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(54) **ATOMIZATION STRUCTURE AND ELECTRONIC ATOMIZATION DEVICE**

(57) The disclosure relates to the field of atomization technologies, and relates to an atomization structure and an electronic atomization device. The atomization structure includes a bottom cover, a housing main body, an atomization unit, an elastic member, and a battery support. The atomization unit, the elastic member, and the battery support are sequentially arranged inside the housing main body in a direction from a top of the atomization structure to a bottom of the atomization structure. The atomization unit is electrically connected to the battery support via the elastic member. The battery support is detachably connected to the elastic member. The bot-

tom cover is detachably connected to a bottom of the housing main body. The bottom cover is configured to press the battery support to enable the elastic member to be in a compressed state. In the atomization structure provided in the disclosure, a pressure can be exerted to the battery support through the bottom cover to secure the battery support, and the battery support can be driven by the elastic member to pop out of the housing main body, thereby addressing the issue of environmental pollution easily caused by discarded atomization devices in the related art.

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## Description

### TECHNICAL FIELD

**[0001]** The disclosure relates to the field of atomization technologies, and in particular, to an atomization structure and an electronic atomization device.

### BACKGROUND

**[0002]** Atomization refers to an operation of dispersing a liquid into tiny droplets either through a nozzle or by using a high-speed airflow. An atomization structure generally includes a housing, an atomization unit, and a power supply unit, where the atomization unit and the power supply unit are both disposed inside the housing. The atomization unit is configured to atomize an atomization substrate inside the atomization unit to generate aerosol that can be inhaled by a user. The power supply unit is electrically connected to the atomization unit to power the atomization unit.

**[0003]** Currently, the power supply unit of the atomization device on the market is typically a lithium battery, and the atomization device is mostly an integrated structure. Specifically, the power supply unit and the atomization unit are enclosed in the housing, and the battery is connected to a heating wire of the atomization unit through welding. However, when the atomization substrate inside the atomization device or the battery is depleted, the user usually chooses to discard the depleted atomization device directly due to the difficulty of disassembling the atomization device, resulting in environment pollution.

### SUMMARY

**[0004]** In view of above, an atomization structure and an electronic atomization device are provided in the disclosure. A pressure can be exerted to a battery support through a bottom cover to secure the battery support, and the battery support can be driven by an elastic member to pop out of a housing main body, thereby addressing the issue of environmental pollution easily caused by discarded atomization devices in the related art.

**[0005]** In order to solve the described problems, according to one aspect of the disclosure, an atomization structure is provided. The atomization structure includes a bottom cover, a housing main body, an atomization unit, an elastic member, and a battery support. The atomization unit, the elastic member, and the battery support are sequentially arranged inside the housing main body in a direction from a top of the atomization structure to a bottom of the atomization structure. The atomization unit is electrically connected to the battery support via the elastic member. The battery support is detachably connected to the elastic member. The bottom cover is detachably connected to a bottom of the housing main body. The bottom cover is configured to press the battery

support to enable the elastic member to be in a compressed state.

**[0006]** In some embodiments, the elastic member has a fixing plate and a return spring. An inner wall of the housing main body defines an annular limiting groove in a circumferential direction of the inner wall of the housing main body. The fixing plate is fitted in the limiting groove. One end of the return spring is connected to the fixing plate. Another end of the return spring abuts against one end of the battery support.

**[0007]** In some embodiments, multiple protrusions are provided at one end of the inner wall of the housing main body close to the bottom of the housing main body. The multiple protrusions are distributed at intervals in a circumferential direction of the housing main body.

**[0008]** The bottom cover includes multiple fasteners in a circumferential direction of the bottom cover. A number of the multiple fasteners is equal to a number of the multiple protrusions. Each of the multiple fasteners is fitted with a corresponding one of the multiple protrusions.

**[0009]** In some embodiments, a limiting portion is provided inside the bottom cover. One end of the limiting portion is connected to the bottom cover, and another end of the limiting portion abuts against the battery support.

**[0010]** In some embodiments, a bottom surface of the housing main body defines an annular groove. The inner wall of the housing main body defines multiple guide grooves. Each of the multiple guide grooves is located between two adjacent protrusions.

**[0011]** A side wall of the bottom cover is slidably connected to the groove. The multiple fasteners are slidably connected to the multiple protrusions.

**[0012]** In some embodiments, the battery support has a top plate, a bottom plate, and an arc-shaped side plate. The top plate, the bottom plate, and the arc-shaped side plate cooperatively define a battery accommodating cavity.

**[0013]** In some embodiments, an outer wall of the side plate is provided with at least one guide protrusion extending in a height direction of the side plate, and each of the least one guide protrusion is slidably connected to one of the multiple guide grooves.

**[0014]** In some embodiments, a limiting spring is disposed at a top of the battery accommodating cavity or a bottom of the battery accommodating cavity.

**[0015]** In some embodiments, the bottom cover is made of an insulating material.

**[0016]** In order to solve the described problems, according to another aspect of the disclosure, an electronic atomization device is provided. The electronic atomization device includes a battery and the above-identified atomization structure.

**[0017]** Compared with the related art, the atomization structure of the disclosure has at least the following beneficial effect.

**[0018]** The atomization structure includes the bottom cover, the housing main body, the atomization unit, the

elastic member, and the battery support. The housing main body is configured for accommodating the atomization unit, the elastic member, and the battery support. The bottom cover is configured for sealing the housing main body. The atomization unit is configured for generating aerosol. The battery support is used for placing a battery. The battery support is electrically connected to the atomization unit via the elastic member to form a power supply circuit. The elastic member can generate an elastic force under a pressing force of the bottom cover to push the battery support to move out of the housing main body.

**[0019]** During operation, when the battery support is received in the housing main body and the bottom cover is connected to the housing main body, the bottom cover can press the battery support, so that the elastic member is in the compressed state. When the battery support needs to be removed, simply detaching the bottom cover from the housing main body allows the battery support to be pushed out of the housing main body by an elastic force of the elastic member. In the atomization structure provided in the disclosure provide, a pressing force can be exerted to the battery support by the bottom cover to secure the battery support. Meanwhile, the battery support can be driven by the elastic member to pop out of the housing main body, thereby addressing the issue of environmental pollution easily caused by discarded atomization devices in the related art.

**[0020]** On the other hand, the electronic atomization device provided in the disclosure is designed based on the atomization structure. The beneficial effect of the electronic atomization device can refer to the beneficial effect of the atomization structure, which will not be repeated herein.

**[0021]** The above illustrations merely provide an overview of the technical solutions of the disclosure. In order to understand the technical means of the disclosure more clearly and implement the technical means of the disclosure according to the specification, preferred embodiments of the disclosure are described in detail below with reference to the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0022]** To describe technical solutions in the embodiments of the disclosure more clearly, the following briefly introduces the accompanying drawings required for describing the embodiments. Apparently, the accompanying drawings in the following description merely illustrate some embodiments of the disclosure. Those of ordinary skill in the art may also obtain other accompanying drawings based on these provided herein without creative efforts.

FIG. 1 is a schematic structural view of an atomization structure provided in an embodiment of the disclosure.

FIG. 2 is an exploded view of an atomization struc-

ture provided in an embodiment of the disclosure.

FIG. 3 is a top view of an atomization structure provided in an embodiment of the disclosure.

FIG. 4 is a cross-sectional view of the atomization structure taken along line A-A of FIG. 3.

FIG. 5 is an enlarged view of the atomization structure at circle B of FIG. 4.

FIG. 6 is a schematic structural view illustrating an assembly of a battery support and a limiting spring of an atomization structure provided in an embodiment of the disclosure.

FIG. 7 is a schematic structural view of a bottom cover of an atomization structure provided in an embodiment of the disclosure.

FIG. 8 is an enlarged view of the bottom cover at circle C of FIG. 7.

FIG. 9 is a partial schematic structural view of a housing main body portion of an atomization structure provided in an embodiment of the disclosure.

FIG. 10 is a schematic structural view of an assembly of a bottom cover and a housing main body.

FIG. 11 is a partial enlarged schematic structural view at circle D in FIG. 10.

**[0023]** 100 - bottom cover; 110 - fastener; 120 - limiting portion; 200 - housing main body; 210 - limiting groove; 220 - protrusion; 230 - groove; 240 - guide groove; 300 - atomization unit; 400 - elastic member; 410 - fixing plate; 420 - return spring; 500 - battery support; 510 - top plate; 520 - bottom plate; 530 - side plate; 531 - guide protrusion; 540 - battery accommodating cavity; 600 - limiting spring; 1101 - engaging protrusion; 1001 - side wall of the bottom cover 100; 202: sliding groove.

#### DETAILED DESCRIPTION

**[0024]** In order to further elaborate the technical means and effects adopted by the disclosure for achieving the objectives of the disclosure, the specific embodiments, structures, features, and effects thereof applied according to the disclosure will be described in detail below with reference to the accompanying drawings and preferred embodiments. In the following illustrations, various references to "one embodiment" or "embodiments" do not necessarily refer to the same embodiment. In addition, particular features, structures, or characteristics in one or more embodiments may be combined in any suitable manner.

**[0025]** In the illustrations of the disclosure, it may be noted that the terms "first" and "second" in the description, claims, and the accompanying drawings of the disclosure are used for distinguishing similar objects, and are not necessarily used for describing a specific sequence or order. The terms "vertical", "lateral", "longitudinal", "front", "rear", "left", "right", "upper", "bottom", "top", "lower", and "horizontal" and the like indicate orientations or positional relationships based on orientations or positional relationships illustrated in the accom-

panying drawings, and are merely used to facilitate illustrations of the disclosure, rather than implying that a device or element referred to must have a specific orientation or position, and therefore cannot be construed as a limitation on the disclosure.

**[0026]** In the illustrations of the disclosure, it may be noted that, unless expressly specified or limited otherwise, the terms "mounted", "connected", and "coupled" should be understood broadly. For example, the term "connect" may refer to fixedly connect, detachably connect, or integrally connect, may also refer to mechanically connect or electrically connect, and may also refer to directly connect or indirectly connect through an intermediate medium. A person of ordinary skill in the art may understand the specific meanings of the foregoing terms in the disclosure according to specific situations.

#### Embodiment 1

**[0027]** The disclosure provides an atomization structure. As illustrated in FIGS. 1 to 9, the atomization structure includes a bottom cover 100, a housing main body 200, an atomization unit 300, an elastic member 400, and a battery support 500. The atomization unit 300, the elastic member 400, and the battery support 500 are sequentially arranged inside the housing main body 200 in a direction from a top of the atomization structure to a bottom of the atomization structure. The atomization unit 300 is electrically connected to the battery support 500 via the elastic member 400. The battery support 500 is detachably connected to the elastic member 400. The bottom cover 100 is detachably connected to a bottom of the housing main body 200. The bottom cover 100 is configured to press the battery support 500 to enable the elastic member 400 to be in a compressed state.

**[0028]** Specifically, the atomization structure includes the bottom cover 100, the housing main body 200, the atomization unit 300, the elastic member 400, and the battery support 500. The housing main body 200 is configured for accommodating the atomization unit 300, the elastic member 400, and the battery support 500. The bottom cover 100 is configured for sealing the housing main body 200. The atomization unit 300 is configured for generating aerosol. The battery support 500 is configured for placing a battery. The battery support 500 is electrically connected to the atomization unit 300 via the elastic member 400 to form a power supply circuit. The elastic member 400 can generate an elastic force under a pressing force of the bottom cover 100 to push the battery support 500 to move out of the housing main body 200.

**[0029]** During operation, when the battery support 500 is received in the housing main body 200 and the bottom cover 100 is connected to the housing main body 200, the bottom cover 100 can press the battery support 500, so that the elastic member 400 is in the compressed state. When the battery support 500 needs to be removed, simply detaching the bottom cover 100 from the

housing main body 200 allows the battery support 500 to be pushed out of the housing main body 200 by an elastic force of the elastic member 400. In the atomization structure provided in the embodiments of the disclosure provide, a pressing force can be exerted to the battery support 500 by the bottom cover 100 to secure the battery support 500. Meanwhile, the battery support 500 can be driven by the elastic member 400 to pop out of the housing main body 200, thereby addressing the issue of environmental pollution easily caused by discarded atomization devices in the related art.

**[0030]** In specific embodiments, as illustrated in FIGS. 2 to 5, the elastic member 400 has a fixing plate 410 and a return spring 420. An inner wall of the housing main body 200 defines an annular limiting groove 210 in a circumferential direction of the inner wall of the housing main body 200. The fixing plate 410 is fitted in the limiting groove 210. One end of the return spring 420 is connected to the fixing plate 410. Another end of the return spring 420 abuts against one end of the battery support 500.

**[0031]** Specifically, the fixing plate 410 is used for securing the return spring 420 in the housing body 200. More specifically, the fixing plate 410 is fitted in the limiting groove 210. The return spring 420 is disposed on the fixing plate 410 and located at one side of the fixing plate 410 close to the bottom cover 100.

**[0032]** In specific embodiments, as illustrated in FIGS. 7 to 9, multiple protrusions 220 are provided at one end of the inner wall of the housing main body 200 close to the bottom of the housing main body 200. The multiple protrusions 220 are distributed at intervals in a circumferential direction of the housing main body 200.

**[0033]** The bottom cover 100 includes multiple fasteners 110 in a circumferential direction of the bottom cover 100. A number of the multiple fasteners 110 is equal to a number of the multiple protrusions 220. Each of the multiple fasteners 110 is fitted with a corresponding one of the multiple protrusions 220.

**[0034]** Referring FIG. 10 and FIG. 11, in the embodiments of the disclosure, the fastener 110 has an engaging protrusion 1101 extending from a surface of the fastener 110 close to a side wall 1001 of the bottom cover 100.

**[0035]** In the embodiments of the disclosure, the engaging protrusion 1101 is engaged with the protrusion 220. As such, the protrusion 220 can be fitted with the fastener 110, thereby securing the bottom cover 100 to the housing main body 200.

**[0036]** In the embodiments of the disclosure, the engaging protrusion 1101 abuts against a surface of the protrusion 220 away from the bottom of the housing main body 200.

**[0037]** Specifically, the protrusion 220 is fitted with the fastener 110 to facilitate detachment and mounting of the bottom cover 100. The multiple fasteners 110 are provided in the circumferential direction of the bottom cover 100, facilitating an improvement in stability of the connection between the bottom cover 100 and the housing

main body 200. During assembly, the fastener 110 is first placed between two adjacent protrusions 220; then the fastener 110 is pushed towards the elastic member 400; and when the fastener 110 is pushed to a limit position, here, the protrusion 220 is at least partially received in a sliding groove 202 defined on an inner wall of the housing main body 200, and the bottom cover 100 can be rotated to fit the fastener 110 with the protrusion 220 to achieve the assembly. During disassembly, the bottom cover 100 can be reversely rotated and then pulled out of the housing main body 200 to achieve the disassembly, so that the removal of the battery can be more convenient, facilitating the recycling of batteries from discarded atomization devices.

**[0038]** In specific embodiments, as illustrated in FIGS. 4 and 7, a limiting portion 120 is provided inside the bottom cover 100. One end of the limiting portion 120 is connected to the bottom cover 100, and another end of the limiting portion 120 abuts against the battery support 500.

**[0039]** Specifically, the limiting portion 120 is configured for pressing the battery support 500 inside the housing main body 200 when the bottom cover 100 is connected to the housing main body 200, so that the elastic member 400 can generate an elastic force. As illustrated in FIG. 7, the limiting portion 120 is symmetrical in structure to ensure that the elastic member 400 can generate a relatively uniform elastic force, thereby allowing the battery support 500 to pop out of the housing main body 200 relatively smoothly. It is noted that, the limiting portion 120 includes, but is not limited to, the embodiment illustrated in FIG. 7, and the limiting portion 120 may also be a columnar structure or other structures capable of continuously providing a pressing force.

**[0040]** In specific embodiments, as illustrated in FIGS. 7 to 9, a bottom surface of the housing main body 200 defines an annular groove 230. The inner wall of the housing main body 200 defines multiple guide grooves 240. Each of the multiple guide grooves 240 is located between two adjacent protrusions 220. In some embodiments, each of the multiple guide grooves 240 extends through a corresponding one of the multiple protrusions 220.

**[0041]** The side wall 1001 of the bottom cover 100 is slidably connected to the groove 230, and the multiple fasteners 110 are slidably connected to the multiple protrusions 220.

**[0042]** In some embodiments, the multiple fasteners 110 are arranged between the limiting portion 120 and the side wall 1001 of the bottom cover 100.

**[0043]** Specifically, during fastening of the multiple fasteners 110 to the multiple protrusions 220, some fasteners 110 may be prone to collide with or even fail to be fastened to the protrusions 220. Therefore, during mounting of the bottom cover 100, the annular groove 230 can guide the side wall 1001 of the bottom cover 100, and the guide groove 240 can guide a guide protrusion 531, so that the bottom cover 100 can slide into the housing

main body 200 relatively easily and smoothly, and the fasteners 110 can be fastened to the protrusions 220 relatively quickly through rotation. In addition, the convenience of detachment and mounting of the bottom cover 100 can be further improved.

**[0044]** In specific embodiments, as illustrated in FIG. 6, the battery support 500 has a top plate 510, a bottom plate 520, and an arc-shaped side plates 530. The top plate 510, the bottom plate 520, and the arc-shaped side plates 530 cooperatively define a battery accommodating cavity 540.

**[0045]** Specifically, the top plate 510, the bottom plate 520, and the arc-shaped side plate 530 cooperatively define the battery accommodating cavity 540 with a lateral opening, so that mounting of the battery is more convenient.

**[0046]** In specific embodiments, as illustrated in FIG. 6, an outer wall of the side plate 530 is provided with at least one guide protrusion 531 extending in a height direction of the side plate 530, and the guide protrusion 531 is slidably connected to the guide groove 240.

**[0047]** Specifically, on the one hand, the guide protrusion 531 facilitates the sliding of the battery support 500 into the housing body 200, and on the other hand, the guide protrusion 531 is configured to prevent the battery support 500 from rotating in the housing body 200, thereby improving stability of electrical connection between the battery support 500 and the elastic member 400.

**[0048]** In specific embodiments, a limiting spring 600 is disposed at a top of the battery accommodating cavity 540 or a bottom of the battery accommodating cavity 540.

**[0049]** Specifically, the battery accommodating cavity 540 is configured to accommodate a battery. The limiting spring 600 may continuously exert pressure to the battery in the height direction of the battery support 500 to secure the battery. It may be noted that, in the case where the limiting spring 600 is disposed at the top of the battery accommodating cavity 540, the battery can be electrically connected to the atomization unit 300 via the limiting spring 600, the battery support 500, and the elastic member 400. In the case where the limiting spring 600 is disposed at the bottom of the battery accommodating cavity 540, the battery can be electrically connected to the atomization unit 300 directly via the battery support 500 and the elastic member 400. It may be noted that the atomization unit 500 is an atomization core assembly.

**[0050]** Further, the bottom cover 100 is made of an insulating material.

**[0051]** Specifically, the bottom cover 100 is made of an insulating material to prevent electricity leakage when the battery support 500 is in contact with the bottom cover 100, thereby improving the mounting performance of the atomization structure. The insulating material is rubber or plastic.

## Embodiment 2

**[0052]** An electronic atomization device is provided in

the embodiments of the disclosure. The electronic atomization device includes a battery and the atomization structure provided in embodiment 1.

**[0053]** Specifically, the battery is electrically connected to the atomization unit 300 via the battery support 500 and the elastic member 400. The battery support 500 is detachable relative to the elastic member 400, thereby addressing the issue of environmental pollution easily caused by discarded atomization devices in the related art.

## Claims

1. An atomization structure, comprising a bottom cover (100), a housing main body (200), an atomization unit (300), an elastic member (400), and a battery support (500), wherein the atomization unit (300), the elastic member (400), and the battery support (500) are sequentially arranged inside the housing main body (200) in a direction from a top of the atomization structure to a bottom of the atomization structure, the atomization unit (300) is electrically connected to the battery support (500) via the elastic member (400), the battery support (500) is detachably connected to the elastic member (400), the bottom cover (100) is detachably connected to a bottom of the housing main body (200), and the bottom cover (100) is configured to press the battery support (500) to enable the elastic member (400) to be in a compressed state.
2. The atomization structure of claim 1, wherein the elastic member (400) has a fixing plate (410) and a return spring (420), an inner wall of the housing main body (200) defines an annular limiting groove (210) in a circumferential direction of the inner wall of the housing main body (200), the fixing plate (410) is fitted in the limiting groove (210), one end of the return spring (420) is connected to the fixing plate (410), and another end of the return spring (420) abuts against one end of the battery support (500).
3. The atomization structure of claim 1 or 2, wherein a plurality of protrusions (220) are provided at one end of the inner wall of the housing main body (200) close to the bottom of the housing main body (200), wherein the plurality of protrusions (220) are distributed at intervals in a circumferential direction of the housing main body (200); the bottom cover (100) comprises a plurality of fasteners (110) in a circumferential direction of the bottom cover (100), a number of the plurality of fasteners (110) is equal to a number of the plurality of protrusions (220), and each of the plurality of fasteners (110) is fitted with a corresponding one of the plurality of protrusions (220).
4. The atomization structure of claim 3, wherein a limiting portion (120) is provided inside the bottom cover (100), wherein one end of the limiting portion (120) is connected to the bottom cover (100), and another end of the limiting portion (120) abuts against the battery support (500).
5. The atomization structure of claim 3 or 4, wherein a bottom surface of the housing main body (200) defines an annular groove (230), the inner wall of the housing main body (200) defines a plurality of guide grooves (240), and each of the plurality of guide grooves (240) extends through a corresponding one of the protrusions (220); and a side wall (1001) of the bottom cover (100) is slidably connected to the groove (230), and the plurality of fasteners (110) are slidably connected to the plurality of protrusions (220).
6. The atomization structure of claim 5, wherein the plurality of fasteners (110) are arranged between the limiting portion (120) and the side wall (1001) of the bottom cover (100).
7. The atomization structure of any one of claims 1 to 6, wherein the battery support (500) has a top plate (510), a bottom plate (520), and an arc-shaped side plate (530), and the top plate (510), the bottom plate (520), and the arc-shaped side plate (530) cooperatively define a battery accommodating cavity (540).
8. The atomization structure of claim 7, wherein an outer wall of the side plate (530) is provided with at least one guide protrusion (531) extending in a height direction of the side plate (530), and each of the at least one guide protrusion (531) is slidably connected to one of the plurality of guide grooves (240).
9. The atomization structure of claim 7 or 8, wherein a limiting spring (600) is disposed at a top of the battery accommodating cavity (540) or a bottom of the battery accommodating cavity (540).
10. The atomization structure of any one of claims 1 to 9, wherein the bottom cover (100) is made of an insulating material.
11. The atomization structure of any one of claims 1 to 10, wherein the atomization unit (300) is configured for generating aerosol, and the battery support (500) is configured to be electrically connected to the atomization unit (300) via the elastic member (400) to form a power supply circuit.
12. The atomization structure of any one of claims 5 to 11, wherein for each of the plurality of the fasteners (110), the fastener (110) has an engaging protrusion (1101) extending from a surface of the fastener (110).

close to the side wall (1001) of the bottom cover (100).

- 13.** The atomization structure of claim 12, wherein the engaging protrusion (1101) abuts against a surface of the protrusion (220) away from the bottom of the housing main body (200). 5
- 14.** An electronic atomization device, comprising a battery and the atomization structure of any one of claims 1 to 13. 10
- 15.** The electronic atomization device of claim 14, wherein the battery is electrically connected to the atomization unit (300) via the battery support (500) and the elastic member (400). 15

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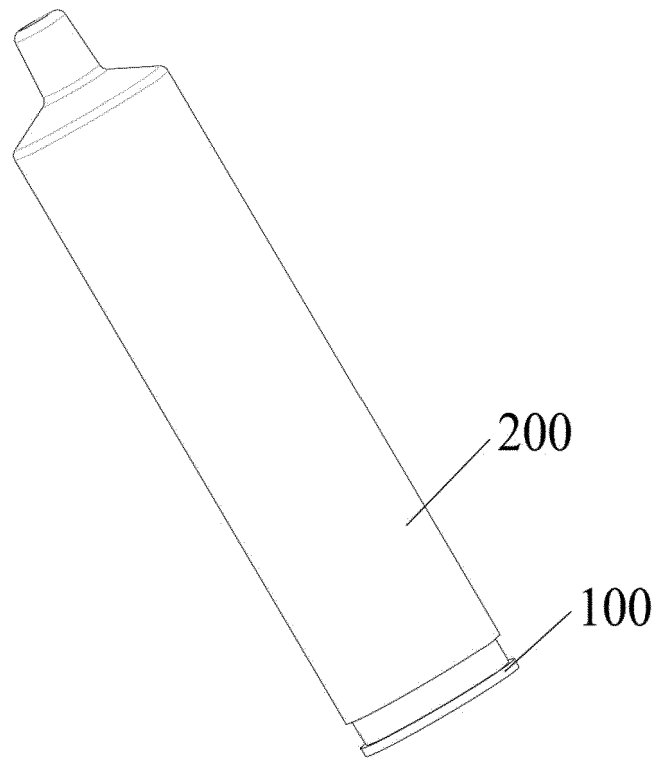
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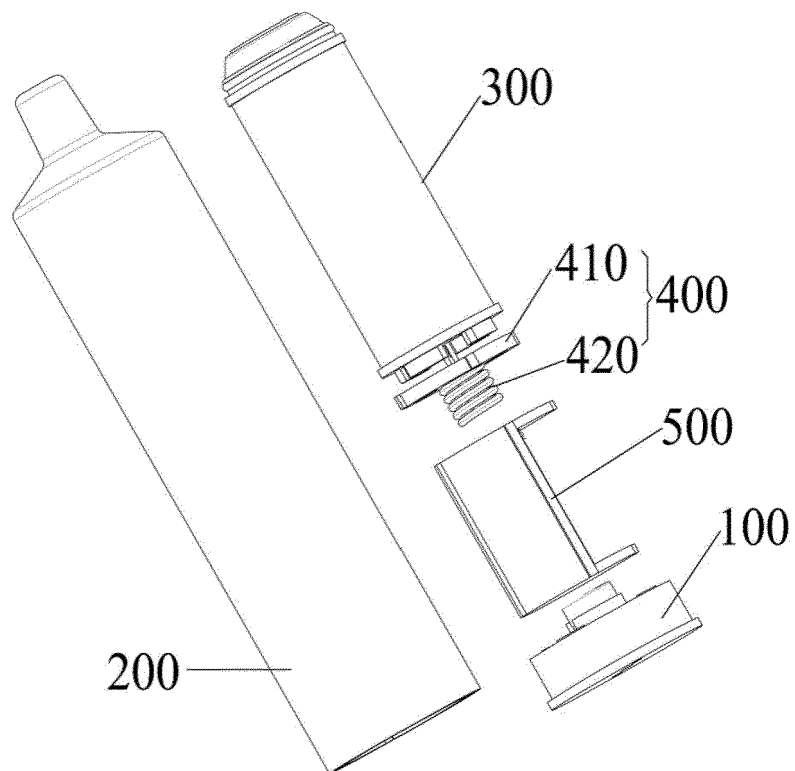
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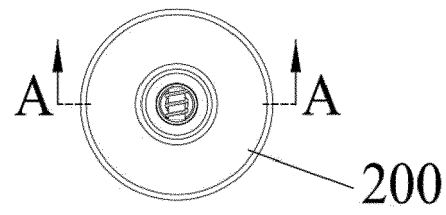


**FIG. 1**

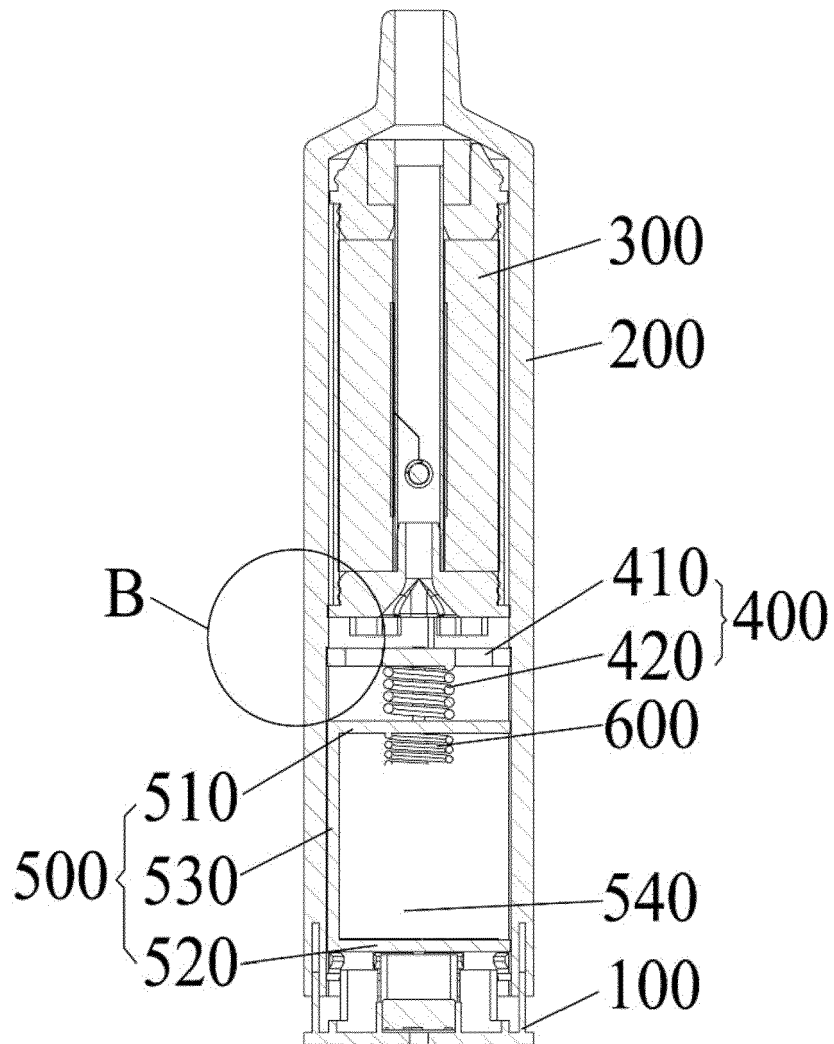


**FIG. 2**

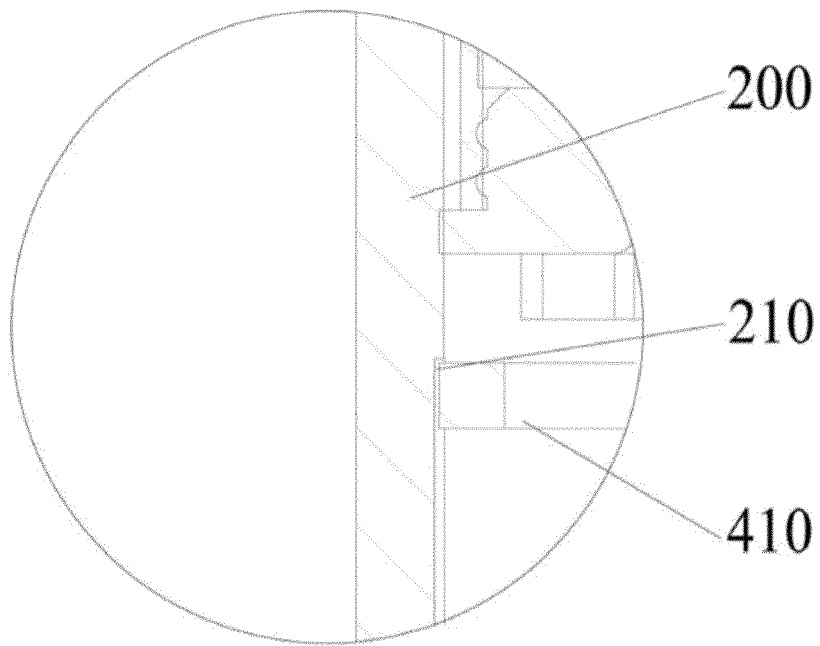




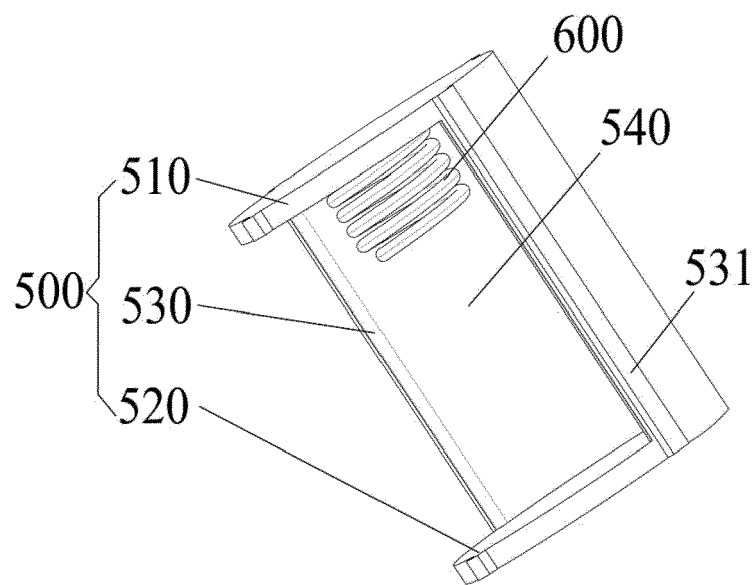
**FIG. 3**



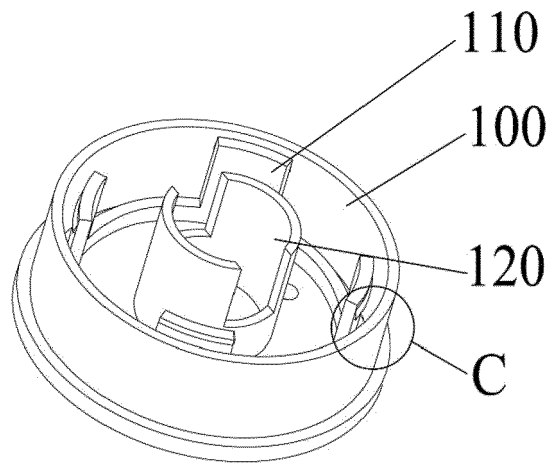
**FIG. 4**



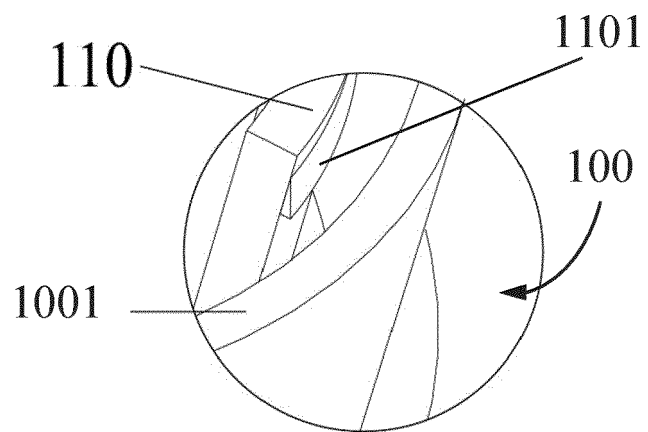
**FIG. 5**



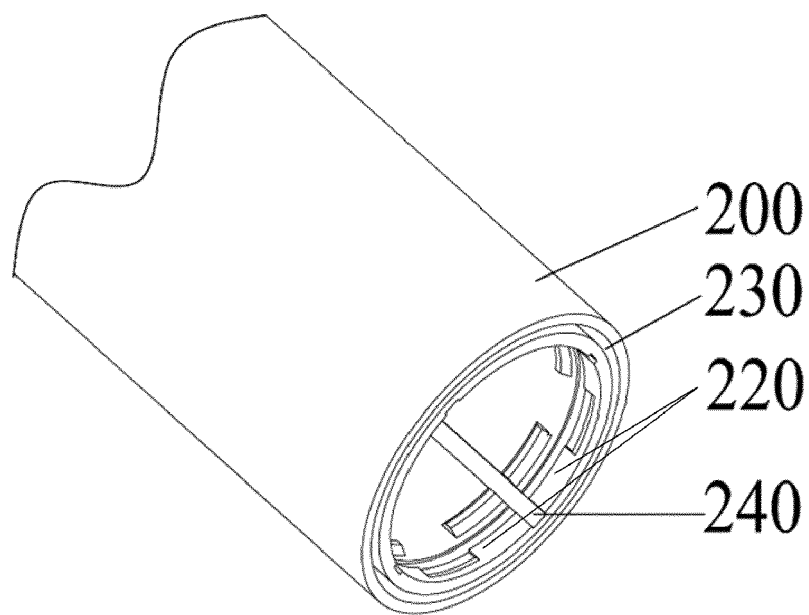
**FIG. 6**



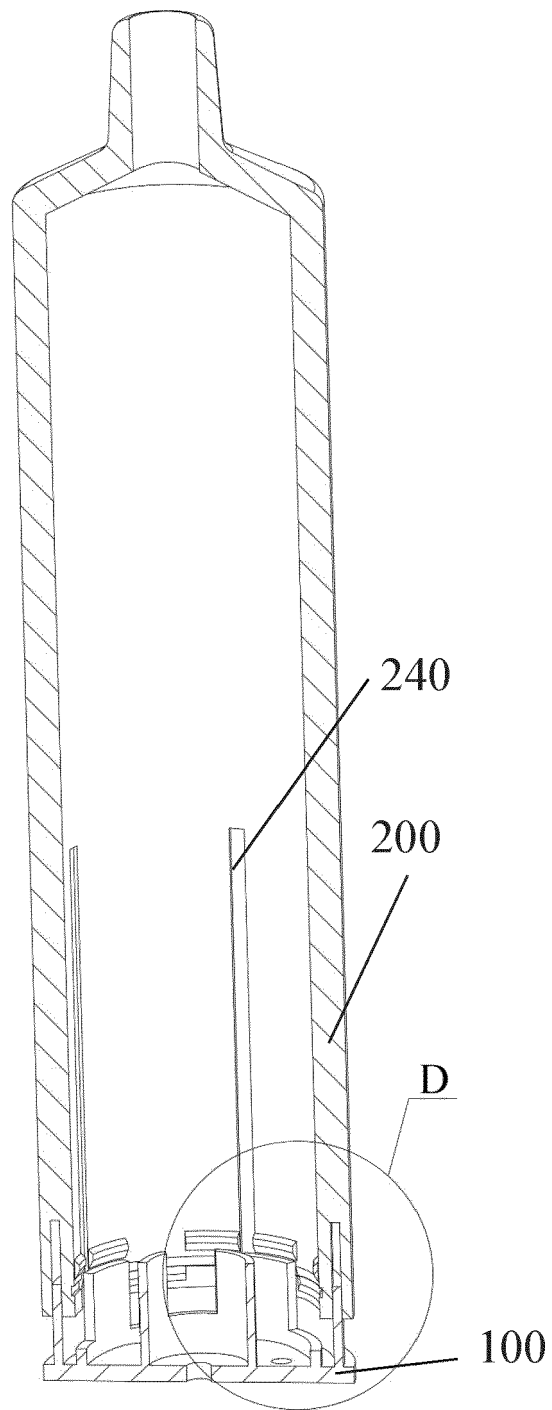
**FIG. 7**



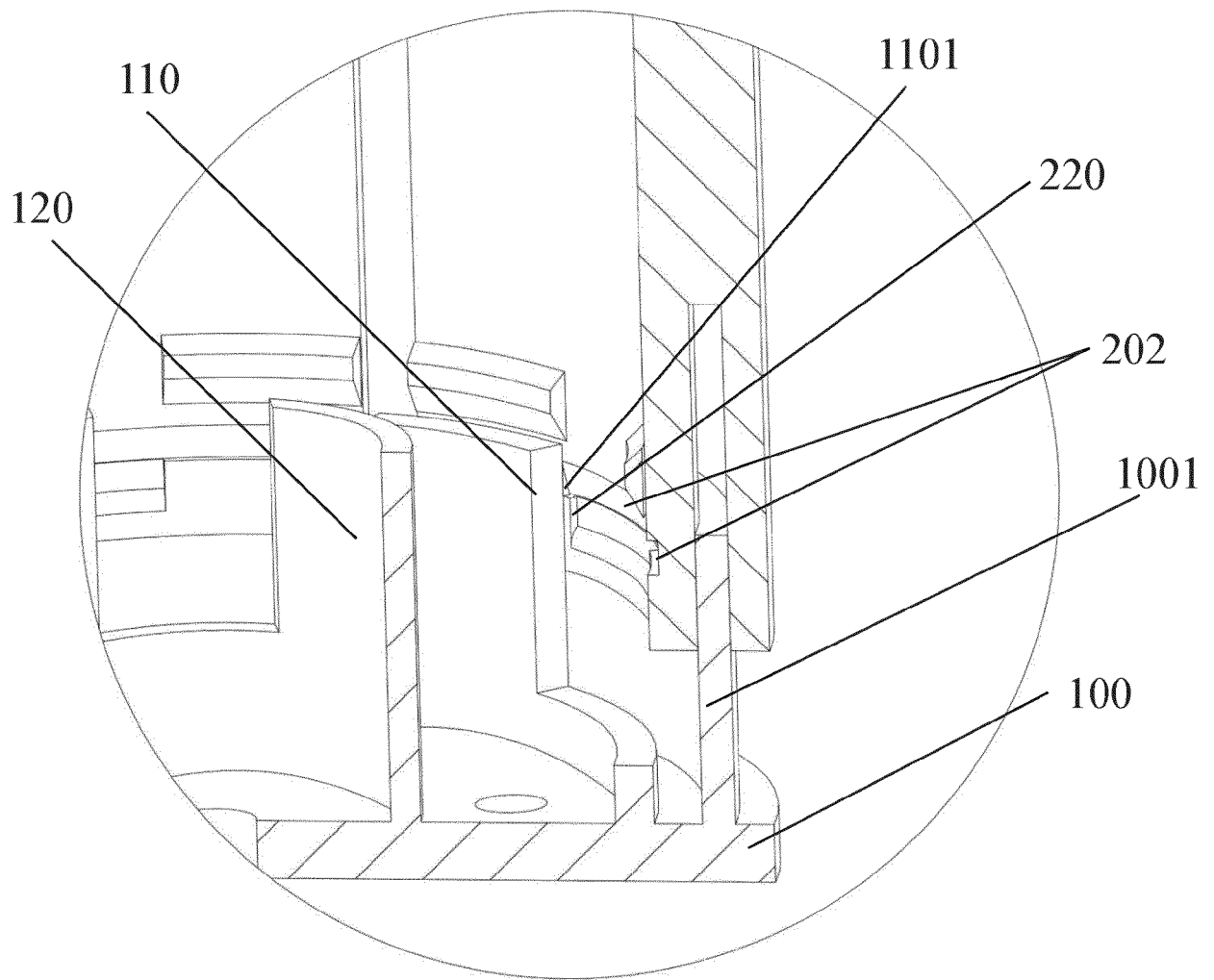
**FIG. 8**



**FIG. 9**



**FIG. 10**



**FIG. 11**



## EUROPEAN SEARCH REPORT

Application Number

EP 24 16 9674

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2021/254649 A1 (CARNAULT AG [CH]) 23 December 2021 (2021-12-23)	1,2,7, 9-11,14, 15	INV. A24F40/40
A	* figures 3a, 3b, 7, 8, 9a to 9c * * page 12, line 14 * * page 13, line 21 - line 22 * * page 19 * -----	3-6,8, 12,13	ADD. A24F40/10
A	US 2023/041737 A1 (LI HUABING [CN] ET AL) 9 February 2023 (2023-02-09) * the whole document * -----	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			A24F
The present search report has been drawn up for all claims			
Place of search <b>Munich</b>		Date of completion of the search <b>11 September 2024</b>	Examiner <b>Schäfer, Lucas</b>
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	

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