiment, the first sealing member 35 and the second sealing member 36 are both made of sealing materials such as silicone or rubber. The first sealing member 35 is sleeved at the outside of the positioning member 32. When liquid injection is not performed, the first sealing member 35 seals the liquid inlet passage 334 and also enhances the sealing between the positioning member 32 and the liquid injection tube 33. The second sealing member 36 is sandwiched between the sleeve 31 and the liquid injection tube 33 to enhance the sealing between the sleeve 31 and the liquid injection tube 33 and prevent the aerosol-forming substrate in the liquid storage chamber 113 from leaking out through the gap between the sleeve 31 and the liquid injection tube 33.

[0034] In this embodiment, by providing the elastic member 34, the elastic force of the elastic member 34 needs to be overcome when the liquid injection tube 33 is pressed downward, which can prevent the liquid injection tube 33 from being easily pressed to cause the liquid storage chamber 113 to be opened by mistake, and thus has a better child protection effect. In addition, after the liquid injection is completed, the liquid injection tube 33 can be automatically reset, and the liquid injection tube 33 can be re-sealed again without the need of the user to manually move the liquid injection tube 33, so that the operation is simple and convenient. In this embodiment, the elastic member 34 is a spring.

[0035] In this embodiment, the liquid injection structure 30 is mounted in the mounting groove 115 of the end cover 112, so as to realize the connection relationship between the liquid injection structure 30 and the liquid storage shell 11. It can be understood that, in other embodiments not shown, the liquid injection structure 30 can also be mounted at other positions of the liquid storage shell 11; for example, without limitation, the liquid injection structure 30 is mounted at the side wall of the liquid storage casing 111. When injecting liquid, the atomizer 100 needs to be adjusted to a position where the open end of the sleeve 31 is located at an upper position, so that the aerosol-forming substrate flows into the liquid storage chamber 113 under the action of its own gravity.

[0036] In this embodiment, by setting the first liquid injection port 312 on the sleeve 31, and the inner diameter of the penetrating hole 331 is between the outer diameter of the positioning main body 323 and the outer diameter of the sealing portion 321, the gap between the inner wall of the penetrating hole 331 and the outer wall of the positioning main body 323 forms the liquid inlet passage 334 communicating with the first liquid injection port 312. By sliding the liquid injection tube 33 relative to the positioning main body 323, the air between the liquid injection tube 33 and the sleeve can flow into the liquid storage chamber 113 through the first liquid injection port 312, which is convenient for pressing the liquid injection tube 33. Further, during liquid injection, the aerosol-forming substrate in the liquid injection tube 33 flows into the liquid storage chamber 113 through the liquid inlet passage 334 and the first liquid injection port 312. The structure is simple. In addition, air or liquid can flow through the first liquid injection port 312 as required, so as to avoid forming other ports on the sleeve 31 or the positioning member 32 and reduce the processing difficulty of the liquid injection structure 30.

[0037] The liquid injection structure 30 or the atomizer 100 provided by the present disclosure, by setting the positioning member 32 in the sleeve 31 and slidably setting the liquid injection tube 33 between the sleeve 31 and the positioning member 32, the liquid injection operation can be performed by sliding the liquid injection tube 33 relative to the positioning member 32 in the sleeve 31. Therefore, the operation is simple and the liquid injection is convenient.

[0038] The aerosol generation device provided by the present disclosure has the same technical effects as the above-mentioned atomizer 100 because it has all the technical features of the above-mentioned atomizer 100.

[0039] Taking the above-mentioned ideal embodiments according to the present disclosure as enlightenment, through the above description, the relevant persons can make various changes and modifications without departing from the concept of the present disclosure. The technical scope of the present disclosure is not limited to the content of the specification, and its technical scope should be determined according to the scope of the claims.

Claims

1. A liquid injection structure comprising a sleeve, an elastic member, a positioning member disposed in the sleeve and fixedly connected to the sleeve, and a liquid injection tube slidably arranged between the sleeve and the positioning member; wherein one end of the elastic member abuts against the sleeve, the other end of the elastic member abuts against the liquid injection tube, the sleeve is provided with a first liquid injection port, one end of the liquid injection tube away from the first liquid injection port is provided with a second liquid injection port; when the liquid injection tube abuts against the positioning member, the first liquid injection port is not communicated with the second liquid injection port; by sliding the liquid injection tube relative to the positioning member, the liquid injection tube compresses the elastic member, and the sealing of the positioning member to the liquid injection tube is removed such that the first liquid injection port is communicated with the second liquid injection port.

2. The liquid injection structure of claim **1**, wherein the liquid injection tube is provided with a sliding portion, the

positioning member is provided with a sealing portion configured for sealing the sliding portion.

3. The liquid injection structure of claim **2**, wherein the positioning member further comprises a positioning main body, the sealing portion is provided at one end of the positioning main body, the sealing portion and the positioning main body form a T-shaped structure, the sliding portion is a protrusion protruding from one end of the liquid injection tube, the sliding portion is provided with a penetrating hole, a diameter of the penetrating hole is between an outer diameter of the positioning main body and an outer diameter of the sealing portion, the liquid injection tube is sleeved at the outside of the positioning main body, the gap between an inner wall of the penetrating hole and an outer wall of the positioning main body forms a liquid inlet passage, the liquid inlet passage can be sealed by the sealing portion.

4. The liquid injection structure of claim **3**, wherein the liquid injection structure further comprises a first sealing member, the first sealing member is sleeved at the outside the positioning main body and is located near the sealing portion, an outer diameter of the first sealing member is larger than the diameter of the penetrating hole.

5. The liquid injection structure of claim **1**, wherein the liquid injection structure further comprises a second sealing member, and the second sealing member is sandwiched between the sleeve and the liquid injection tube.

6. The liquid injection structure of claim **5**, wherein an outer peripheral wall of the liquid injection tube is recessed to form an accommodation groove along a circumferential direction of the liquid injection tube, an inner ring of the second sealing member is accommodated in the accommodation groove, an outer ring of the second sealing member is sandwiched between the sleeve and the liquid injection tube.

7. The liquid injection structure of claim **1**, wherein the sleeve is provided with an air exhaust port, and one end of the sleeve is opened to form an open end, by sliding the liquid injection tube relative to the positioning member, the air exhaust port is communicated with the open end.

8. The liquid injection structure of claim **1**, wherein the elastic member is a spring, and the elastic member is sleeved at the outside of the positioning member.

9. An atomizer comprising the liquid injection structure according to any one of claims **1** to **8**, wherein the atomizer further comprises a liquid storage assembly, the liquid storage assembly comprises a liquid storage shell with a liquid storage chamber, the liquid injection structure is mounted to the liquid storage shell, the sleeve is provided with an air exhaust port, both the air exhaust port and the first liquid injection port communicate with the liquid storage chamber.

10. An aerosol generation device comprising the atomizer of claim **9**.

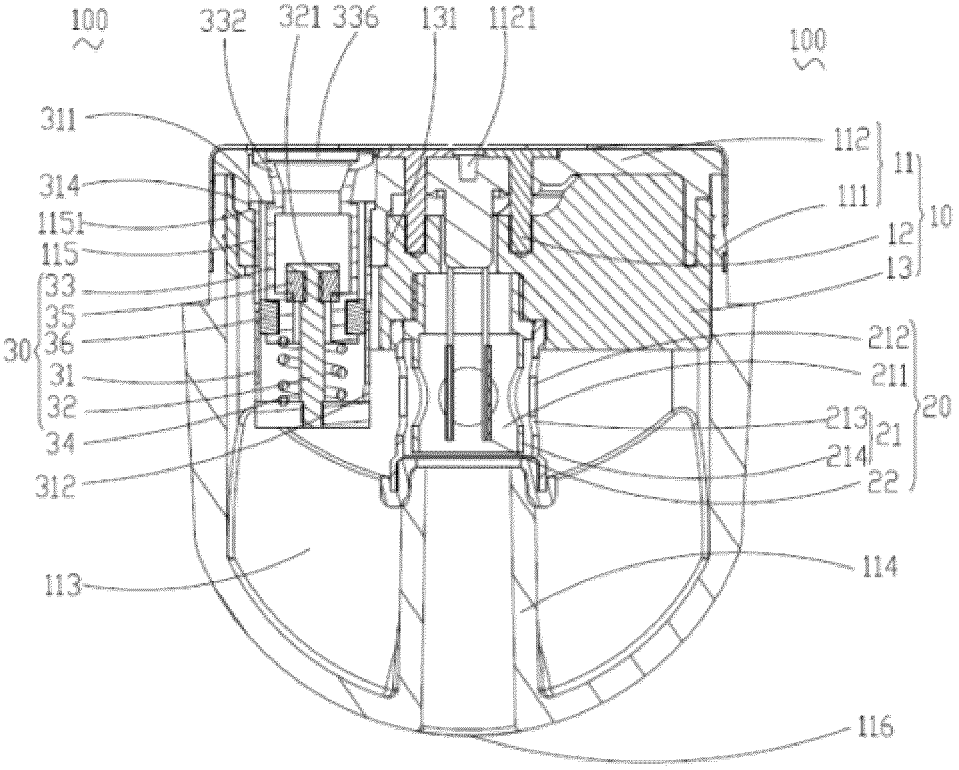
100
332
321
336
131
1121
100
311
314
1151
115
33
35
36
31
32
34
30
312
113
112
111
11
10
12
13
212
211
213
214
21
22
20
114
116

FIG. 1

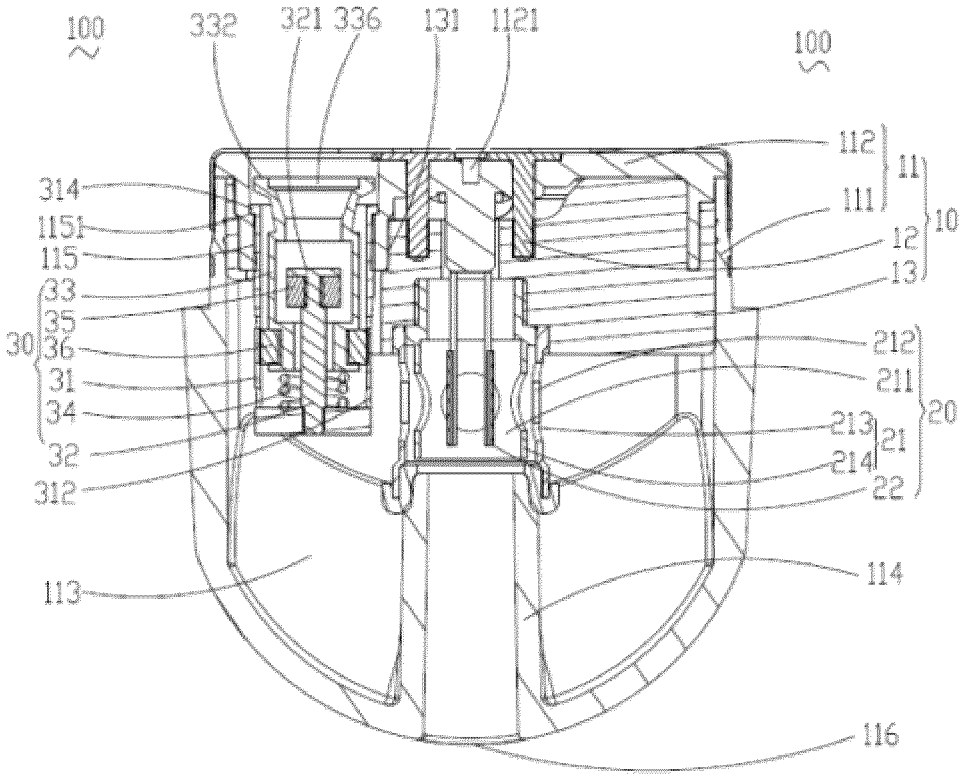
100
332
321
336
131
1121
100
112
11
111
10
12
13
314
1151
115
33
35
30
36
31
34
32
312
212
211
20
213
21
214
22
113
114
116

FIG. 2

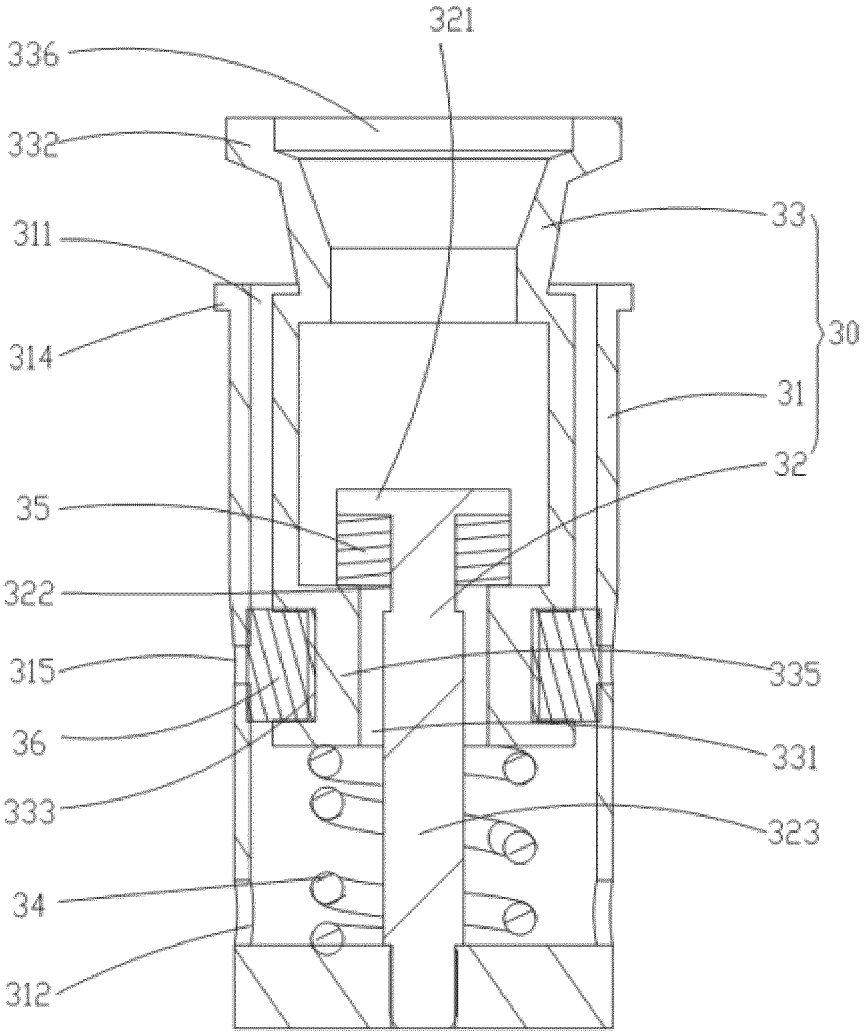
321
336
332
33
311
30
314
31
32
35
322
315
335
36
331
333
323
34
312

FIG. 3

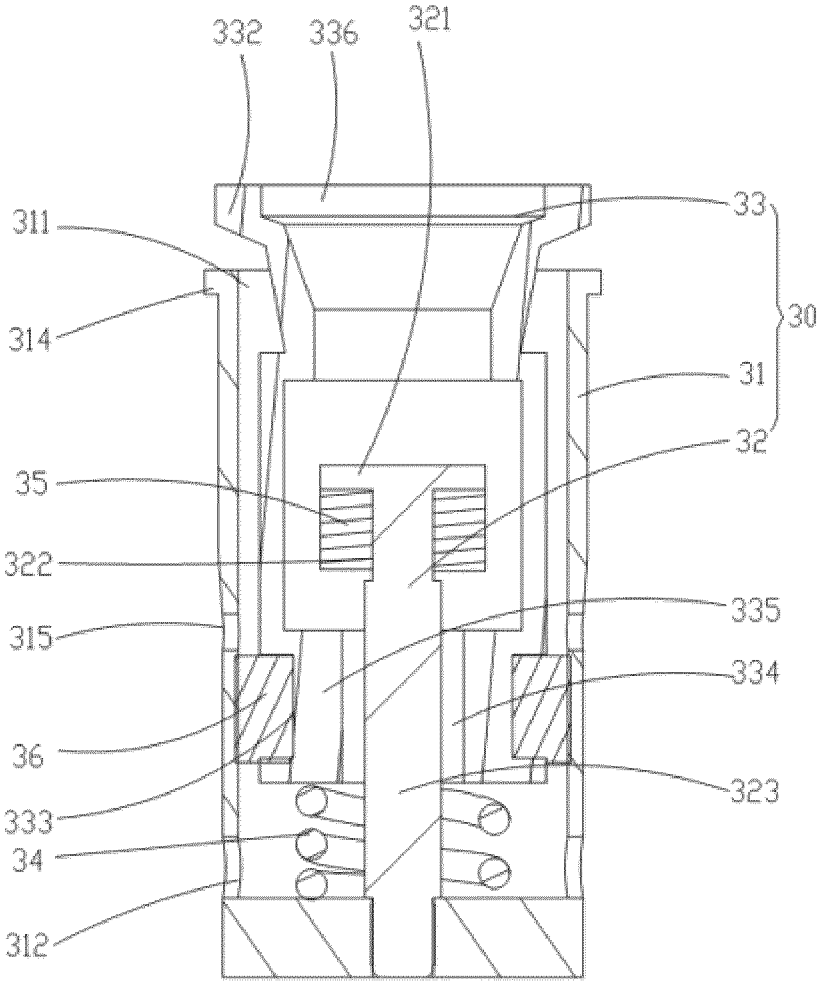
332
336
321
311
33
30
314
31
32
35
322
335
315
334
36
323
333
34
312

FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2021/072202

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/10(2020.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A24F40; A24F47; B65D47

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

VEN; CNABS; CNTXT; USTXT; EPTXT; CNKI: 气溶胶, 雾化器, 电子烟, 电子香烟, 烟油, 堵, 进液阀, 胶圈, 加油, 弹簧, 加液, 进液, 加油嘴, 注液口, 弹力, 加液口, 弹性件, 密封, T形, T型, 油斗, 气道, 排气, 出气, 封堵, 注液, 活塞, 注液阀, 气孔, 滑, 烟液, 封闭, 雾化, 弹性, 管, 注油嘴, 注油, 吸烟, 密封圈, electr+, dispen+, oil?, liquid?, aerosol?, suppl+, push+, press +, cigarette?, inject+, spring?, elast+, tar?, add+, Nicotine, integrat+, fill+, refill+, T-shaped, seal+, smok+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 211657390 U (CHANGZHOU PAITENG ELECTRONIC TECHNOLOGY SERVICE CO., LTD.) 13 October 2020 (2020-10-13) description, paragraphs 0004-0014, figures 1-4	1-10
PX	CN 210960415 U (CHANGZHOU PAITENG ELECTRONIC TECHNOLOGY SERVICE CO., LTD.) 10 July 2020 (2020-07-10) description, paragraphs 0034-0052, figures 1-4	1-10
X	CN 109415143 A (FONTEM HOLDINGS 1 B.V.) 01 March 2019 (2019-03-01) description paragraphs 0048, 0070-0082, figures 8-9	1-4, 8-10
Y	CN 109415143 A (FONTEM HOLDINGS 1 B.V.) 01 March 2019 (2019-03-01) description paragraphs 0048, 0070-0082, figures 8-9	5-7
Y	CN 110447968 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 15 November 2019 (2019-11-15) description, paragraphs 0070-0076, figures 7-12	5-7

☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 March 2021	**30 March 2021**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088** **China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2021/072202

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 1960030 A (TIANJIN LISHEN BATTERY JOINT-STOCK CO., LTD.) 09 May 2007 (2007-05-09) entire document	1-10
A	CN 109567278 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 05 April 2019 (2019-04-05) entire document	1-10
A	CN 209436265 U (SHENZHEN IJOY TECHNOLOGY CO., LTD.) 27 September 2019 (2019-09-27) entire document	1-10
A	CN 110447980 A (LIU, Tuanfang) 15 November 2019 (2019-11-15) entire document	1-10
A	WO 2015084083 A1 (JESSYTECH CO LTD) 11 June 2015 (2015-06-11) entire document	1-10
A	US 2019168246 A1 (SHENZHEN UWELL TECH CO LTD) 06 June 2019 (2019-06-06) entire document	1-10

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2021/072202

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
CN	211657390	U	13 October 2020	None			
CN	210960415	U	10 July 2020	None			
CN	109415143	A	01 March 2019	WO	2017137554	A1	17 August 2017
				US	2019031407	A1	31 January 2019
				EP	3205597	A1	16 August 2017
				EP	3205597	B1	03 April 2019
				PL	3205597	T3	31 October 2019
CN	110447968	A	15 November 2019	None			
CN	1960030	A	09 May 2007	CN	100429808	C	29 October 2008
CN	109567278	A	05 April 2019	EP	3680021	A1	15 July 2020
				US	2020214353	A1	09 July 2020
CN	209436265	U	27 September 2019	None			
CN	110447980	A	15 November 2019	CN	211932541	U	17 November 2020
WO	2015084083	A1	11 June 2015	KR	20150065072	A	12 June 2015
				KR	101544594	B1	13 August 2015
US	2019168246	A1	06 June 2019	US	10632484	B2	28 April 2020
				WO	2019109259	A1	13 June 2019
				CN	207550723	U	29 June 2018

Form PCT/ISA/210 (patent family annex) (January 2015)