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(54) **ELECTRONIC ATOMIZATION DEVICE**

(57) An electronic atomization device (100), comprising: a liquid storage cavity (12) for storing a liquid matrix; an atomization assembly for atomizing the liquid matrix to generate an aerosol; an air suction port (A), a first air inlet (123) and a first airflow channel, which jointly define a first airflow path from the first air inlet (123) to the air suction port (A) via the atomization assembly, so as to deliver the aerosol to the air suction port (A); an airflow sensor (150) for sensing a change in the airflow in the first airflow channel; an operating element (80) arranged to be configurable between a first configuration and a second configuration, wherein in the first configuration, the first air inlet (123) is closed or covered by the operating element (80) so as to prevent external air from entering via the first air inlet (123), and in the second configuration, the first air inlet (123) is opened or exposed by the operating element (80); a battery cell (140); and a circuit board for controlling a power supply to the atomization assembly according to the sensing of the airflow sensor (150). According to the electronic atomization device (100), the electronic atomization device (100) is locked in the first configuration by means of the operating element (80), so as to prevent an aerosol from being provided to a user, especially a minor.

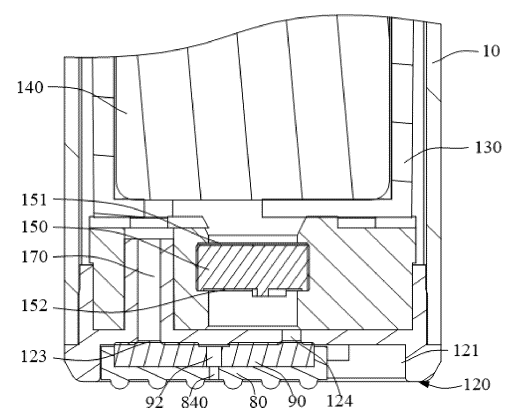


FIG. 8

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## Description

### CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Chinese Patent Application No. 202220888270.0, entitled "ELECTRONIC ATOMIZATION DEVICE", and Chinese Patent Application 202220875734.4, entitled "AEROSOL GENERATION DEVICE", filed with the China National Intellectual Property Administration on April 15, 2022, which is incorporated herein by reference in its entirety.

### TECHNICAL FIELD

[0002] Embodiments of this application relate to the field of electronic atomization technologies, and in particular, to an electronic atomization device.

### BACKGROUND

[0003] Tobacco products (such as cigarettes and cigars) burn tobacco during use to produce tobacco smoke. Attempts are made to replace these tobacco-burning products by manufacturing products that release compounds without being burnt.

[0004] An example of such a product is a heating device that releases a compound by heating rather than burning a material. For example, the material may be tobacco or other non-tobacco products. These non-tobacco products may include or not include nicotine. In another example, there are aerosol-providing articles, for example, so-called electronic atomization devices. These devices generally contain a liquid, and the liquid is heated to be vaporized, to generate an inhalable aerosol. The liquid may contain nicotine, and/or aromatics, and/or aerosol-generation substances (such as glycerin). In a known electronic atomization device, an airflow sensor senses an inhalation action of a user, and based on the sensing of the airflow sensor, the liquid is controlled to be vaporized to generate the aerosol.

### SUMMARY

[0005] An embodiment of this application provides an electronic atomization device, including:

a liquid storage cavity, configured to store a liquid substrate;  
an atomization assembly, configured to atomize the liquid substrate to generate an aerosol;  
an inhalation port;  
a first air inlet, and a first airflow channel located between the first air inlet and the inhalation port, where the first air inlet, the inhalation port, and the first airflow channel are arranged to define a first airflow path from the first air inlet through the atomization assembly to the inhalation port, to transmit the aerosol to the inhalation port;

an airflow sensor, in airflow communication with the first airflow channel and configured to sense an airflow change in the first airflow channel;  
a battery cell, configured to supply power to the atomization assembly;  
a circuit, configured to control, based on a sensing result of the airflow sensor, the battery cell to supply power to the atomization assembly; and  
an operating element, arranged to be configurable between a first configuration and a second configuration, where the operating element closes or covers the first air inlet in the first configuration to prevent external air from entering through the first air inlet, and the operating element opens or exposes the first air inlet in the second configuration.

[0006] In a more preferred implementation, the circuit is configured to prevent, when the operating element is in the first configuration, the battery cell from supplying power to the atomization assembly.

[0007] In a more preferred implementation, the electronic atomization device further includes:  
a second air inlet, and a second airflow channel located between the second air inlet and the inhalation port, where the second air inlet, the inhalation port, and the second airflow channel are arranged to define a second airflow path from the first air inlet to the inhalation port.

[0008] In a more preferred implementation, the operating element opens or exposes the second air inlet in the first configuration; and the operating element closes or covers the second air inlet in the second configuration, to prevent the external air from entering through the second air inlet.

[0009] In a more preferred implementation, an area of the second air inlet is greater than an area of the first air inlet.

[0010] In a more preferred implementation, the electronic atomization device further includes:

a shell, at least partially defining a surface of the electronic atomization device, where  
at least a part of the operating element is exposed outside the shell and is constructed to be movable relative to the shell, to change a configuration between the first configuration and the second configuration.

[0011] In a more preferred implementation, the electronic atomization device further includes:

a damping element, located between the operating element and the shell, to provide damping in movement of the operating element.

[0012] In a more preferred implementation, the airflow sensor includes a first side and a second side that face away from each other, where the first side is in airflow communication with the first airflow channel;

an air hole is further provided on the shell, to com-

municate the second side with an external atmosphere;  
the operating element closes or covers the air hole in the first configuration, to isolate the second side from the external atmosphere, to prevent the airflow sensor from sensing the airflow change in the first airflow channel; and the operating element opens or exposes the air hole in the second configuration, to communicate the second side with the external atmosphere.

**[0013]** In a more preferred implementation, the operating element prevents the airflow sensor from sensing the airflow change in the first airflow channel in the first configuration, and allows the airflow sensor to sense the airflow change in the first airflow channel in the second configuration.

**[0014]** Another embodiment of this application further provides an electronic atomization device, including:

a liquid storage cavity, configured to store a liquid substrate;  
an atomization assembly, configured to atomize the liquid substrate to generate an aerosol;  
an inhalation port;  
a first air inlet, and a first airflow channel located between the first air inlet and the inhalation port, where the first air inlet, the inhalation port, and the first airflow channel are arranged to define a first airflow path from the first air inlet through the atomization assembly to the inhalation port, to transmit the aerosol to the inhalation port;  
an airflow sensor, including a first side and a second side that face away from each other, where the first side is in airflow communication with the first airflow channel;  
an air hole, configured to communicate the second side with an external atmosphere;  
a battery cell, configured to supply power to the atomization assembly;  
a circuit, controlling, based on a sensing result of the airflow sensor, the battery cell to supply power to the atomization assembly; and  
an operating element, arranged to be configurable between a first configuration and a second configuration, where the operating element closes or covers the air hole in the first configuration, to isolate the second side from the external atmosphere, to prevent the airflow sensor from sensing the airflow change in the first airflow channel; and the operating element opens or exposes the air hole in the second configuration, to communicate the second side with the external atmosphere, to allow the airflow sensor to sense the airflow change in the first airflow channel.

**[0015]** According to the foregoing electronic atomization device, the electronic atomization device is locked in

the first configuration by using the operating element, to avoid providing the aerosol to a user, especially a minor.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0016]** One or more embodiments are exemplarily described with reference to the corresponding figures in the accompanying drawings, and the descriptions are not to be construed as limiting the embodiments. Elements in the accompanying drawings that have same reference numerals are represented as similar elements, and unless otherwise particularly stated, the figures in the accompanying drawings are not drawn to scale.

FIG. 1 is a schematic diagram of an electronic atomization device from an angle of view according to an embodiment;

FIG. 2 is a schematic diagram of the electronic atomization device in FIG. 1 from another angle of view;

FIG. 3 is a schematic exploded view of a part of components of the electronic atomization device in FIG. 2 before assembly;

FIG. 4 is a schematic exploded view of an operating element and a damping element in FIG. 3 from another angle of view;

FIG. 5 is a schematic diagram of an operating element in FIG. 2 in a configuration state;

FIG. 6 is a schematic diagram of the operating element in FIG. 5 moved to another configuration state;

FIG. 7 is a schematic cross-sectional view of the electronic atomization device in FIG. 2;

FIG. 8 is a schematic cross-sectional view of an operating element in FIG. 7 in a configuration state;

FIG. 9 is a schematic cross-sectional view of the operating element in FIG. 8 moved to another configuration state;

FIG. 10 is a schematic exploded view of a part of components of an electronic atomization device according to another embodiment;

FIG. 11 is a schematic cross-sectional view of the electronic atomization device in FIG. 10;

FIG. 12 is a schematic cross-sectional view of an operating element in FIG. 11 in a configuration state;

FIG. 13 is a schematic cross-sectional view of the operating element in FIG. 12 moved to another configuration state;

FIG. 14 is a schematic diagram of an operating element in FIG. 10 in a configuration state;

FIG. 15 is a schematic diagram of the operating element in FIG. 14 moved to another configuration state;

FIG. 16 is a cross-sectional view of an electronic atomization device according to another embodiment;

FIG. 17 is an exploded view of an atomization assembly in FIG. 16;

FIG. 18 is a cross-sectional view of the electronic

atomization device in FIG. 16 from another angle of view;

FIG. 19 is an exploded view of the electronic atomization device in FIG. 16;

FIG. 20 is a three-dimensional diagram of the electronic atomization device in FIG. 16 with a rotating sleeve removed;

FIG. 21 is a three-dimensional diagram of a sleeve of the electronic atomization device in FIG. 16;

FIG. 22 is a three-dimensional diagram of the rotating sleeve of the electronic atomization device in FIG. 16;

FIG. 23 is a cross-sectional view of the electronic atomization device in FIG. 16 from another angle of view;

FIG. 24 is a cross-sectional view of an electronic atomization device according to another embodiment;

FIG. 25 is an exploded view of the electronic atomization device in FIG. 24;

FIG. 26 is a three-dimensional diagram of an operating element of the electronic atomization device in FIG. 24 in a first configuration;

FIG. 27 is a three-dimensional diagram of the operating element of the electronic atomization device in FIG. 24 in a third configuration; and

FIG. 28 is a three-dimensional diagram of the operating element of the electronic atomization device in FIG. 24 in a second configuration.

## DETAILED DESCRIPTION

**[0017]** For ease of understanding of this application, this application is described in further detail below with reference to the accompanying drawings and specific implementations.

**[0018]** This application provides an electronic atomization device, configured to atomize a liquid substrate to generate an aerosol.

**[0019]** Further, FIG. 1 is a schematic diagram of an electronic atomization device 100 according to a specific embodiment. The electronic atomization device includes a plurality of components arranged in an outer body or a shell (which may be referred to as a housing). An overall design of the outer body or the shell is variable, and a style or configuration of an outer body that may limit an overall size and shape of the electronic atomization device 100 is variable. Generally, an elongated body may be formed by a single integral housing, or an elongated housing may be formed by two or more separable bodies.

**[0020]** For example, the electronic atomization device 100 may include a control body at an end, and the control body has a housing including one or more reusable components (for example, storage batteries such as rechargeable batteries and/or rechargeable supercapacitors, and various electronic components configured to control an operation of a product). In addition, the elec-

tronic atomization device includes an outer body or a shell for inhalation at an other end.

**[0021]** Further, in specific embodiments shown in FIG. 1 and FIG. 2, the electronic atomization device 100 includes:

a shell 10, basically defining an outer surface of the electronic atomization device 100 and including a near end 110 and a far end 120 opposite to each other in a longitudinal direction. During use, the near end 110 is an end close to a user for inhalation; and the far end 120 is an end away from the user.

**[0022]** In some examples, the shell 10 may be formed by a metal such as stainless steel or aluminum, or an alloy. Other appropriate materials include various plastics (for example, polycarbonates), metal-plating over plastics, ceramics, and the like.

**[0023]** Further, as shown in FIG. 1 and FIG. 2, the electronic atomization device 100 further includes:

an inhalation port A, provided for the user to inhale; and the near end 110 located on the shell 10.

**[0024]** The electronic atomization device 100 further includes:

an operating element 80, arranged at the far end 120 of the shell 10 and arranged to be movable in a width direction of the shell 10. Specifically, a slot 121 extending in the width direction is provided at the far end 120 of the shell 10; and the operating element 80 is at least partially accommodated and held in the slot 121 to move. In addition, a limiting concave portion 125 extending in the width direction of the shell 10 is provided on a side edge of the slot 121; and an engaging protrusion 831 extending into the limiting concave portion 125 is arranged on the operating element 80, so that during movement, movement of the operating element 80 is limited by using the limiting concave portion 125. In addition, through cooperation between the limiting concave portion 125 and the engaging protrusion 831, the operating element 80 is prevented from detaching from the slot 121.

**[0025]** Further, as shown in FIG. 3 and FIG. 4, the operating element 80 is constructed to be substantially perpendicular to a longitudinal direction of the shell 10. The operating element 80 is thin, and a length of the operating element 80 is greater than a width, and the width is greater than a thickness. The operating element 80 includes a first end wall 810 and a second end wall 820 that face away from each other in a thickness direction, and a peripheral side wall 830 extending between the first end wall 810 and the second end wall 820. The engaging protrusion 831 is located on the peripheral side wall 830.

**[0026]** After assembly, the first end wall 810 of the operating element 80 faces the slot 121 of the shell 10 instead of being exposed, and the second end wall 820 is exposed at the far end 120 of the shell 10. A plurality of convex edges 821 are arranged on the second end wall 820, and are configured to provide friction when the user presses the second end wall 820 to move the operating element 80. This facilitates a user operation. The convex edge 821 is perpendicular to a length direction of the

operating element 80.

**[0027]** An accommodating concave cavity 811 is provided on the first end wall 810 of the operating element 80, and the accommodating concave cavity 811 is configured to accommodate and mount a damping element 90. The damping element 90 is made of elastic silicone, a thermoplastic elastomer, an elastic polymer, or the like. After assembly, the damping element 90 is located between the operating element 80 and the shell 10 in a longitudinal direction of the electronic atomization device, to provide damping during the movement of the operating element 80.

**[0028]** Further, as shown in FIG. 3 and FIG. 4, the damping element 90 is also constructed to be thin. After assembly, the damping element 90 is compressed by the operating element 80 and the shell 10 on two sides in the thickness direction. A protrusion 91 is arranged on a surface of the damping element 90 facing the shell 10. This is beneficial for providing damping when the damping element abuts against the shell 10 to form extrusion or compression.

**[0029]** Further, as shown in FIG. 5 to FIG. 9, the electronic atomization device 100 further includes: a liquid storage cavity 12 configured to store a liquid substrate, and an atomization assembly configured to absorb the liquid substrate from the liquid storage cavity 12 and heat and atomize the liquid substrate. In addition, for ease of atomization and output, both the liquid storage cavity 12 and the atomization assembly are arranged close to the near end 110. Specifically, in this embodiment, an aerosol output tube 11 is arranged in the longitudinal direction. In an implementation, the aerosol output tube 11 at least partially extends in the liquid storage cavity 12, and the liquid storage cavity 12 is formed by space between an outer wall of the aerosol output tube 11 and an inner wall of the first housing 10. A first end of the aerosol output tube 11 opposite to the near end 110 is in communication with the inhalation port A, to output the aerosol generated by the atomization assembly through atomization to the inhalation port A for inhalation.

**[0030]** In an implementation shown in FIG. 7, the atomization assembly includes:

a liquid guide element 20, made of a capillary material or a porous material, such as a sponge, a cotton fiber, or a porous body, where the liquid guide element 20 extends perpendicular to the longitudinal direction of the electronic atomization device 100, and the liquid guide element 20 at least partially extends from the liquid storage cavity 12 into the aerosol output tube 11, to absorb and store the liquid substrate through capillary infiltration, as shown by an arrow R1 in FIG. 7; and

a heating element 30, located in the aerosol output tube 11 and surrounding the liquid guide element 20, to heat at least a part of the liquid substrate in the liquid guide element 20 to generate the aerosol and release the aerosol to the aerosol output tube 11. In a

preferred implementation, the heating element 30 is a spiral heating wire surrounding the liquid guide element 20.

**[0031]** Alternatively, in some variable implementations, the liquid guide element 20 may be further constructed to be of various regular or irregular shapes, and is partially in fluid communication with the liquid storage cavity 12 to receive the liquid substrate. Alternatively, in some variable implementations, the liquid guide element 20 may be of more regular or irregular shapes, such as a polygonal block shape, a slot shape with a slot on a surface, or an arch shape with a hollow channel inside.

**[0032]** Alternatively, in some other variable implementations, the heating element 30 may be bonded onto the liquid guide element 20 through printing, deposition, sintering, physical assembly, or the like. In some other variable implementations, the liquid guide element 20 may have a plane or a curved surface for supporting the heating element 30, and the heating element 30 is formed on the plane or the curved surface of the liquid guide element 20 through surface-mounting, printing, deposition, or the like. Alternatively, in some other variable implementations, the heating element 30 is a conductive trajectory formed on a surface of the liquid guide element 20. In an implementation, the conductive trajectory of the heating element 30 may be in a form of a printed circuit formed through printing. In some implementations, the heating element 30 is a patterned conductive trajectory. In some other implementations, the heating element 30 is planar. In the implementations, the heating element 30 is a conductive trajectory extending in a circuitous, meandering, reciprocating, or bending manner.

**[0033]** Further, as shown in FIG. 7, a sealing element 40 is further arranged in the shell 10; and the sealing element 40 at least partially supports the aerosol output tube 11 and seals the liquid storage cavity 12. In this way, after assembly, the liquid storage cavity 12 defined by the outer wall of the aerosol output tube 11 and the inner wall of the shell 10 is closed at an end portion close to the near end 110; and an end portion of the liquid storage cavity 12 facing the far end 120 is sealed by the sealing element 40.

**[0034]** For ease of assembly, an insertion portion 41 extending toward the near end 110 is arranged on the sealing element 40, and is provided for insertion of the aerosol output tube 11. The sealing element 40 further defines an air channel 42 running through the sealing element 40 in the longitudinal direction of the electronic atomization device, to allow external air to enter the aerosol output tube 11 during inhalation. As shown in FIG. 7, the air channel 42 is at least partially surrounded by the insertion portion 41.

**[0035]** Further, as shown in FIG. 7, the electronic atomization device 100 further includes:

a holder 130, located between the sealing element 40 and the far end 120, where the holder 130 is rigid and includes a support arm 131, and the support arm

131 is inserted into the sealing element 40 to provide support for the sealing element 40; and a battery cell 140, at least partially accommodated and held in the holder 130, and configured to supply power to the heating element 30. Specifically, lead holes 43 are provided on the sealing element 40, and after assembly, two ends of the heating element 30 are connected to the battery cell 140 by using leading wires passing through the lead holes 43, so that the heating element 30 is in connection.

**[0036]** Certainly, a circuit board (not shown in the figure) is further arranged in the electronic atomization device 100, to control power output by the battery cell 140 to the heating element 30.

**[0037]** Further, as shown in FIG. 7, a design of an airflow path for inhalation is shown by an arrow R2. An air inlet is provided at the far end 120 of the electronic atomization device 100, to allow the external air to enter the shell 10 during inhalation. In addition, a gap is maintained between the battery cell 140 and the shell 10, so that the air entering from the air inlet can enter the air channel 42 of the sealing element 40 through the gap between the battery cell 140 and the shell 10, and then passes through the aerosol output tube 11 and carries the aerosol generated by the heating element 30 through heating to be output to the inhalation port A.

**[0038]** Further, as shown in FIG. 5 to FIG. 9, the electronic atomization device 100 includes:

an airflow sensor 150, such as a microphone or a differential pressure sensor, including a first side 151 and a second side 152 that face away from each other in the longitudinal direction of the electronic atomization device 100. After assembly, the first side 151 is arranged to face the battery cell 140, and the first side 151 is in airflow communication with the gap between the battery cell 140 and the shell 10, so that an airflow flowing through the gap between the battery cell 140 and the shell 10 can be sensed during inhalation of the user. The second side 152 faces the far end 120, and can be in communication with an external atmosphere through a hole 124 located in the slot 121. The airflow sensor 150 determines an inhalation action of the user when a pressure difference between the first side 151 and the second side 152 caused by an inhalation airflow is greater than a preset threshold, and outputs a high-level signal. Further, the circuit board (not shown in the figure) controls, based on a sensing result of the airflow sensor 150, the battery cell 140 to output power to the heating element 30, to atomize a liquid to generate the aerosol.

**[0039]** Further, as shown in FIG. 5 to FIG. 9, the electronic atomization device 100 includes:

a first air inlet channel 170 located between the battery cell 140 and the far end 120. The first air inlet channel 170 includes a first air inlet 123 located in the slot 121. The first air inlet channel 170 is configured to allow the external air to enter the shell 10 from the first air inlet 123. Specifically, the external air is allowed to enter the gap between the

battery cell 140 and the shell 10 from the first air inlet channel 170, to finally enter the aerosol output tube 11.

**[0040]** In addition, as shown in the figure, the airflow sensor 150 is arranged close to the far end 120; and the airflow sensor 150 is arranged at the far end 120 close to the first air inlet 123.

**[0041]** Further, as shown in FIG. 3, FIG. 4, FIG. 5, FIG. 6, FIG. 8, and FIG. 9, a first through hole 840 is provided on the operating element 80, and a second side 92 opposite to and in communication with the first through hole 840 is provided on the damping element 90. The operating element 80 is moved in the slot 121 by the user pressing the second end wall 820, and has a first configuration or a first location. Specifically,

**[0042]** FIG. 5 and FIG. 8 are schematic diagrams of the operating element 80 in the first configuration or the first location. In the first configuration or the first location, the operating element 80 and the damping element 90 close the first air inlet 123 of the first air inlet channel 170. In addition, in the first configuration or the first location, the operating element 80 and the damping element 90 close the hole 124. In this way, in the first configuration or the first location, the second side 152 of the airflow sensor 150 is sealed or is isolated from the external air, so that the airflow sensor 150 such as the microphone or the differential pressure sensor, cannot be triggered. In this way, in the first configuration or the first location, the circuit board controls to prevent the battery cell 140 from supplying power to the heating element 30, and the user cannot inhale. In addition, in the implementations, the external air cannot enter the shell 10 through the first air inlet 123. In this case, when the user inhales at the inhalation port A, there is large inhalation resistance because no inhalation airflow is generated.

**[0043]** FIG. 6 and FIG. 9 are schematic diagrams of the operating element 80 in the second configuration or the second location. In the second configuration or the second location, the operating element 80 and the damping element 90 open or expose the first air inlet 123 of the first air inlet channel 170. In addition, the hole 124 is aligned with both the first through hole 840 of the operating element 80 and the second through hole 92 of the damping element 90 to be in communication with the external air. In this case, the second side 152 of the airflow sensor 150 is in communication with the external air. In this way, in the second configuration and the second location, when the user inhales at the inhalation port A, the external air can enter the shell 10 through the first air inlet channel 170 in a direction shown by an arrow R4 in FIG. 9; and then the external air flows to the aerosol output tube 11 through the gap between the battery cell 140 and the shell 10 in a direction shown by the arrow R2. In addition, the airflow sensor 150 can be triggered based on that the pressure difference between the first side 151 and the second side 152 is greater than the preset threshold, so that the circuit board controls the battery cell 140 to supply power to the heating element 30 to generate the aerosol through heating.

**[0044]** The first air inlet channel 170 and the hole 124 are selectively opened or closed through movement of the operating element 80 between the first configuration and the second configuration in a direction shown by an arrow P in FIG. 5 and FIG. 6. Specifically, when the operating element is moved to the first configuration, the first air inlet channel 170 and the hole 124 are closed to form a locked state of the electronic atomization device 100. In this case, the heating element 30 is prevented from heating to generate the aerosol, and the inhalation resistance is made high during inhalation to prevent inhalation. When the operating element is moved to the second configuration, the first air inlet channel 170 and the hole 124 are opened or conducted to form an unlocked state of the electronic atomization device 100. In this case, the user can inhale the aerosol. Furthermore, the foregoing electronic atomization device 100 can prevent the user, especially a minor, from inhaling through the locked state.

**[0045]** In some implementations, the electronic atomization device 100 may detect a location of the operating element 80 by using a sensing device such as a distance sensor or an optical sensor, to determine a configuration state of the operating element 80; and prevent the aerosol from being generated in the first configuration.

**[0046]** Further, FIG. 10 to FIG. 15 show an electronic atomization device 100 according to a more preferred embodiment. In this implementation, the electronic atomization device 100 includes:

a shell 10a, including a near end 110a and a far end 120a that face away from to each other in a longitudinal direction, where an aerosol output tube 11a and a liquid storage cavity 12a close to the near end 110a are provided in the shell 10a;

a liquid guide element 20a, extending from the liquid storage cavity 12a into the aerosol output tube 11a, to absorb a liquid substrate; a heating element 30a, located in the aerosol output tube 11a and surrounding the liquid guide element 20a, to heat at least a part of the liquid substrate in the liquid guide element 20a to generate an aerosol;

a sealing element 40a, sealing the liquid storage cavity 12a and having an insertion portion 41a provided for insertion of the aerosol output tube 11a, where a lead hole 43a is provided on the sealing element 40a, and is provided for connecting the heating element 30a to a battery cell 140a after a leading wire passes through the lead hole 43a; and an air channel 42a is provided on the sealing element 40a, to allow air entering from the far end 120a to flow into the aerosol output tube 11a;

a holder 130a, being rigid and including a support arm 131a, where the support arm 131a is inserted into the sealing element 40a to provide support for the sealing element 40a;

the battery cell 140a, accommodated and held in the holder 130a, and configured to output power to the

heating element 30a; and

a circuit board (not shown in the figure), configured to control the battery cell 140a to output power to the heating element 30a.

**[0047]** Further, as shown in FIG. 12 to FIG. 15, the electronic atomization device 100 in this embodiment further includes:

an airflow sensor 150a, where a first side 151a is arranged to face the battery cell 140a, and the first side 151a is in airflow communication with a gap between the battery cell 140a and the shell 10a, so that an airflow flowing through the gap between the battery cell 140a and the shell 10a can be sensed during inhalation of a user; and a second side 152a faces the far end 120a, and can be in communication with external air through a hole 124a located in a slot 121a;

a first air inlet channel 170a, where the first air inlet channel 170a includes a first air inlet 123a located in the slot 121a; and the first air inlet channel 170a is configured to allow the external air to enter the shell 10a from the first air inlet 123a, and specifically, the external air is allowed to enter the gap between the battery cell 140a and the shell 10a from the first air inlet channel 170a, to finally enter the aerosol output tube 11a;

a second air inlet channel 160a, where the second air inlet channel 160a includes a second air inlet 122a located in the slot 121a; and the second air inlet channel 160a is configured to allow the external air to enter the shell 10a from the second air inlet 122a; and

an operating element 80a and a damping element 90a, located at the far end 120a and movable in the slot 121a of the shell 10a, and selectively configured between a first configuration and a second configuration. Specifically,

**[0048]** FIG. 12 and FIG. 14 are schematic diagrams of the first configuration. The operating element 80a in the first configuration covers or closes the first air inlet 123a of the first air inlet channel 170a and the hole 124a, to prevent airflow sensor 150a from triggering to lock the electronic atomization device 100.

**[0049]** In addition, in the first configuration, when the user inhales at an inhalation port A, the external air can enter the shell 10a from the second air inlet 122a of the second air inlet channel 160a, as shown by an arrow R3 in FIG. 12; and then the external air flows to the air channel 42a and the aerosol output tube 11a through the gap between the battery cell 140a and the shell 10a. In the electronic atomization device 100 in this embodiment, when the user inhales in a locked state, heating is not performed to generate the aerosol, but an airflow still pass through the electronic atomization device 100. In the locked state, air can still be inhaled without providing

large inhalation resistance. This is beneficial to avoiding causing a minor to discover or find that the electronic atomization device 100 is locked.

**[0050]** In addition, an area of the second air inlet 122a is greater than an area of the first air inlet 123a.

**[0051]** Further, when the operating element 80a and the damping element 90a are moved to the second configuration, as shown in FIG. 13 and FIG. 15, the hole 124a is aligned with both a first through hole 840a of the operating element 80a and a second through hole 92a of the damping element 90a to be in communication with the external air. The first air inlet 123a of the first air inlet channel 170a is opened or exposed, and the external air can enter the shell 10a during inhalation in a direction shown by an arrow R4 in the figure. In this case, the electronic atomization device 100 is in an unlocked state, and when the user inhales, the airflow sensor 150a such as a microphone or a differential pressure sensor can respond to an inhalation action to trigger to generate a high-level signal, so that the circuit board controls, based on the triggering of the airflow sensor 150a, the battery cell 140a to output power to the heating element 30a.

**[0052]** In addition, in the second configuration shown in FIG. 13 and FIG. 15, the second air inlet 122a of the second air inlet channel 160a is covered or closed, to prevent the external air from entering the shell 10a from the second air inlet channel 160a.

**[0053]** In the electronic atomization device 100 in the preferred embodiment, generation of the aerosol is prevented in the locked state, but there is still an airflow passing through the electronic atomization device 100. This is beneficial to preventing the minor from discovering that the electronic atomization device 100 is locked.

**[0054]** In some other preferred implementations, in the locked state, when the user inhales, the air entering the shell 10a from the second air inlet channel 160a avoids the first side 151a of the airflow sensor 150a. Alternatively, in the locked state, the airflow during inhalation is separated from the first side 151a of the airflow sensor 150a. This is further beneficial to preventing the triggering of the airflow sensor 150a.

**[0055]** Further, according to the preferred implementations shown in FIG. 12 and FIG. 13, a cross-sectional area of the first air inlet channel 170a is less than a cross-sectional area of the second air inlet channel 160a. For the electronic atomization device inhaled by the minor in the locked state, this is beneficial to reducing the inhalation resistance to further prevent the minor from detecting that the electronic atomization device is locked.

**[0056]** Further, in the preferred implementation shown in FIG. 14, a hole diameter of the second air inlet 122a is about 1 mm to 3 mm. In addition, there are a plurality of second air inlets 122a, for example, six second air inlets annularly arranged in FIG. 14.

**[0057]** Further, in a more preferred implementation, both the first air inlet channel 170a and the second air inlet channel 160a extend in the longitudinal direction of the electronic atomization device 100; and the first air

inlet channel 170a and the second air inlet channel 160a are arranged spaced away in a width direction of the electronic atomization device 100. In addition, the airflow sensor 150a is located between the first air inlet channel 170a and the second air inlet channel 160a in the width direction of the electronic atomization device 100.

**[0058]** In addition, the airflow sensor 150a is close to a center of the electronic atomization device 100 in the width direction; and the first air inlet channel 170a and/or the second air inlet channel 160a deviates from the center of the electronic atomization device 100 in the width direction.

**[0059]** Alternatively, in some other variable implementations, the shell 10/10a of the electronic atomization device 100 is constructed to be in an elongated cylindrical shape different from the above flat shape. The operating element 80/80a is in an annular or arc shape that at least partially surrounds the shell 10/10a. In this way, correspondingly, in an operation, the operating element 80/80a is driven to rotate in a circumferential direction of the shell 10/10a, to adjust a location of the operating element 80/80 to be configured between the first configuration and the second configuration.

**[0060]** Alternatively, in some other variable implementations, the first air inlet channel 170/170a and the first air inlet 123/123a are correspondingly arranged at locations away from the far end 120/120a. For example, in some implementations, the first air inlet channel 170/170a and the first air inlet 123/123a are located between the battery cell 140/140a and the sealing element 40/40a. Alternatively, for example, in some implementations, the first air inlet channel 170/170a and the first air inlet 123/123a are defined between the holder 130/130a and the sealing element 40/40a. In this way, the operating element 80/80a is correspondingly adjusted and arranged at a corresponding location on the shell 10/10a.

**[0061]** Further, FIG. 16 to FIG. 23 show an electronic atomization device 100 according to another embodiment. In this implementation, a shell 10b of the electronic atomization device 100 includes a suction nozzle end and an opening end that are opposite to each other in a longitudinal direction, a part of the shell 10b adjacent to the suction nozzle end is configured to be a flat inhalation port B, a suction nozzle B 1 longitudinally penetrating through the inhalation port is provided inside the inhalation port B, and a user mainly contact the inhalation port B during use of the electronic atomization device 100. An atomization assembly and a battery 16b are mounted in an inner cavity of the shell 10b from the opening end of the shell 10b, and a bottom cover is further arranged at the opening end of the shell 10b. In addition to covering the opening end of the shell 10b, the bottom cover is further configured to provide longitudinal support for a battery assembly. A part of space of the inner cavity of the shell 10b is configured to be a liquid storage cavity 12b, and the liquid storage cavity 12b is configured to store a liquid substrate. In an example, the liquid storage cavity 12b is defined and formed by a liquid storage tube 121b fixed in

the inner cavity of the shell 10b, the inner cavity of the liquid storage tube 121b is filled with a liquid storage element 122b, and the liquid storage element 122b may be defined and formed by fiber cotton having a liquid storage capability.

**[0062]** The atomization assembly includes an atomization core assembly and the electronic atomization device 100 configured to support the atomization core assembly. The atomization core assembly includes a heating element 30b and a liquid guide element 20b. The heating element 30b is configured to atomize the liquid substrate to generate an aerosol. At least a part of the liquid guide element 20b is combined with the heating element 30b, and another part of the liquid guide element 20b extends into an inner part of the liquid storage cavity 12b or maintains a fluid channel with the liquid storage cavity 12b, to provide the liquid substrate inside the liquid storage cavity 12b for the heating element 30b. For a non-rechargeable electronic atomization device 100, an atomization core assembly of the electronic atomization device 100 generally uses a low-cost cotton core atomization core assembly, a liquid guide element 20b thereof is made of a fiber cotton material, and a heating element 30b is made of one or more metals of iron, chromium, and nickel to form a spiral heating wire or a heating plate with a grid structure.

**[0063]** In an example, as shown in FIG. 17, the heating element 30b is configured to be a heating plate with a grid structure, the heating plate is constructed to be an open tubular structure, and the liquid guide element 20b is fixed to a periphery of the heating element 30b to wrap the heating element 30b in an inner cavity of the liquid guide element. The atomization core assembly is placed in the inner cavity of the shell 10b by using a substantially tubular holder 23b. The holder 23b has a cavity with two open ends, and two U-shaped openings penetrating through an upper open end of the holder are arranged on a side wall of the holder 23b. The liquid guide element 20b is generally formed by stacking several layers of fiber cotton sheets, and two free ends of the fiber cotton sheet are stacked together to form a protruding structure. The stacked several layers of fiber cotton sheets are fixed to a U-shaped opening 231b on the holder 23b by using the protruding structure. A step surface is arranged on an inner wall of the holder 23b, and a lower end of the liquid guide element 20b longitudinally abuts against the step surface of the inner wall. An upper end of the U-shaped opening 231b extends to the upper open end of the holder 23b, and a lower end of the U-shaped opening 231b is flush with the step surface. A liquid inlet hole 232b is further provided on the side wall of the holder 23b, and the liquid inlet hole 232b is provided within a longitudinal extension range of the U-shaped opening 231b. An air outlet tube 24b is sleeved on an upper end of the holder 23b, an end of the air outlet tube 24b abuts against a flange on an outer wall of the holder 23b, and the other end of the air outlet tube 24b extends out of the inner cavity of the liquid storage tube 121b. The liquid storage

element 122b filled inside the liquid storage tube 121b is formed by splicing of several parts of fiber cotton, and the several parts of fiber cotton are spliced on the holder 23b and a periphery of the air outlet tube. The protruding structure on the liquid guide element 20b can directly contact with the fiber cotton, to absorb the liquid substrate. In addition, the liquid substrate can also enter the liquid guide element 20b from the liquid inlet hole on the holder 23b, and the heating element 30b atomizes the absorbed liquid substrate to generate the aerosol.

**[0064]** When the electronic atomization device 100 reaches a factory state, the liquid storage cavity 12b of the electronic atomization device 100 is generally configured to be non-fillable, to prevent a user from adding a low-quality liquid substrate into the liquid storage cavity 12b. The liquid storage tube 121b includes a near end and a far end opposite to each other in the longitudinal direction, and the near end is arranged close to the inhalation port B. An upper sealing member 13b and a lower sealing member 14b are respectively arranged at the near end and the far end of the liquid storage tube 121b. The upper sealing sleeve is sealingly sleeved on an upper end of the liquid storage tube 121b. A slot is further provided on the upper sealing member 13b, and a liquid absorption element 131b is arranged in the slot. The liquid absorption element 131b is arranged close to the suction nozzle B1 and is made of a fiber cotton material with a capillary function, to absorb condensate and prevent the condensate from entering the suction nozzle B1 to be inhaled by the user. In addition, longitudinally penetrating fluid channels are provided on the liquid absorption element 131b and the upper sealing member 13b. In an example, as shown in FIG. 16 and FIG. 17, a hollow air guide column 133b is provided on the upper sealing member 13b, the air guide column 133b is accommodated in an inner cavity of the air outlet tube 24b, and a vent hole on the air guide column 133b is in communication with the air outlet tube 24b and a vent hole on the liquid absorption element 131b. A flange is arranged on a side wall of the lower sealing member 14b, and a lower end of the liquid storage tube 121b abuts against the flange of the lower sealing member 14b. In another example, as shown in FIG. 24, a through hole in communication with the slot is provided on the upper sealing member 13b. An upper end of the air outlet tube 24b is fixed in the through hole of the upper sealing member 13b, and an air outlet end of the air outlet tube 24b is arranged close to an air outlet hole on the liquid guide element 20b. The through hole on the upper sealing member 13b is in longitudinal communication with the air outlet tube and the vent hole on the liquid absorption element 131b.

**[0065]** An air guide hole 141b is further provided on the lower sealing member 14b, and the air guide hole 141b is configured to be able to guide an external airflow into an inner cavity of the holder 23b. A lower end of the holder 23b abuts against a step surface on an inner wall of the air guide hole 141b. Further, a positive electrode 142b and a

negative electrode 143b are further fixed on the lower sealing member 14b. Conductive pins connected to two ends of the heating element 30b penetrate a wall of the lower sealing member 14b to be connected to the positive electrode 142b and the negative electrode 143b. In a preferred implementation, the heating element 30b is configured to be a heating plate with a grid structure, and the heating plate is constructed to be an open tubular structure. Conductive leads connected to two ends of the heating element 30b are maintained to extend on a longitudinal extension line of two free sides of the heating plate as close as possible, to prevent the two free sides of the heating plate from being pulled, causing the heating plate to shift and affecting a heating effect of the heating plate. Several support legs 144b are arranged on a bottom end surface of the lower sealing member 14b, and the several support legs are arranged surrounding the air guide hole 141b. The support leg 144b abuts against a liquid absorption element or a power supply assembly in a bottom cover 81b.

**[0066]** A control part of an airflow sensor 150b inside the electronic atomization device 100 is in communication with the power supply assembly through a wire, and the electronic atomization device 100 control, by using the airflow sensor 150b, opening and closing of the electronic atomization device 100 due to an air pressure change inside the shell 10b due to an inhalation action. The airflow sensor includes a first side 151b and a second side 152b. The first side 151b is in communication with the airflow channel inside the electronic atomization device 100, and the second side 152b is in communication with the external atmosphere through an air hole 50b. The airflow channel inside the electronic atomization device 100 is in communication with the suction nozzle B1 and an air inlet 60b. When the user performs the inhalation action, air pressure in the airflow channel inside the electronic atomization device 100 decreases, and a pressure difference is generated between the second side 152b and the first side 151b. When the pressure difference reaches a start threshold of the airflow sensor 150b, the airflow sensor 150b converts a pressure difference signal into an electrical signal, to control the battery 16b to provide power drive for the atomization assembly.

**[0067]** For a one-piece electronic atomization device 100, the air inlet 60b of the electronic atomization device 100 is generally provided at the bottom of the bottom cover thereof or near the bottom end thereof. When the airflow sensor 150b is also arranged inside the bottom cover of the electronic atomization device 100, the air hole 50b of the airflow sensor is also arranged close to the air inlet 60b. In the embodiment provided in this application, an operating element 70b is further arranged on an end of the shell 10b. The operating element 70b has a function of a child lock. The electronic atomization device 100 can be started only when the operating element 70b is adjusted to a set location. Further, the operating element 70b is configured to be movable between a first

configuration and a second configuration relative to the shell 10b. When the operating element 70b is in the first configuration, the operating element 70b is configured to simultaneously close the air hole 50b and the air inlet 60b, and the electronic atomization device 100 is in a locked state. When the operating element 70b is in the second configuration, the operating element 70b is configured to simultaneously open the air hole 50b and the air inlet 60b, and the electronic atomization device 100 is in an open state. When the electronic atomization device 100 is not in use, the electronic atomization device 100 is in a closed state, and the air inlet 60b and the air hole 50b of the electronic atomization device 100 are both in a closed state. Therefore, even if a child imitates an inhalation action, the external airflow cannot enter the electronic atomization device 100 through the air hole 50b or the air inlet 60b, so that the first side 151b and the second side 152b of the airflow sensor 150b inside the electronic atomization device 100 cannot generate a pressure difference, so that the airflow sensor 150b cannot be triggered, and the electronic atomization device 100 cannot generate the aerosol, thereby limiting use of the electronic atomization device 100 by the child. A configuration of the operating element 70b mainly relies on a function of a movable switch. The movable switch may be configured to rotate relative to the shell 10b to implement the opening and closing of the electronic atomization device 100. In an optional implementation, the movable switch may alternatively be configured to slide relative to the shell 10b to implement the opening and closing of the electronic atomization device 100. A specific structure of the movable switch is described in detail below in combination with different structures of the electronic atomization device 100.

**[0068]** In an embodiment, when the electronic atomization device 100 is configured to be in a cylindrical shape, the operating element 70b is configured to be a rotary switch. When the electronic atomization device 100 is configured to be in the cylindrical shape, the atomization assembly and the power supply assembly inside the electronic atomization device 100 are arranged in parallel up and down, and the airflow sensor 150b is arranged at a lower end of the battery 16b. As shown in FIG. 18 to FIG. 23, the electronic atomization device 100 includes a rotating sleeve 71b connected to an end of the shell 10b, where the rotating sleeve 71b may rotate relative to the shell 10b, and a sleeve 72b is further arranged inside the rotating sleeve 71b. The sleeve 72b is coaxially arranged with the rotating sleeve 71b, and an end of the sleeve 72b is fixedly connected to the shell 10b. The operating element 70b includes the rotating sleeve 71b and the sleeve 72b. The rotating sleeve 71b rotates relative to the sleeve 72b, thereby changing a switching state of the air inlet 60b and a switching state of the air hole 50b. Further, the battery 16b is accommodated in an inner cavity of the sleeve 72b, a length of the sleeve 72b is greater than a length of the shell 10b, a circumferentially extending sliding rail 711b is arranged

on an inner wall of the rotating sleeve 71b, and a first group of outward-turned buckles 721b is arranged on the sleeve 72b. The first group of buckles 721b is configured to be slidable on the sliding rail 711b, and the first group of buckles 721b includes a first buckle 7211b and a second buckle 7212b that are symmetrical about an axis thereof. Correspondingly, a first sliding rail 7111b and a second sliding rail 7112b that are symmetrically arranged about a central axis of the rotating sleeve are arranged on the selected rotating sleeve 71b, where the first buckle 7211b slides on the first sliding rail 7111b, and the second buckle 7212b slides on the second sliding rail 7112b. A second group of buckles 722b is further arranged on the sleeve 72b, and the second group of buckles 722b is snap-connected to the shell 10b, so that the sleeve 72b is fixedly arranged inside the electronic atomization device 100. When the rotating sleeve 71b is rotated in a specified direction, the rotating sleeve 71b rotates relative to the sleeve 72b until the buckle on the sleeve 72b abuts against an end of the sliding rail on the rotating sleeve 71b. It may be understood that a protrusion structure may be arranged on the inner wall of the rotating sleeve 71b, and a sliding slot structure may be arranged on the sleeve 72b, so that the rotating sleeve 71b is configured to be rotatable within a stroke limited by a sliding slot. When the rotating sleeve 71b is in the first configuration, the first group of buckles 721b on the sleeve 72b is located at an end of the sliding rail 711b. When the rotating sleeve 71b is in the second configuration, the first group of buckles 721b on the sleeve 72b is located at the other end of the sliding rail 711b. A receiving cavity 723 is provided on the sleeve 72b, and the airflow sensor 150b is fixed in the receiving cavity 723. A wire slot is provided on a side of the receiving cavity 723. A wire connected to a control board of the airflow sensor 150b is led out through the wire slot and further extends to be connected to the battery 16b and the heating element 30b.

**[0069]** The air inlet 60b includes at least one air inlet hole 61b provided at intervals at a bottom end of the rotating sleeve 71b, and an air guide port 62b is provided at a bottom end of the sleeve 72b. The air hole 50b includes a first air hole 51b provided at the bottom end of the rotating sleeve 71b and a second air hole 52b provided at the bottom end of the sleeve 72b. The second air hole 52b is in communication with the receiving cavity 723 of the airflow sensor 150b, where a part of the air inlet hole 61b and the first air hole 51b are arranged symmetrically about a center of the bottom end of the rotating sleeve 71b, so that during the rotation of the rotating sleeve 71b, a displacement of the air inlet hole 61b rotating relative to a central axis of the rotating sleeve is basically the same as a displacement of the first air hole 51b rotating relative to the central axis of the rotating sleeve, so that the air inlet hole 61b and the first air hole 51b can be simultaneously in communication with or staggered with the air guide port 62b and the second air hole 52b on the sleeve 72b respectively.

**[0070]** Further, when the air inlet hole 61b on the

rotating sleeve 71b is staggered with the air guide port 62b on the sleeve 72b, and the first air hole 51b on the rotating sleeve 71b is staggered with the second air hole 52b on the sleeve 72b, to form a seal between the air inlet hole 61b and the first air hole 51b on the rotating sleeve 71b and prevent an airflow from entering through a gap between the rotating sleeve 71b and the sleeve 72b, a blocking element 73b is further arranged between the rotating sleeve 71b and the sleeve 72b. When the air inlet hole 61b on the rotating sleeve 71b is staggered with the air guide port 62b on the sleeve 72b, and the first air hole 51b on the rotating sleeve 71b is staggered with the second air hole 52b on the sleeve 72b, the blocking element 73b is configured to be a flexible material, so that the air inlet hole 61b and the first air hole 51b on the rotating sleeve 71b can be sealed and blocked, making it difficult for the airflow to enter through a gap between the two. In addition, a first air guide window 63b and a second air guide window 53b are further arranged on the blocking element 73b, and the first air guide window 63b and the second air guide window 53b are symmetrically arranged about a center of the blocking element 73b. The first air guide window 63b is always in communication with the air guide port 62b on the sleeve 72b. When the rotating sleeve 71b is in the first configuration, the first air guide window 63b directly faces the air inlet hole 61b on the rotating sleeve 71b, and the airflow channel inside the electronic atomization device 100 is in longitudinal communication. When the rotating sleeve 71b is in the second configuration, the first air guide window 63b is completely staggered with the air inlet hole 61b on the rotating sleeve 71b, and the airflow channel inside the electronic atomization device 100 is in a closed state. The air hole 50b includes the second air guide window 53b, and the second air guide window 53b is always in communication with the second air hole 52b on the sleeve 72b. When the rotating sleeve 71b is in the first configuration, the second air guide window 53b directly faces the first air hole 51b on the rotating sleeve 71b, and the air hole 50b is in longitudinal communication. When the rotating sleeve 71b is in the second configuration, the second air guide window 53b is completely staggered with the first air hole 51b on the rotating sleeve 71b, and the air hole 50b is in a closed state.

**[0071]** Further, an air inlet cross-sectional area of the air inlet 60b of the electronic atomization device 100 is configured to be adjustable, so that inhalation resistance of the electronic atomization device 100 is configured to be in an adjustable mode. In an example, the electronic atomization device 100 is configured to be in a two-level inhalation resistance mode. As shown in FIG. 19, two air inlet holes 61b, respectively a first air inlet hole 611b and a second air inlet hole 612b, are provided on an end of the rotating sleeve 71b. When the rotating sleeve 71b is at a third location, the first air inlet hole 611b is in longitudinal communication with the first air guide window 63b on the blocking element 73b and the air guide port 62b on the sleeve 72b, and the airflow channel is in a communication

state. The second air inlet hole 612b is staggered with the first air guide window on the blocking element 73b, and the external airflow can only enter the electronic atomization device 100 through the first air inlet hole 611b. In this case, the electronic atomization device 100 is in a first inhalation resistance mode. When the rotating sleeve 71b is in the second configuration, the first air inlet hole 611b, the second air inlet hole 612b, the first air guide window 63b on the blocking element 73b, and the air guide port 62b on the sleeve 72b are all in longitudinal communication, and the external airflow may enter the electronic atomization device 100 through the first air inlet hole 611b and the second air inlet hole 612b. In this case, the electronic atomization device 100 is in a second inhalation resistance mode. Apparently, an air inlet cross-sectional area limited by the air inlet 60b corresponding to the second inhalation resistance mode is much greater than an air inlet cross-sectional area limited by the air inlet 60b corresponding to the first inhalation resistance mode. The user may determine whether the electronic atomization device 100 is currently in the first inhalation resistance mode or the second inhalation resistance mode by observing a switching state of the first air inlet hole 611b and a switching state of the second air inlet hole 612b on the bottom cover. The third location is between the first configuration and the second configuration. Correspondingly, when the first buckle 7211b and the second buckle 7212b are both at a middle location of the sliding rail 711b, the rotating sleeve 71b corresponds to a third location state. In addition, when the rotating sleeve 71b is at the third location, the air hole 50b is in an open state. To be specific, the first air hole 51b on the rotating sleeve 71b, the second air guide window 53b on the blocking element 73b, and the second air hole 52b on the sleeve 72b are in a communication state. Therefore, an air inlet area of the second air guide window 53b is greater than an air inlet area of the second air hole 52b and an air inlet area of the first air hole 51b, so that when the rotating sleeve 71b moves from the third location to the second configuration, the second air hole 52b on the rotating sleeve 71b can always be in communication with the second air guide window 53b. An air inlet area of the first air guide window 63b is greater than an air inlet area of the first air inlet hole 611b and an air inlet area of the second air inlet hole 612b, so that during the rotation of the rotating sleeve 71b, the first air inlet hole 611b and the second air inlet hole 612b arranged spaced away on an end surface of the rotating sleeve 71b can simultaneously overlap with the first air guide window 63b. The air inlet area of the first air guide window 63b may be configured to be the same as an area of the air guide port 62b on the sleeve 72b, to further increase an airflow amount entering the electronic atomization device 100. It may be understood that the air inlet hole 61b provided on the rotating sleeve 71b may be provided to be an arc-shaped air inlet, so that during the rotation of the rotating sleeve 71b, an area of overlap between the arc-shaped air inlet on the rotating sleeve 71b and the first air guide

window 63b on the blocking element 73b continuously changes, thereby continuously changing a size of the inhalation resistance of the electronic atomization device 100.

**[0072]** In another embodiment provided in this application, as shown in FIG. 24 to FIG. 28, when the electronic atomization device 100 is configured to be in a box shape, the atomization assembly and the power supply assembly inside the electronic atomization device 100 are arranged side by side on the left and right. In a preferred implementation, the inner cavity of the shell 10b of the electronic atomization device 100 is divided into two cavities, namely the liquid storage cavity 12b and a battery cavity. The inhalation port B is arranged within a range of a region in which the liquid storage cavity 12b extends, and the liquid storage cavity 12b and the battery cavity are separated by an inner wall of the shell 10b. In the box-shaped electronic atomization device 100, the bottom cover 81b is arranged at an end of the shell 10b, and the airflow sensor 150b is fixedly arranged in an inner cavity of the bottom cover 81b. Specifically, as shown in FIG. 24 and FIG. 25, the box-shaped electronic atomization device 100 is configured with a large liquid storage cavity 12b, so that many liquid substrates can be stored inside. In a preferred implementation, a charging interface 31b is further arranged on the bottom cover 81b, and the charging interface 31b is fixed on a charging plate. The charging plate is arranged at the lower end of the battery 16b. A receiving cavity is further provided in the inner cavity of the bottom cover 81b. After the airflow sensor 150b is fixed on a sealing sleeve 43b, an airflow sensing assembly is formed, and the airflow sensing assembly is fixed inside the receiving cavity. The airflow sensor 150b is arranged closer to the atomization assembly than that in the foregoing embodiment, so that a protruding air guide column 431b is arranged at an end of the sealing sleeve 43b, an end of a vent hole on the air guide column 431b is in communication with the airflow channel inside the electronic atomization device 100, and the other end of the vent hole on the air guide column 431b is in communication with a sensing membrane of the airflow sensor 150b. The operating element 70b configured on the electronic atomization device 100 is configured to be a sliding switch 75b. A sliding slot 32b is provided on an end surface of the bottom cover 81b, a strip-shaped opening 33b is provided in the sliding slot 32b, and the sliding switch 75b includes an operating member and a protruding sliding column. An end of the sliding column is connected to the operating member, and a plug is arranged at the other end of the sliding column. Anti-slip grains are arranged on an outer surface of the operating member. When external force is applied to the operating member, the sliding switch 75b can slide in the sliding slot 32b, and an operable moving range of the sliding switch 75b is a stroke defined by the strip-shaped opening 33b of the sliding slot 32b. When the sliding switch 75b is in the first configuration, the sliding column of the sliding switch 75b is located at a side of the

strip opening 33b, and when the sliding switch 75b is in the second configuration, the sliding column of the sliding switch 75b is located at the other side of the strip-shaped opening.

**[0073]** The air inlet 60b of the electronic atomization device 100 includes the air inlet hole 61b provided on the sliding slot 32b, and the air hole 50b of the electronic atomization device 100 includes a third air hole 54b provided on the sliding slot 32b. The air inlet hole 61b is configured to introduce the external airflow into the inner cavity of the bottom cover 81b to enter the electronic atomization device 100. The first air hole 51b is in communication with the receiving cavity of the airflow sensor 150b, so that a base membrane of the airflow sensor 150b is in communication with the external atmosphere. The air inlet hole 61b is arranged adjacent to the third air hole 54b. When the sliding switch 75b is in the first configuration, the third air hole 54b and the air inlet hole 61b are both blocked by the sliding switch 75b, as shown in FIG. 26, so that the airflow channel and the air hole 50b of the electronic atomization device 100 are both in a closed state. Even if the user inhales hard, the external airflow cannot enter the electronic atomization device 100, and the airflow sensor 150b cannot be triggered, so that the electronic atomization device 100 is in a child lock state. When the sliding switch 75b is in the second configuration, the first air hole 51b is staggered with the sliding switch 75b, so that the air hole 50b of the electronic atomization device 100 is in an open state, and the air inlet hole 61b is staggered with the sliding switch 75b, so that the airflow channel of the electronic atomization device 100 is in an open state.

**[0074]** Further, the inhalation resistance of the electronic atomization device 100 is configured to be adjustable. Specifically, two air inlet holes 61b, respectively the first air inlet hole 611b and the second air inlet hole 612b, are provided spaced away in the sliding slot 32b. The third air hole 54b is provided on a side of the first air inlet hole 611b. The third air hole 54b, the first air inlet hole 611b, and the second air inlet hole 612b are provided adjacent to each other in sequence. The sliding switch 75b further includes the third location between the first configuration and the second configuration. When the sliding switch 75b is at the third location, the third air hole 54b is staggered with the sliding switch 75b, the air hole 50b is in an open state, the first air inlet hole 611b is staggered with the sliding switch 75b, the second air inlet hole 612b is blocked by the sliding switch 75b, the air inlet 60b is in an open state, and the electronic atomization device 100 corresponds to the first inhalation resistance mode, as shown in FIG. 27. When the sliding switch 75b is in the second configuration, the first air hole 51b is staggered with the sliding switch 75b, the air hole 50b is in an open state, the first air inlet hole 611b and the second air inlet hole 612b are both staggered with the sliding switch 75b, the air inlet 60b is in an open state, and the electronic atomization device 100 corresponds to the second inhalation resistance mode, as shown in FIG. 28. Appar-

ently, the air inlet cross-sectional area defined by the air inlet 60b of the electronic atomization device 100 in the first inhalation resistance mode is smaller than the air inlet cross-sectional area defined by the air inlet 60b in the second inhalation resistance mode. It may be understood that if it is necessary to add a multi-level inhalation resistance mode, the air inlet 60b may be configured to be a strip-shaped air inlet or a plurality of air inlet holes 61b may be provided on the sliding slot 32b, and a switching state of the plurality of air inlet holes 61b may be changed by changing a location of the sliding switch 75b, thereby adjusting the inhalation resistance of the electronic atomization device 100.

**[0075]** An embodiment of this application provides an operating element 70b, and the operating element 70b can simultaneously control switching states of an air hole 50b and an air inlet 60b of an electronic atomization device 100. When the operating element 70b is in a first configuration, the air hole 50b and the air inlet 60b are both in a closed state. Even if a user performs an inhalation action hard, inside the electronic atomization device 100 without supplement of an external airflow, a first side 151b of an airflow sensor 150b can only sense a slight airflow change, so that the airflow sensor 150b of the electronic atomization device 100 cannot be triggered. It may be understood that if the air hole 50b is in an open state and the user inhales the electronic atomization device 100, the external airflow may enter the electronic atomization device 100 through the air hole 50b and a gap between a connecting wire of the airflow sensor 150b and a wire fixing slot or a fixing hole, so that sufficient negative pressure is generated inside the electronic atomization device 100, so that the airflow sensor 150b is triggered and the electronic atomization device 100 is started. After the air hole 50b is closed, the external airflow has no chance to enter the electronic atomization device 100, so that there is no possibility that a child lock of the electronic atomization device 100 fails. Further, the operating element 70b may be arranged with a multi-level adjustment mode, to further adjust an inhalation resistance mode of the electronic atomization device 100, thereby improving user experience.

**[0076]** It should be noted that, the specification of this application and the accompanying drawings thereof illustrate preferred embodiments of this application, but are not limited to the embodiments described in this specification. Further, a person of ordinary skill in the art may make improvements or variations according to the above descriptions, and such improvements and variations shall all fall within the protection scope of the appended claims of this application.

## Claims

1. An electronic atomization device, comprising:

a liquid storage cavity, configured to store a

- liquid substrate;  
 an atomization assembly, configured to atomize the liquid substrate to generate an aerosol;  
 an inhalation port;  
 a first air inlet, and a first airflow channel located between the first air inlet and the inhalation port, wherein the first airflow channel defines a first airflow path from the first air inlet through the atomization assembly to the inhalation port, to transmit the aerosol to the inhalation port;  
 an airflow sensor, in airflow communication with the first airflow channel and configured to sense an airflow change in the first airflow channel;  
 a battery cell, configured to supply power to the atomization assembly;  
 a circuit, configured to control, based on a sensing result of the airflow sensor, the battery cell to supply power to the atomization assembly;  
 and  
 an operating element, arranged to be configurable between a first configuration and a second configuration, wherein the operating element closes or covers the first air inlet in the first configuration to prevent external air from entering the first airflow channel through the first air inlet, and the operating element opens or exposes the first air inlet in the second configuration.
2. The electronic atomization device according to claim 1, wherein the circuit is configured to prevent, when the operating element is in the first configuration, the battery cell from supplying power to the atomization assembly.
3. The electronic atomization device according to claim 1 or 2, further comprising:  
 a second air inlet, and a second airflow channel located between the second air inlet and the inhalation port, wherein the second airflow channel defines a second airflow path from the first air inlet to the inhalation port.
4. The electronic atomization device according to claim 3, wherein the operating element opens or exposes the second air inlet in the first configuration; and the operating element closes or covers the second air inlet in the second configuration, to prevent the external air from entering the second airflow channel through the second air inlet.
5. The electronic atomization device according to claim 3, wherein an area of the second air inlet is greater than an area of the first air inlet, or the number of the second air inlet is greater than the number of the first air inlet.
6. The electronic atomization device according to claim 1 or 2, further comprising:  
 a shell, at least partially defining a surface of the electronic atomization device, wherein:  
 at least a part of the operating element is exposed outside the shell and is constructed to be movable relative to the shell, to change a configuration between the first configuration and the second configuration.
7. The electronic atomization device according to claim 6, further comprising:  
 a damping element, located between the operating element and the shell, to provide damping in movement of the operating element.
8. The electronic atomization device according to claim 6, wherein:  
 the airflow sensor comprises a first side and a second side that face away from each other, and the first side is in airflow communication with the first airflow channel;  
 an air hole is further provided on the shell, to communicate the second side with an external atmosphere;  
 the operating element closes or covers the air hole in the first configuration, to isolate the second side from the external atmosphere, to prevent the airflow sensor from sensing the airflow change in the first airflow channel; and  
 the operating element opens or exposes the air hole in the second configuration, to communicate the second side with the external atmosphere.
9. The electronic atomization device according to claim 1, wherein the operating element prevents the airflow sensor from sensing the airflow change in the first airflow channel in the first configuration, and allows the airflow sensor to sense the airflow change in the first airflow channel in the second configuration.
10. The electronic atomization device according to claim 1, wherein the electronic atomization device further comprises a second air inlet, a configuration of the operating element further comprises a third configuration, the operating element opens the first air inlet and closes the second air inlet when in the third configuration, and the third configuration is located between the first configuration and the second configuration.
11. The electronic atomization device according to claim 10, wherein the operating element simultaneously opens the first air inlet and the second air inlet when in the second configuration.

**12.** An electronic atomization device, comprising:

a shell;  
 an inhalation port and at least one air inlet,  
 wherein the air inlet is configured to guide an  
 external airflow to enter the electronic atomiza- 5  
 tion device, and an airflow channel is defined  
 between the air inlet and the inhalation port;  
 an airflow sensor, configured to sense an airflow  
 change in the airflow channel, to generate a 10  
 sensing signal, wherein the airflow sensor com-  
 prises a first side and a second side that are  
 opposite to each other, and the first side is in fluid  
 communication with the airflow channel;  
 an air hole, configured to communicate the sec- 15  
 ond side of the airflow sensor with an external  
 world; and  
 an operating element, wherein the operating  
 element is movable relative to the shell between  
 a first configuration and a second configuration; 20  
 the operating element simultaneously closes  
 the air hole and all the air inlets when in the first  
 configuration, to prevent the sensing signal from  
 being generated due to activation of the airflow  
 sensor; and the operating element simulta- 25  
 neously opens the air hole and all the air inlets  
 when in the second configuration, to allow the  
 airflow sensor to be activated.

**13.** The electronic atomization device according to claim 30  
 12, wherein an air inlet cross-sectional area of the air  
 inlet is configured to be changeable with a change of  
 a location of the operating element.

**14.** The electronic atomization device according to claim 35  
 12, wherein the operating element is capable of  
 being in a third configuration, the third configuration  
 is located between the first configuration and the  
 second configuration, and when the operating ele-  
 ment is in the third configuration, the air hole is 40  
 opened, and simultaneously the air inlet is partially  
 opened or a partial quantity of air inlets are opened.

**15.** The electronic atomization device according to claim 45  
 11, wherein:

the operating element comprises a rotating  
 sleeve, the rotating sleeve is connected to an  
 end of the shell, and the rotating sleeve is con-  
 figured to be rotatable relative to the shell; 50  
 or the operating element comprises a sliding  
 switch, and the sliding switch is configured to  
 be operable to be slidable relative to the shell.

55

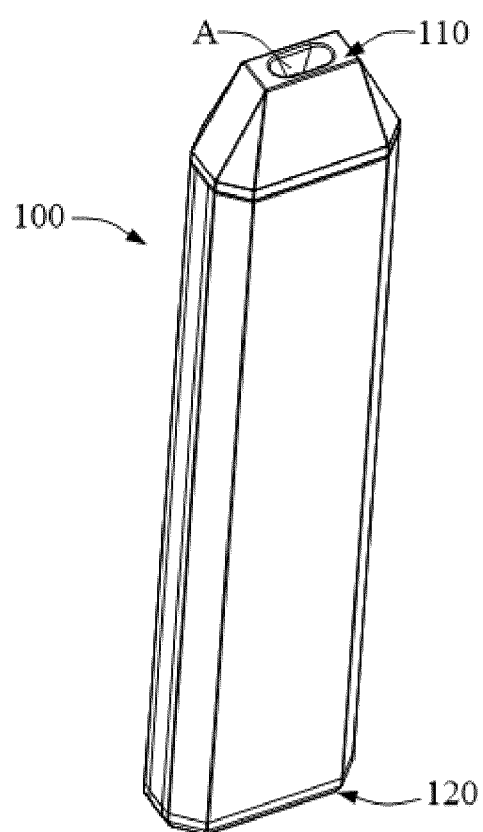


FIG. 1

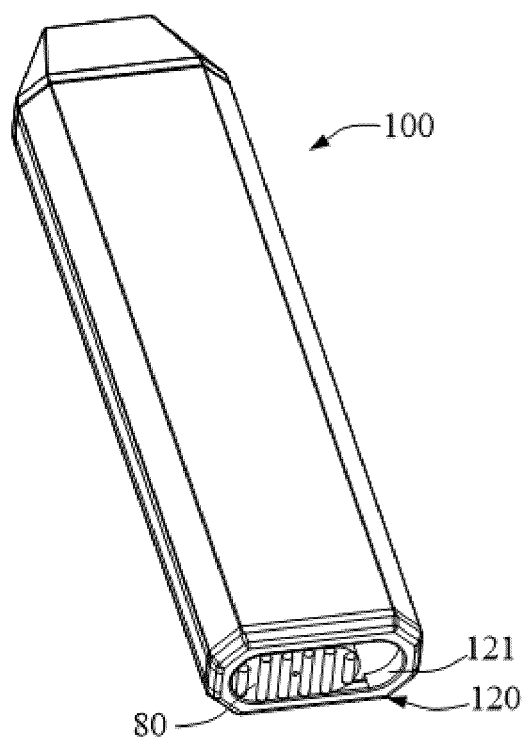


FIG. 2

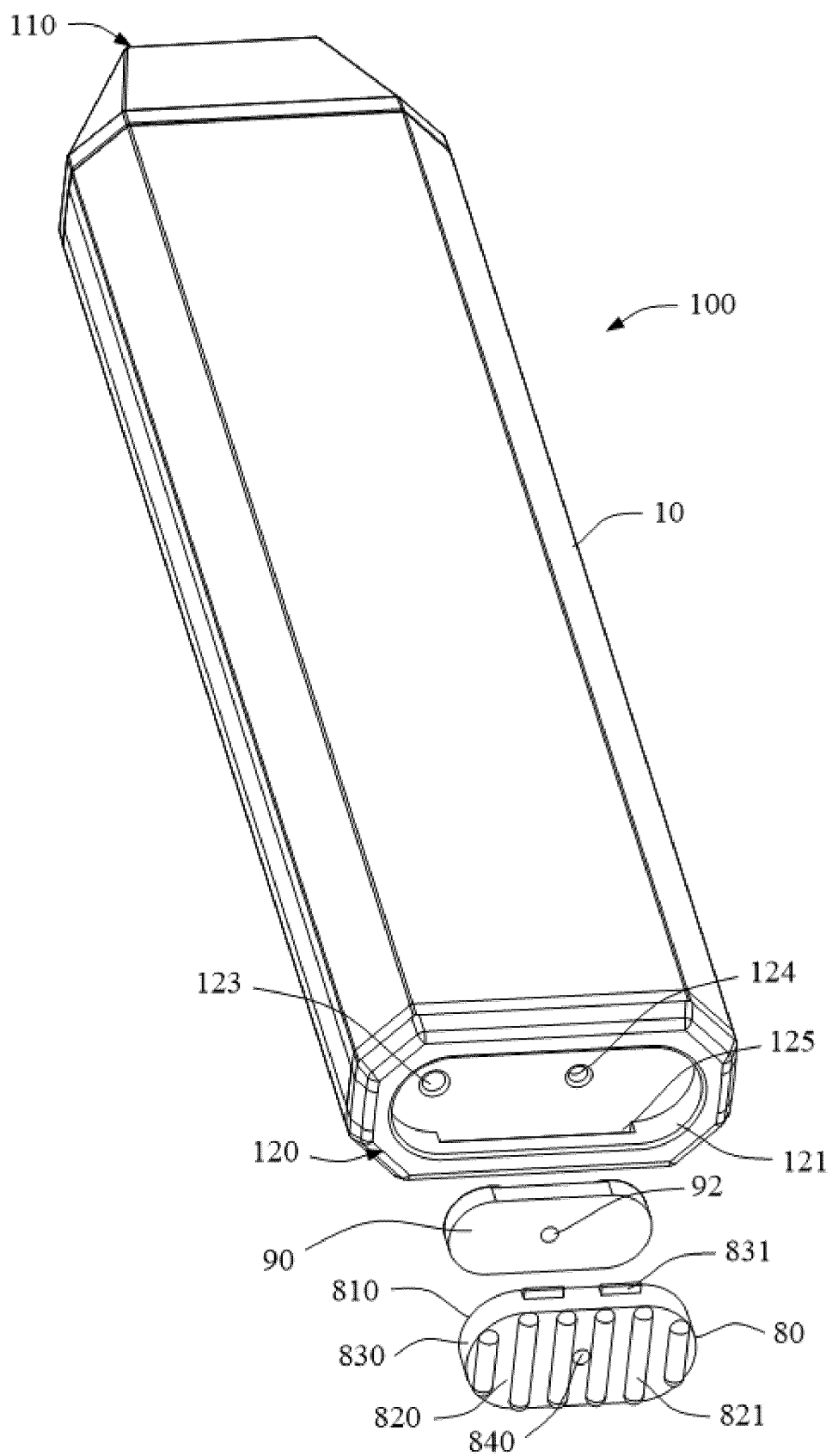


FIG. 3

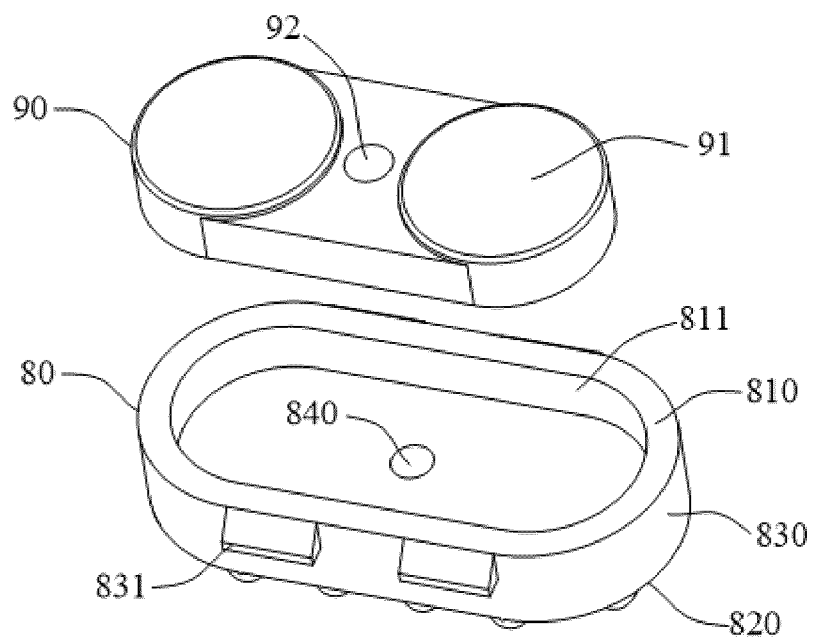


FIG. 4

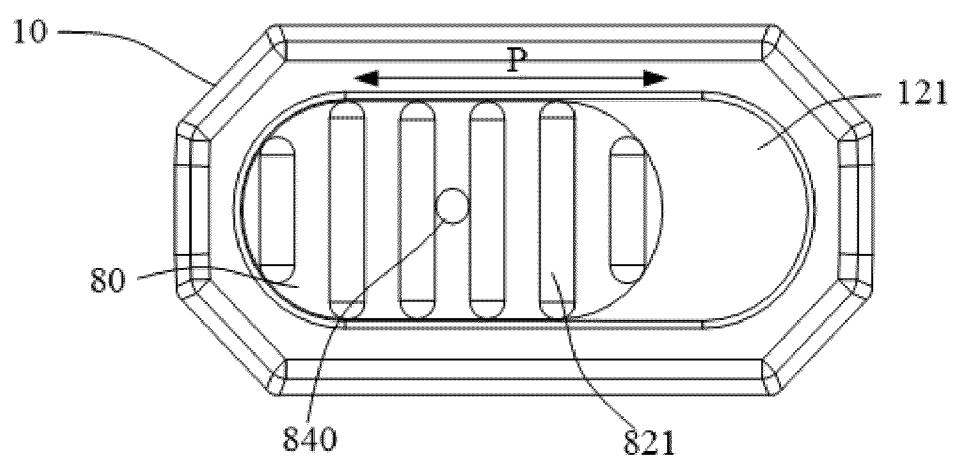


FIG. 5

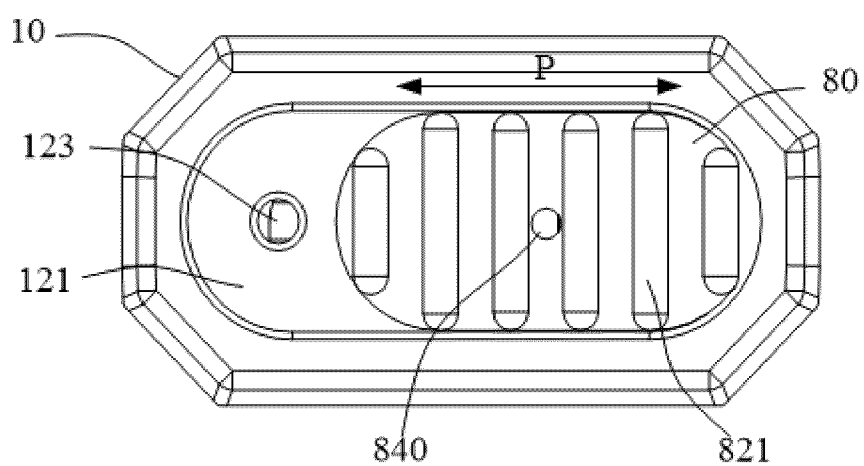


FIG. 6

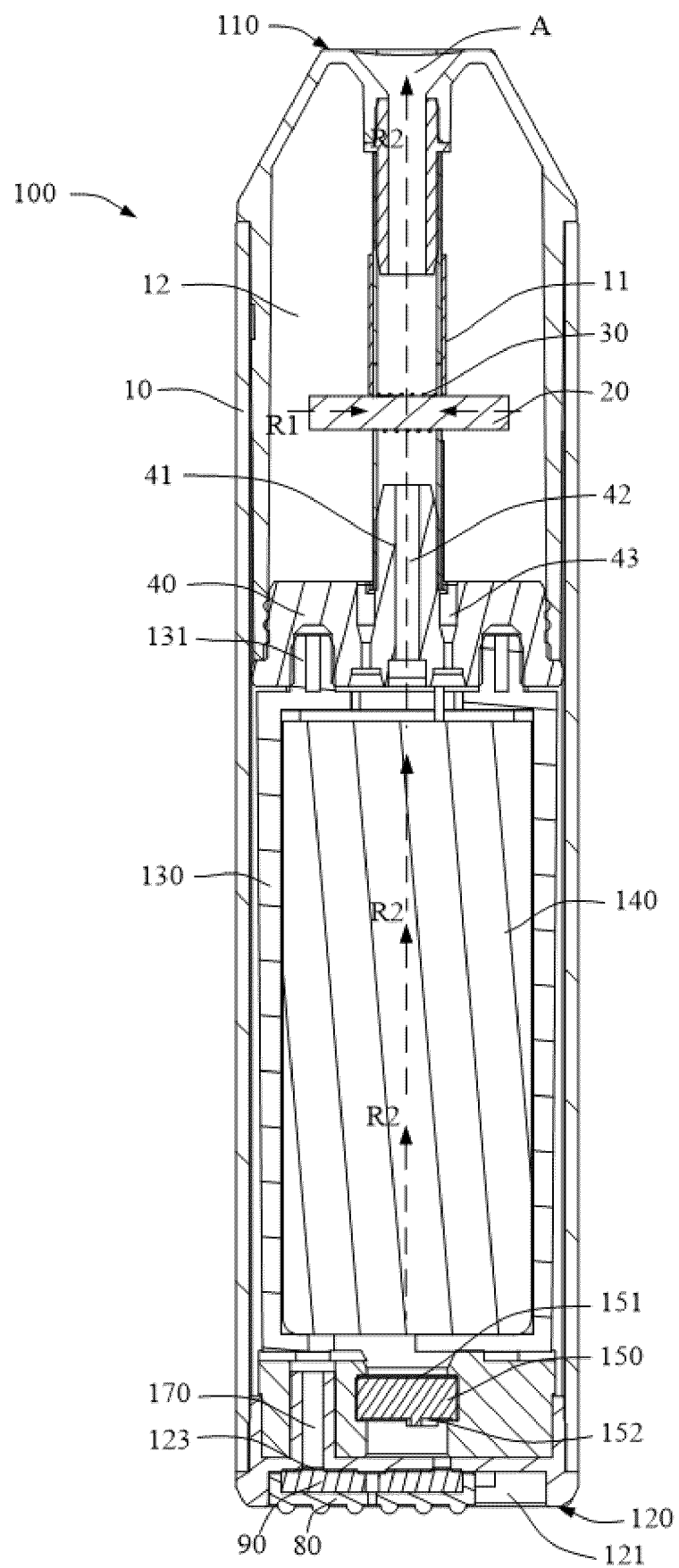


FIG. 7

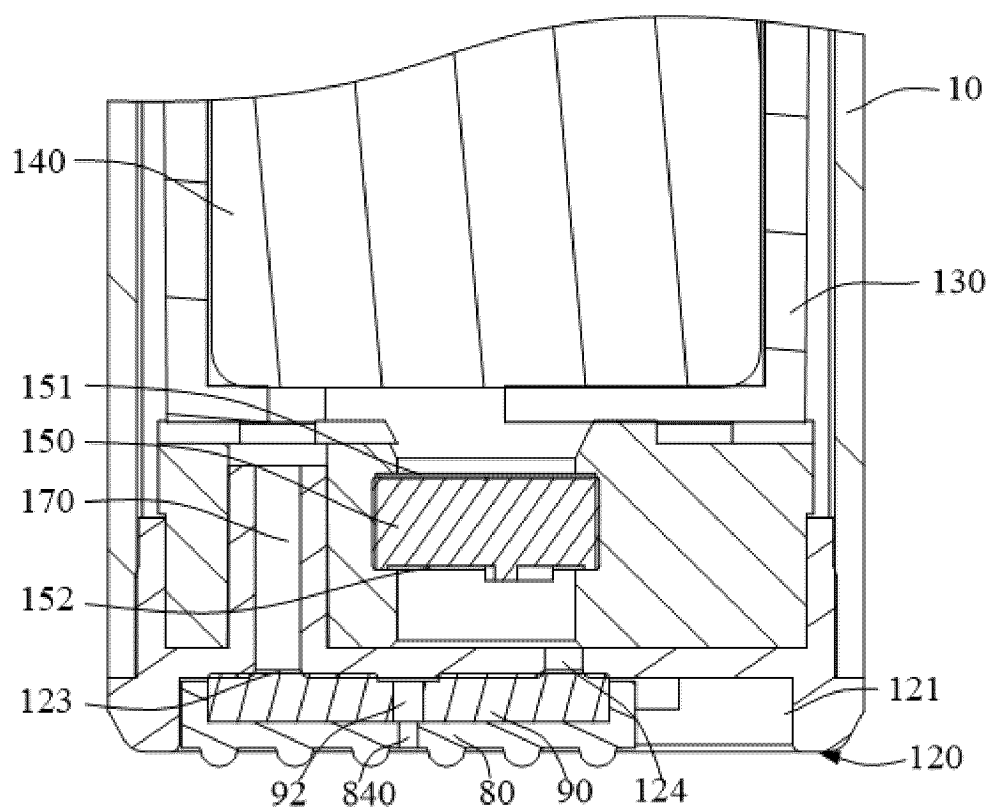


FIG. 8

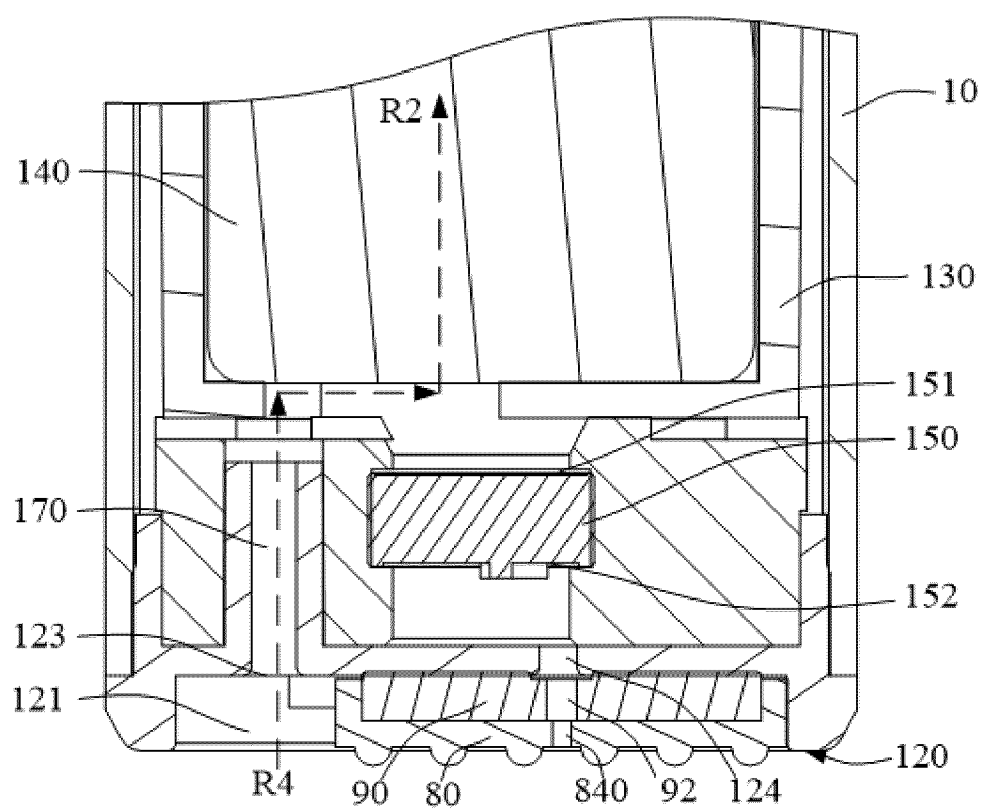


FIG. 9

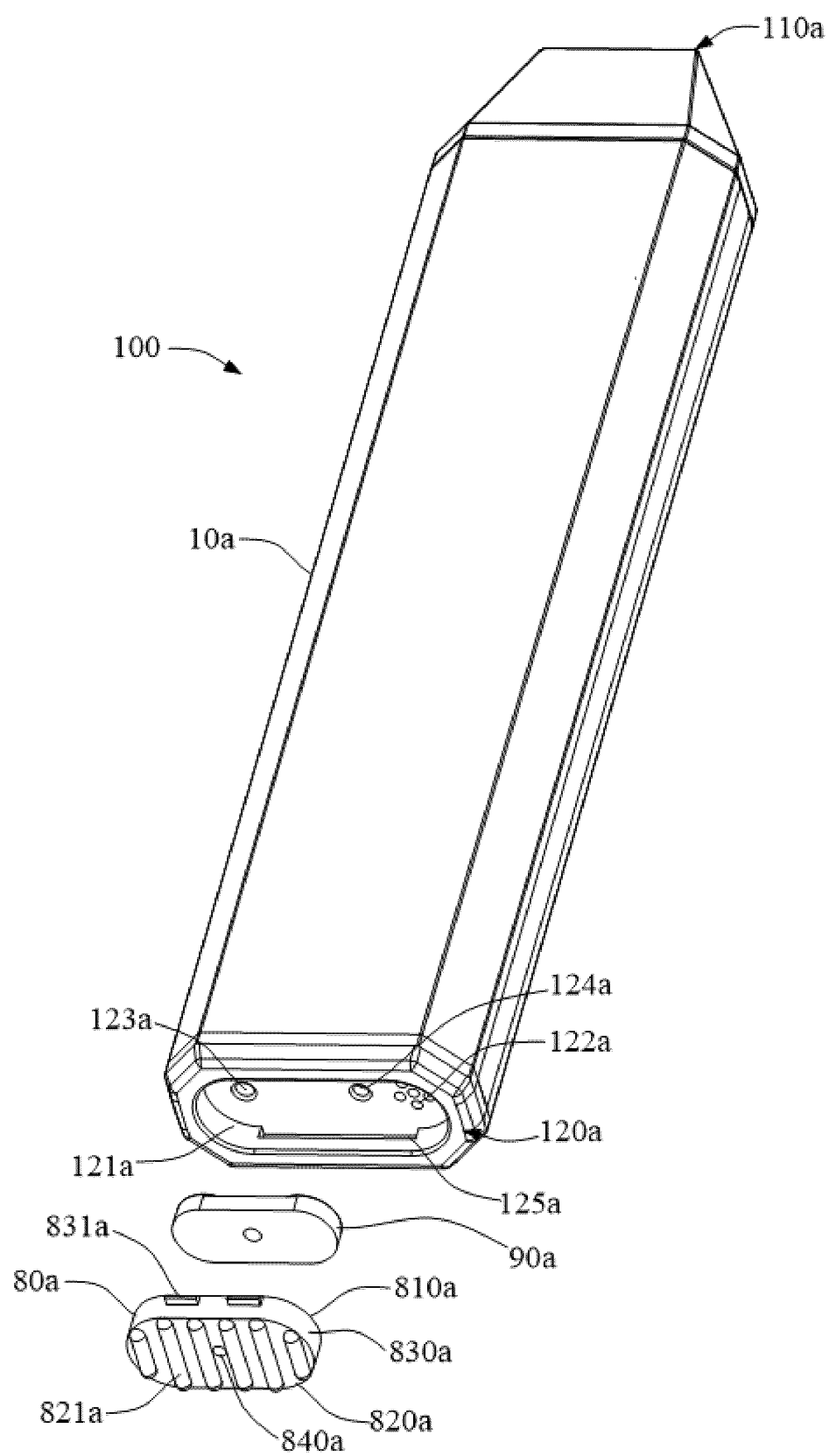


FIG. 10

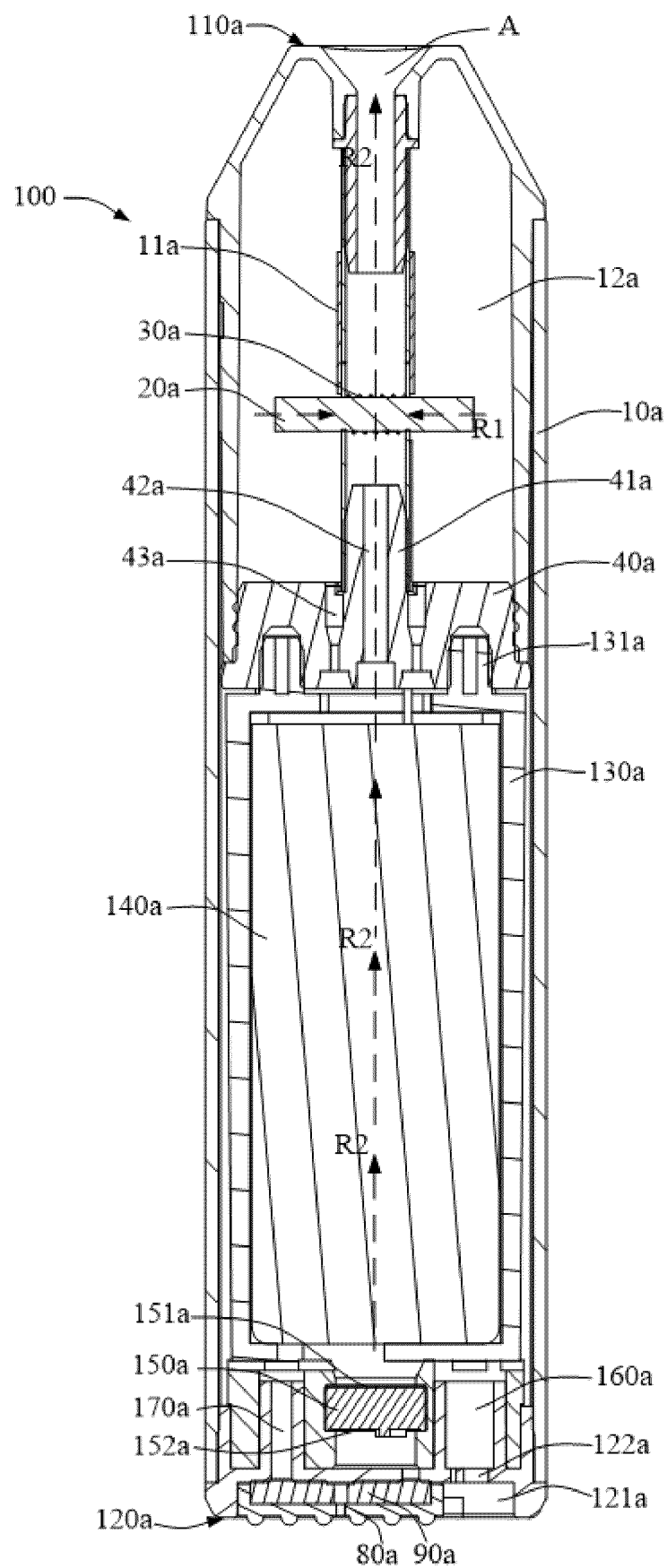


FIG. 11

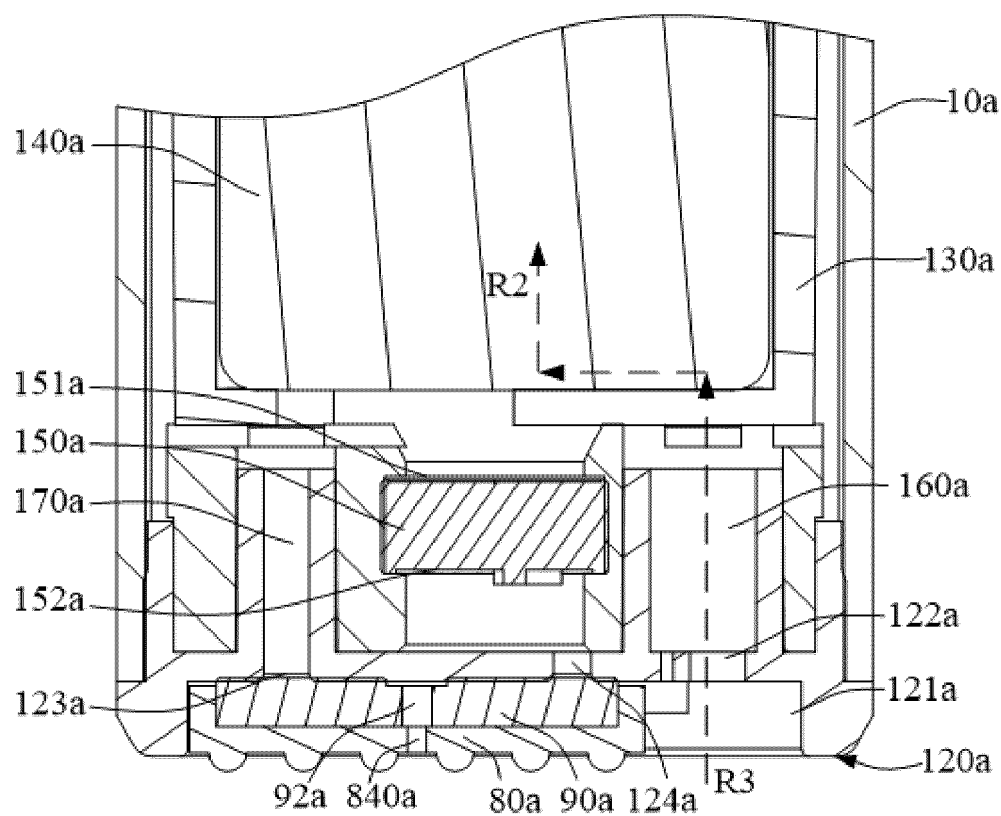


FIG. 12

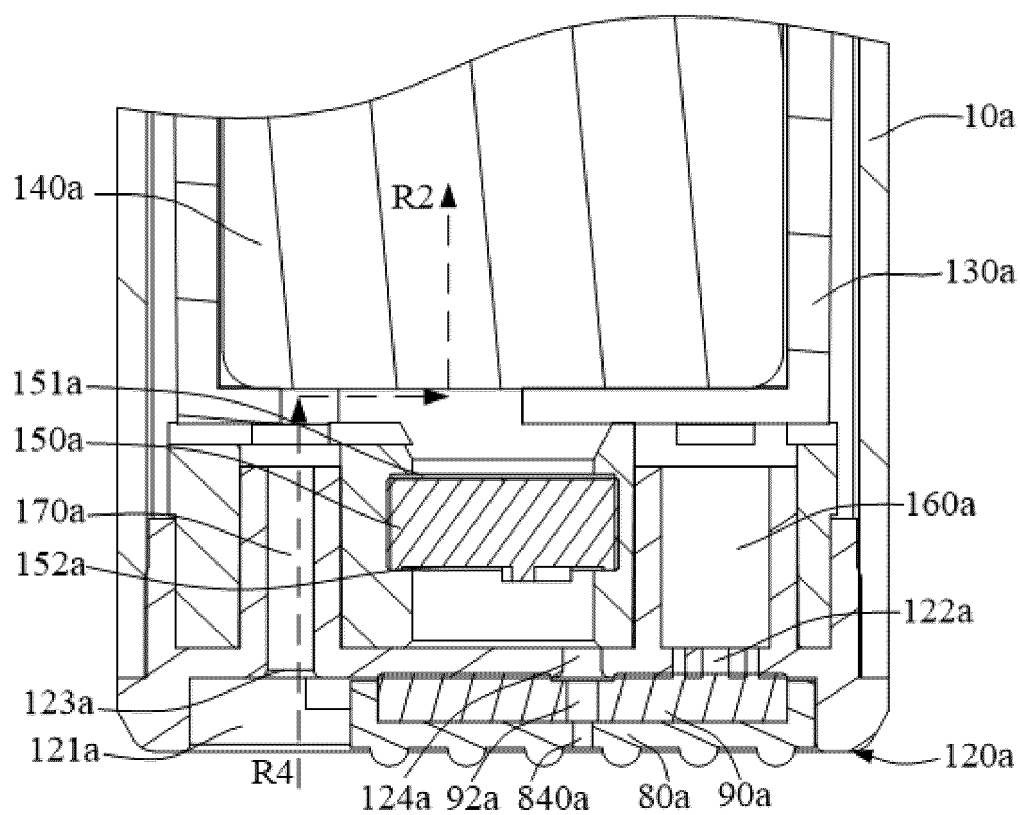


FIG. 13

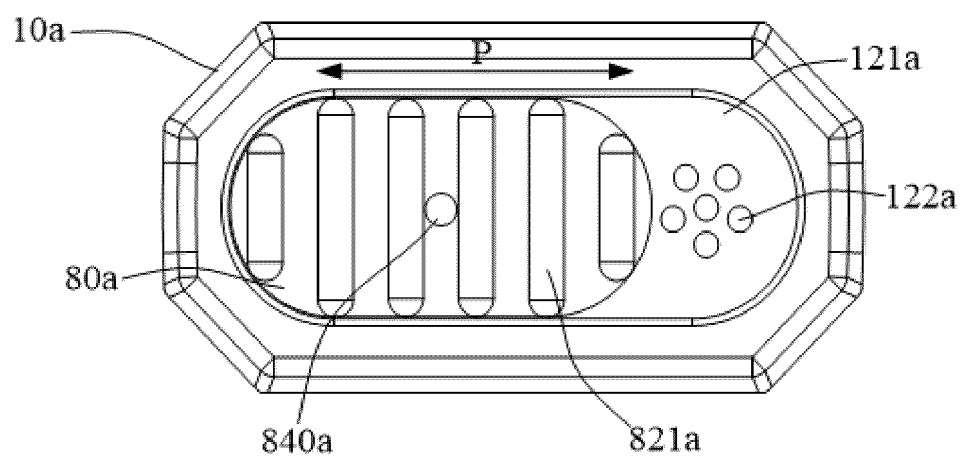


FIG. 14

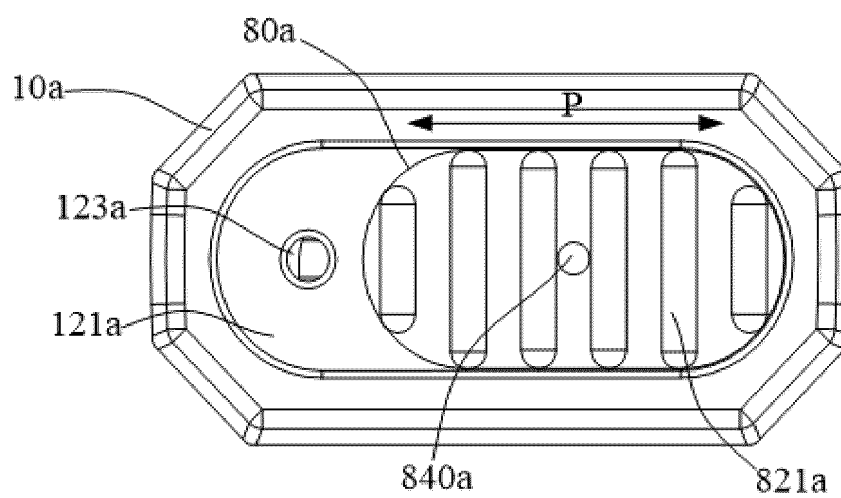


FIG. 15

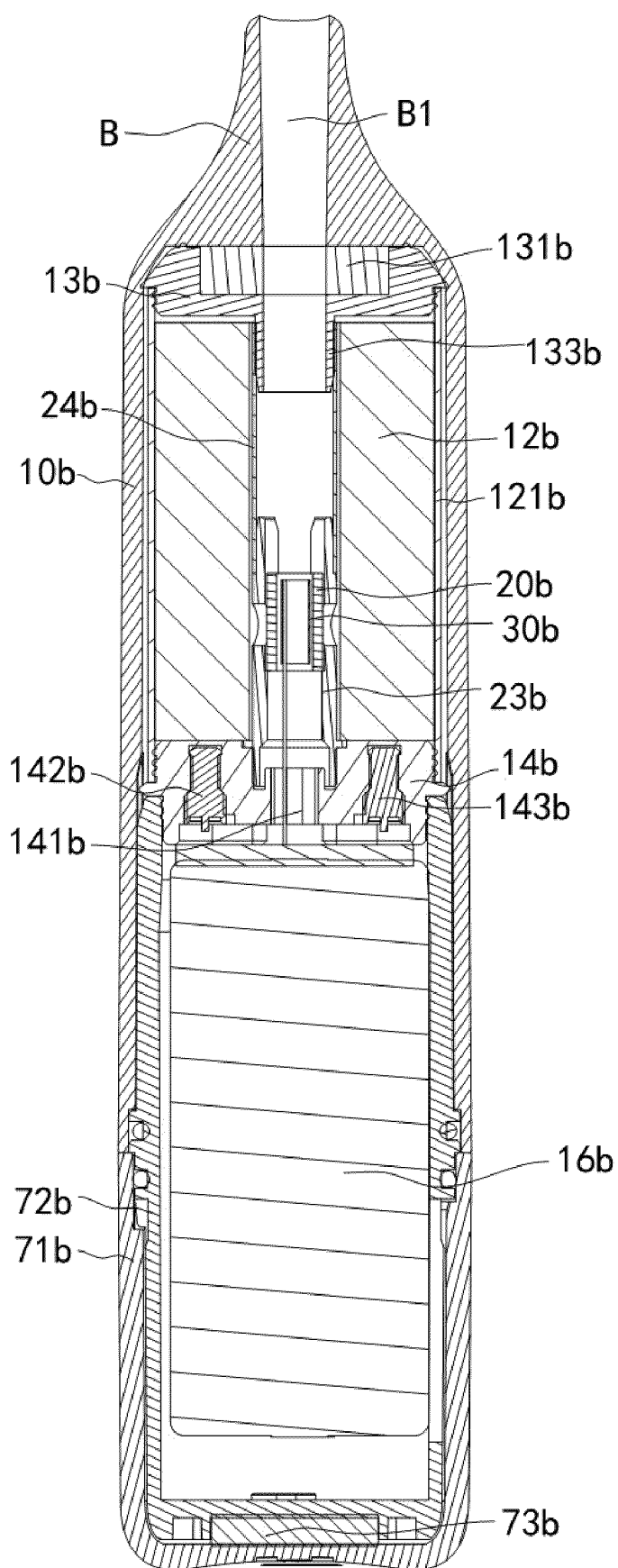


FIG. 16

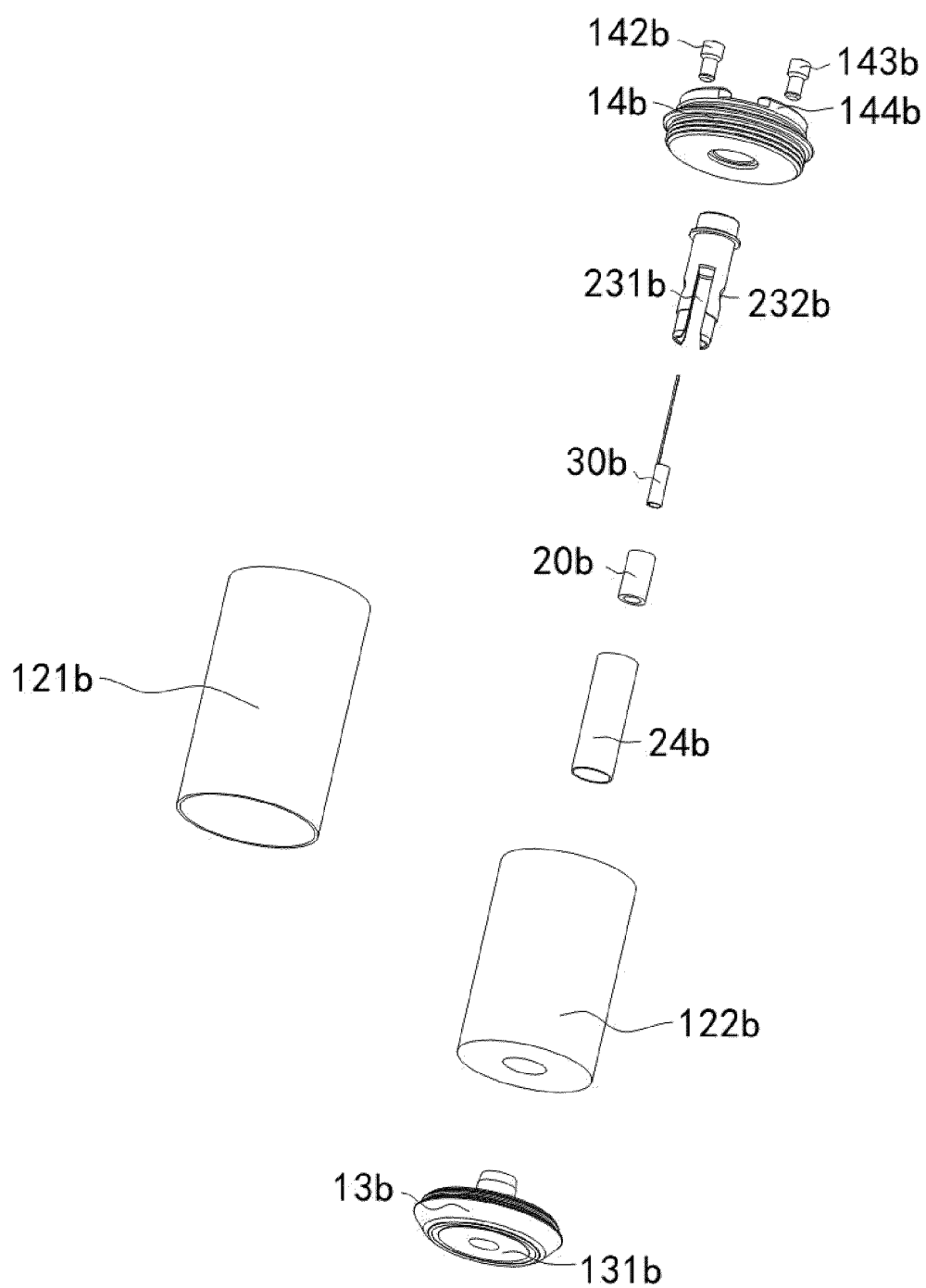


FIG. 17

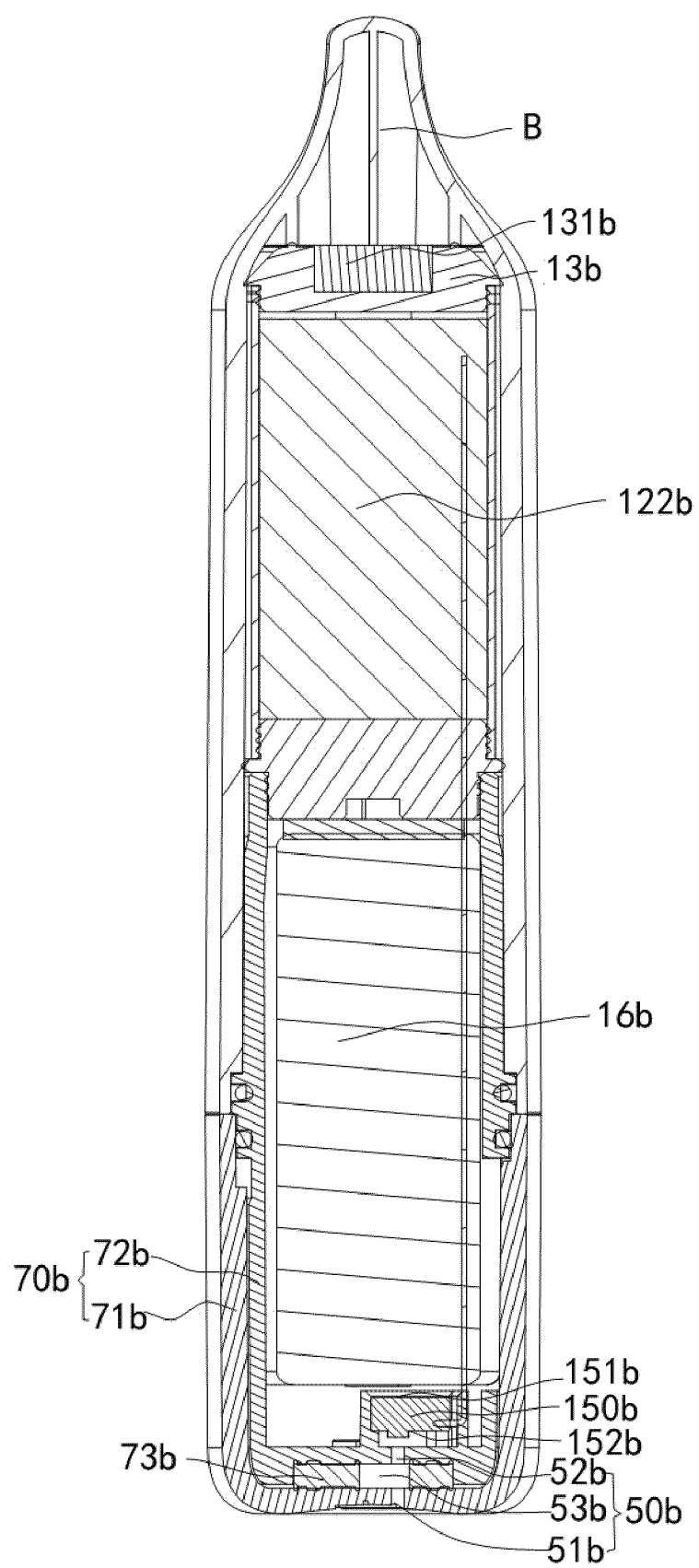


FIG. 18

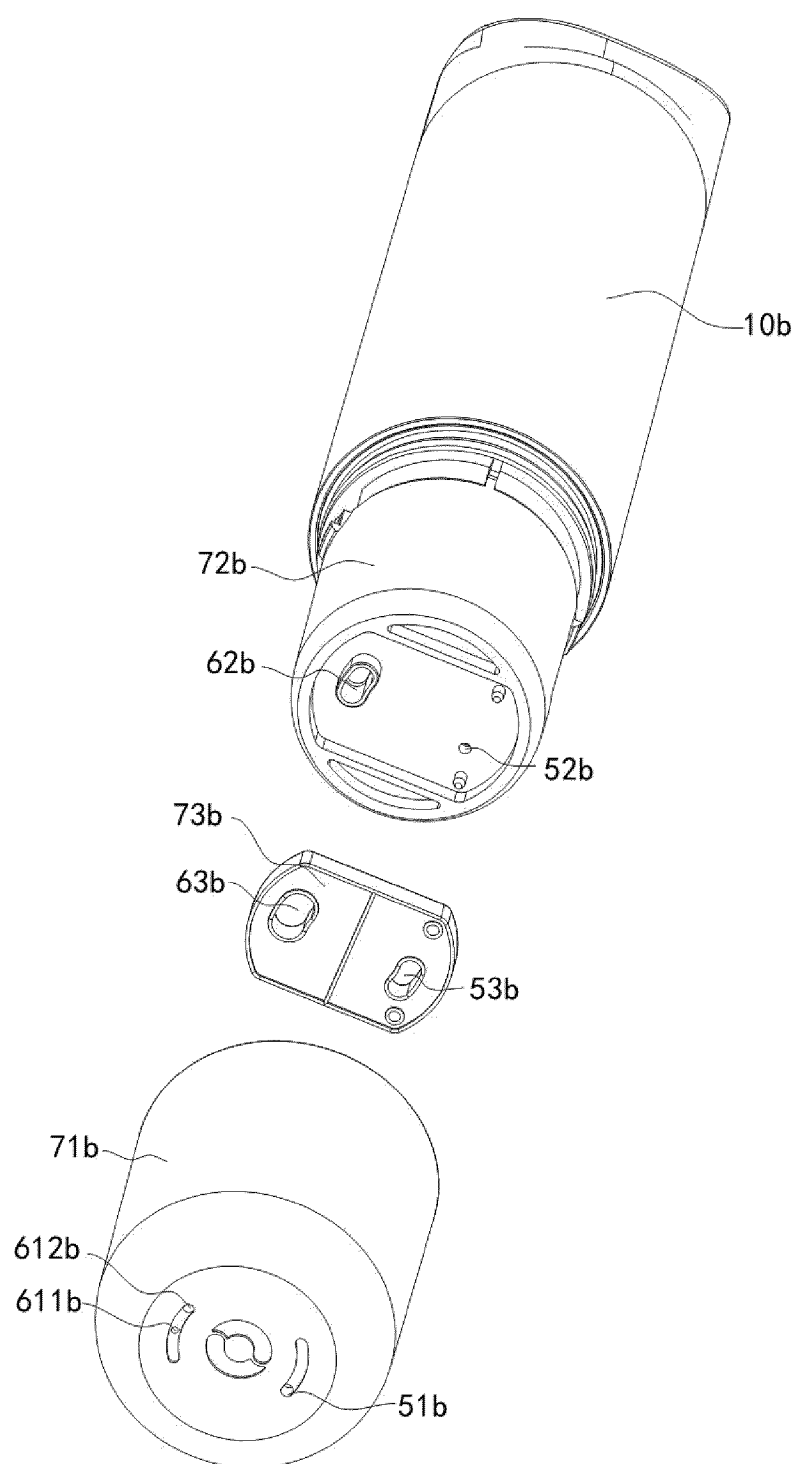


FIG. 19

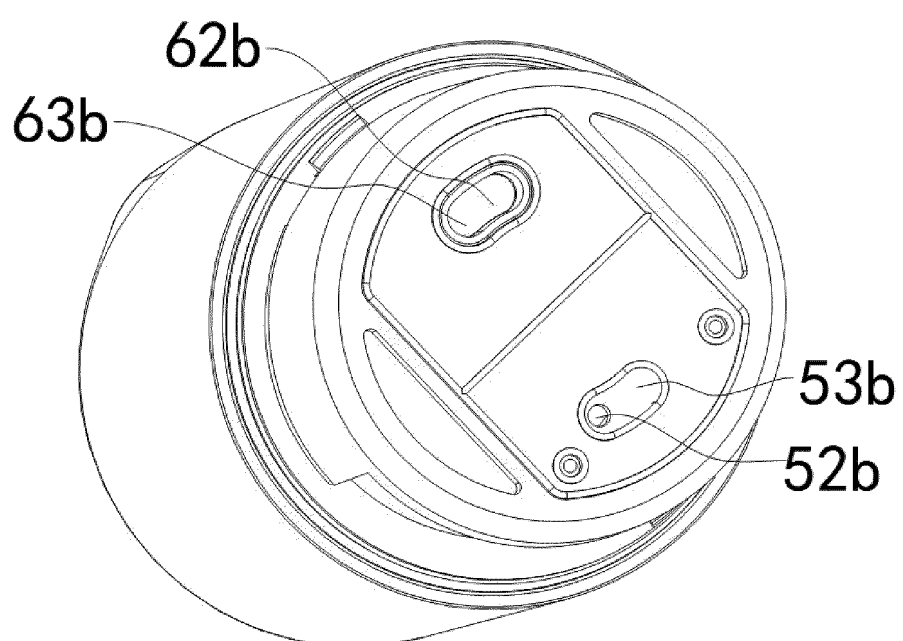


FIG. 20

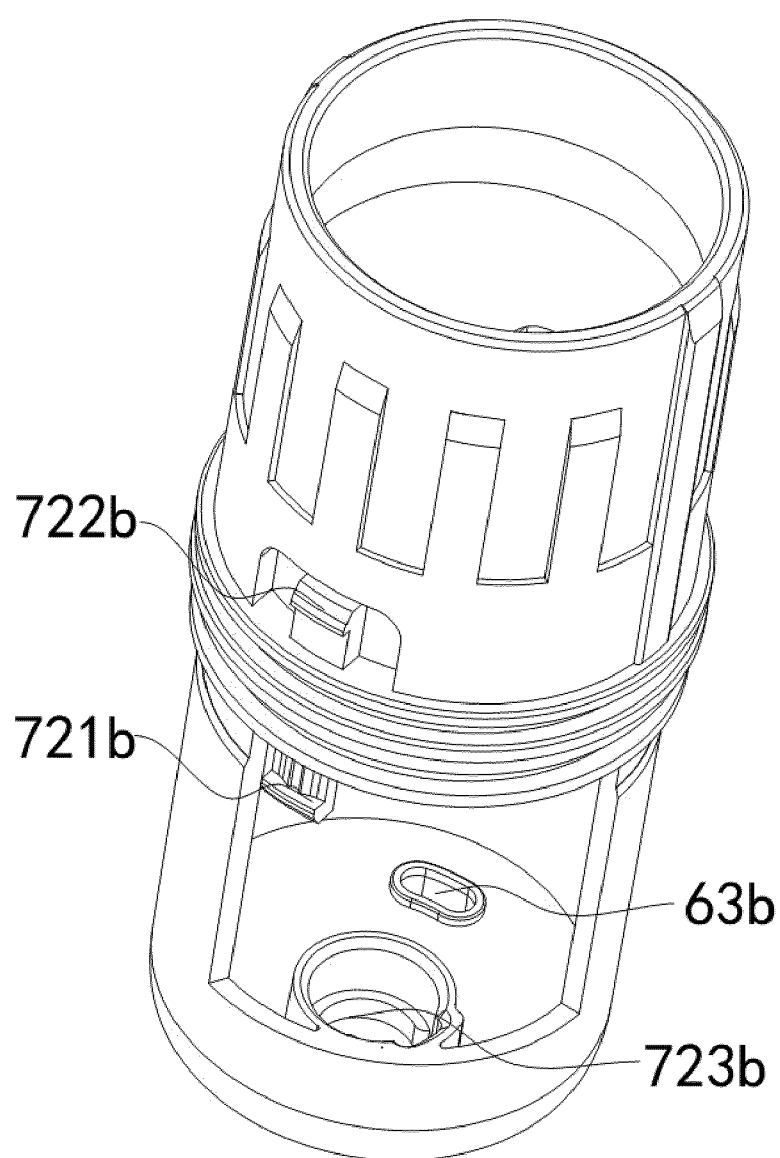


FIG. 21

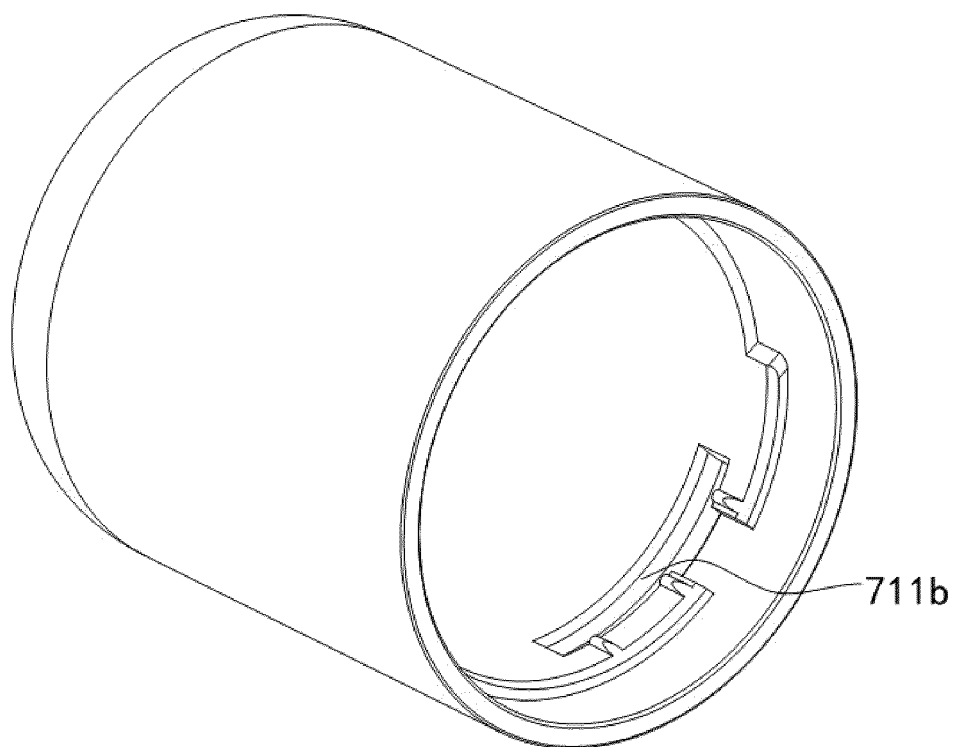


FIG. 22

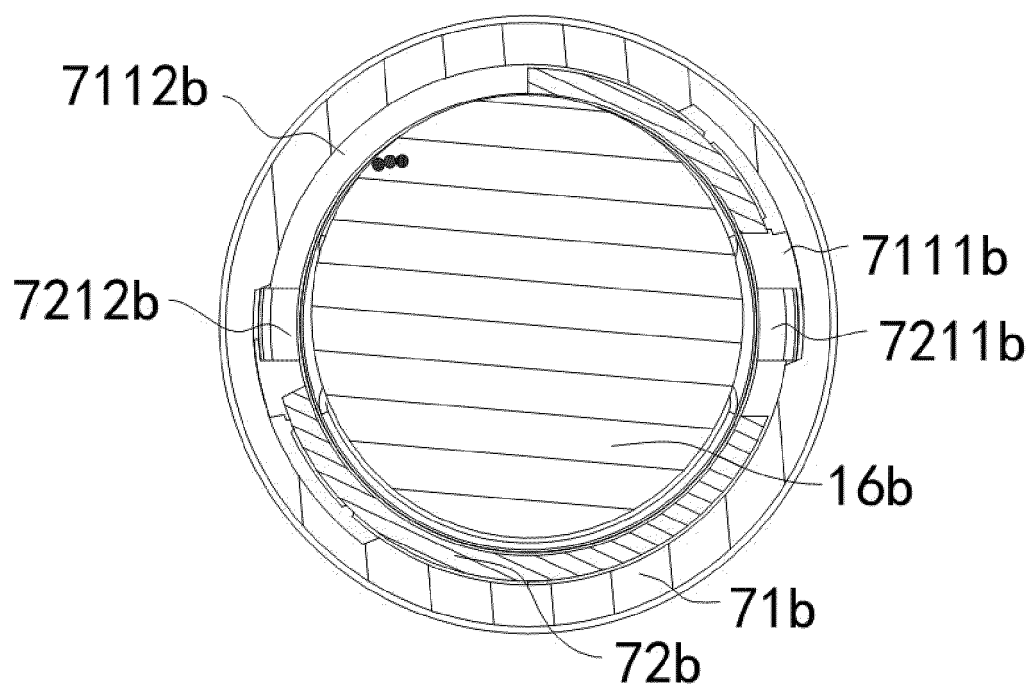


FIG. 23

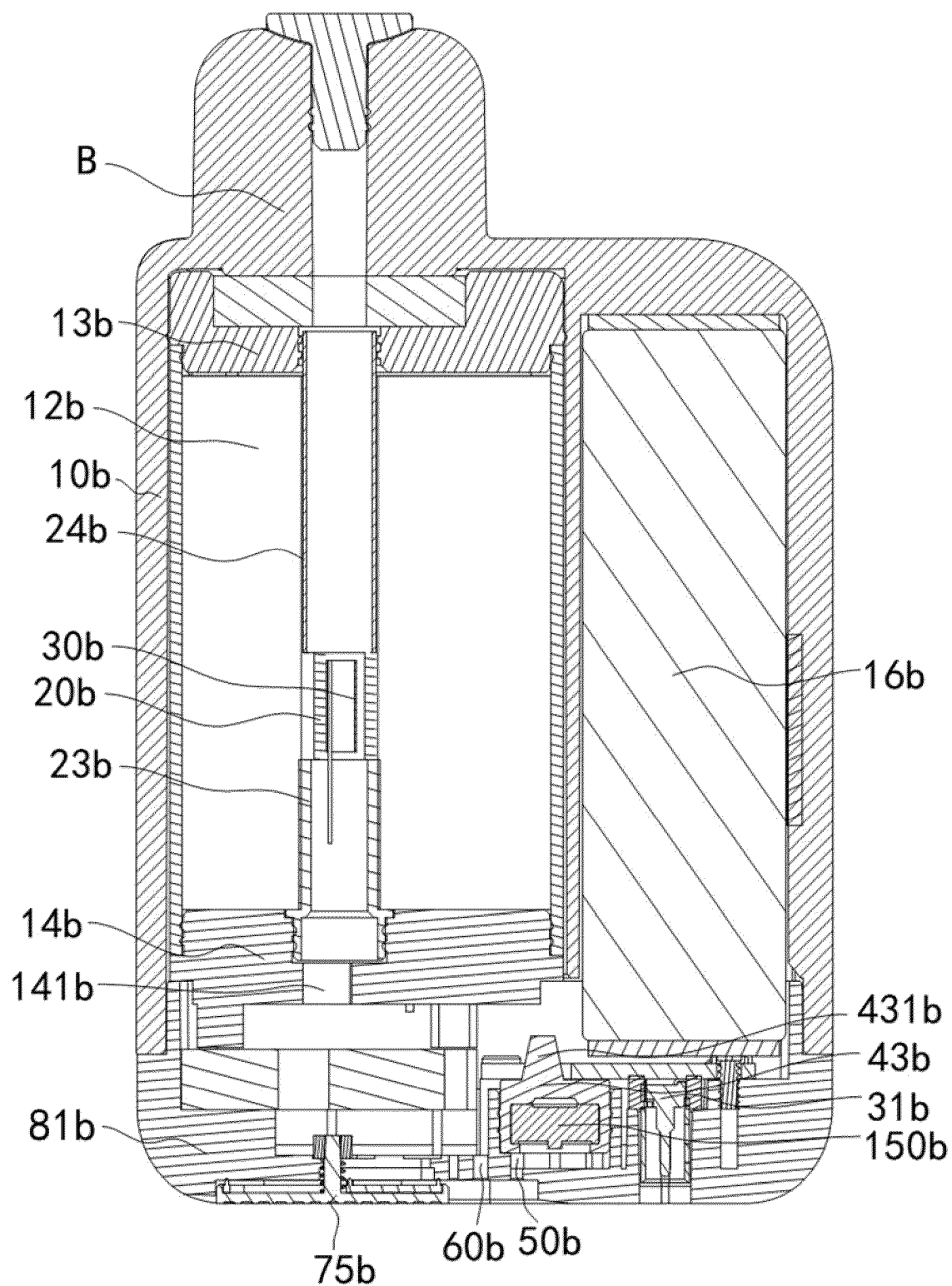


FIG. 24

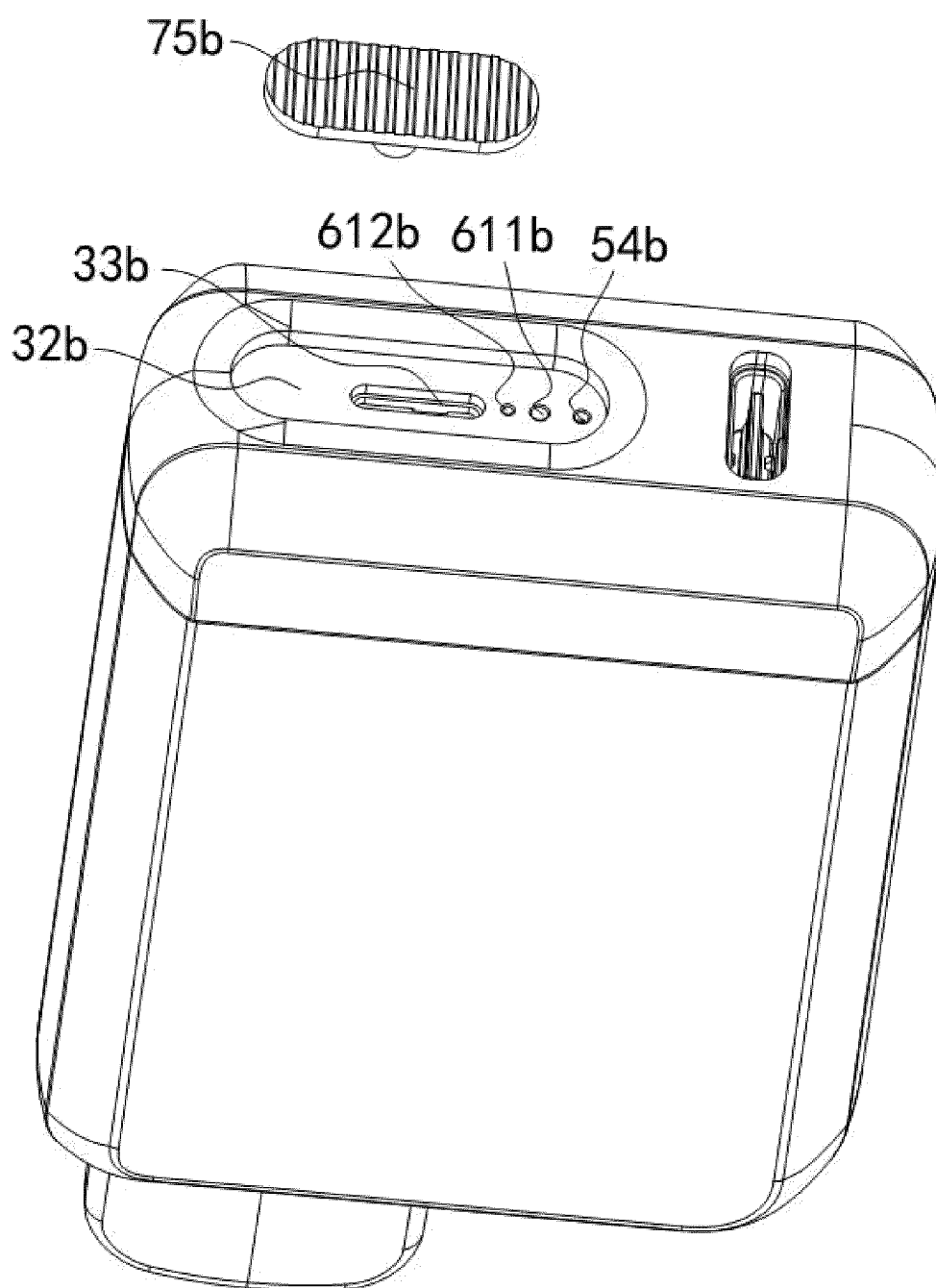


FIG. 25

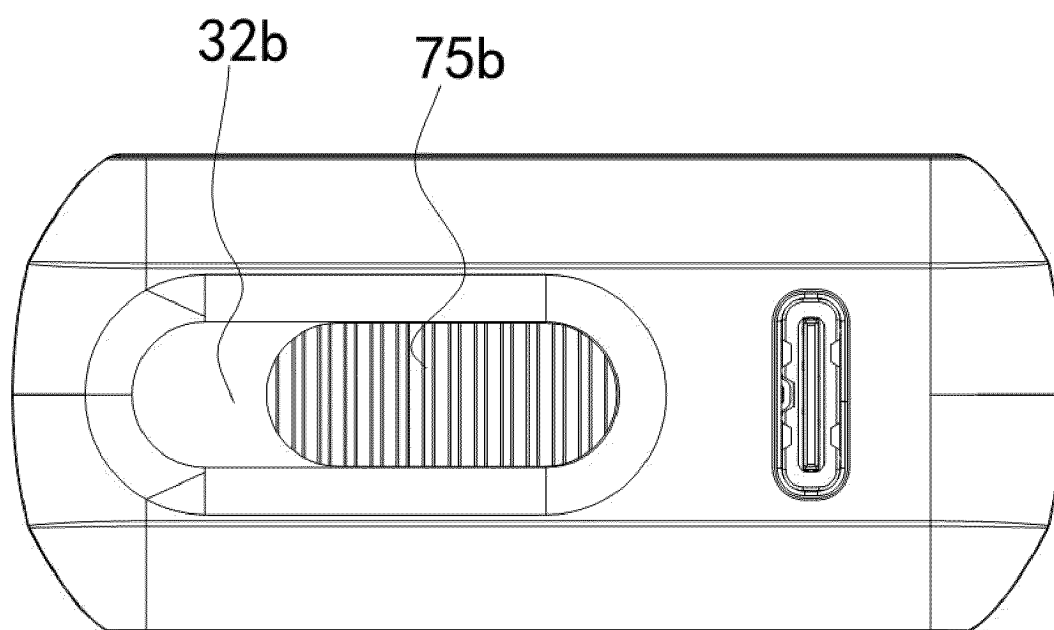


FIG. 26

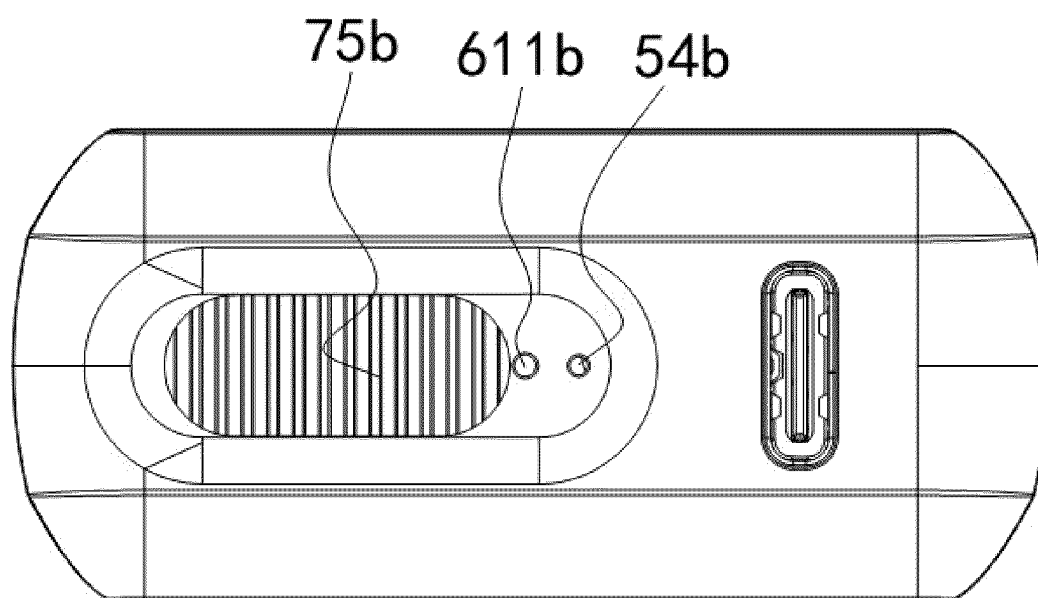


FIG. 27

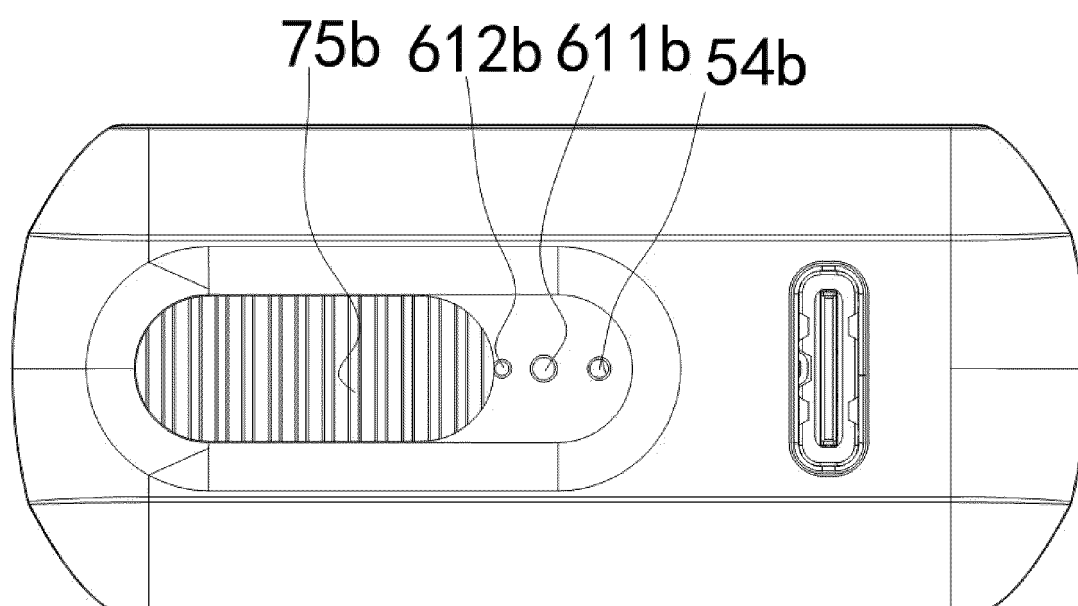


FIG. 28

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2023/088549

## A. CLASSIFICATION OF SUBJECT MATTER

A24F40/40(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)

IPC:A24F40/-

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)

CNABS, CNTXT, TWTXT, CNKI, USTXT: 深圳市合元科技有限公司, 徐伟, 徐中立, 李永海, 电子烟, 雾化, 进气口, 气孔, 气流传感器, 操作元件, 关闭, 遮盖, 打开, 显露, 锁定, 激活, 第一, 第二, electronic, atomiz+, aerosol, air inlet, operating element, close, cover, open, expose, first, second

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                    | Relevant to claim No. |
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| A         | CN 113766844 A (JAPAN TOBACCO INTERNATIONAL CORPORATION) 07 December 2021 (2021-12-07)<br>entire document                                             | 1-15                  |

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

|                                                                                                                                                                         |                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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| "P" document published prior to the international filing date but later than the priority date claimed                                                                  |                                                                                                                                                                                                                                                  |

Date of the actual completion of the international search

14 July 2023

Date of mailing of the international search report

21 July 2023

Name and mailing address of the ISA/CN

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Beijing 100088

Authorized officer

Telephone No.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2023/088549

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                          | Relevant to claim No. |
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**INTERNATIONAL SEARCH REPORT**  
**Information on patent family members**

International application No.

**PCT/CN2023/088549**

| Patent document<br>cited in search report | Publication date<br>(day/month/year) | Patent family member(s) | Publication date<br>(day/month/year) |
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Form PCT/ISA/210 (patent family annex) (July 2022)

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