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(54) **ATOMIZER AND ELECTRONIC ATOMIZING DEVICE HAVING THE SAME**  
**ZERSTÄUBER UND ELEKTRONISCHE ZERSTÄUBUNGSVORRICHTUNGEN DAMIT**  
**ATOMISEUR ET DISPOSITIF D'ATOMISATION ÉLECTRONIQUE LE COMPRENANT**

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**WO-A1-2016/154994 CN-A- 109 393 570**  
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## Description

### TECHNICAL FIELD

[0001] The present application relates to the field of atomizing technology, in particular to an atomizer and an electronic atomizing device having the same.

### BACKGROUND

[0002] Electronic atomizing device generally includes an atomizer and a power supply. The power supply supplies power to the atomizer. The atomizer converts electrical energy into heat to atomize the liquid to form an aerosol that can be inhaled by the user. When the aerosol is inhaled at a nozzle at an end of an inhaling passage of the atomizer, the user may sometimes inhale the liquid from the inhaling passage. In addition, during transportation or storage of the electronic atomizing device, the atomizer may be inverted or tilted, such that the nozzle faces downward, causing the liquid in the inhaling passage to leak out of the atomizer via the nozzle. Known devices are disclosed in, for example, documents CN109393570A and WO2016/154994A1.

### SUMMARY

[0003] According to various exemplary embodiments, the present application provides an atomizer and an electronic atomizing device including the same.

[0004] The invention relates to an atomizer including a top cover assembly provided with a guiding passage as set out in claim 1.

[0005] An electronic atomizing device includes a power supply and the atomizer electrically connected to the power supply.

[0006] Details of one or more embodiments of the present application will be given in the following description and attached drawings. Other features, objects and advantages of the present application will become apparent from the description, drawings, and claims.

### BRIEF DESCRIPTION OF THE DRAWINGS

#### [0007]

FIG. 1 is a perspective view of an atomizer according to an embodiment.

FIG. 2 is an exploded view of the atomizer shown in FIG. 1.

FIG. 3 is a plan cross-sectional view of the atomizer shown in FIG. 1 in a first direction.

FIG. 4 is a perspective cross-sectional view of the atomizer shown in FIG. 1 in a first direction.

FIG. 5 is a perspective cross-sectional view of the atomizer shown in FIG. 1 in a second direction.

FIG. 6 is a plan cross-sectional view of the atomizer shown in FIG. 1 in a second direction.

FIG. 7 is a perspective partial exploded cross-sectional view of the atomizer shown in FIG. 1.

FIG. 8 is a perspective view of a heating top cover of the atomizer shown in FIG. 1 when being upright.

FIG. 9 is a perspective view of a heating top cover of the atomizer shown in FIG. 1 when being inverted.

FIG. 10 is a perspective transverse cross-sectional view of a heating top cover of the atomizer shown in FIG. 1.

FIG. 11 is a perspective longitudinal cross-sectional view of a heating top cover of the atomizer shown in FIG. 1.

FIG. 12 is a front view of a heating top cover of the atomizer shown in FIG. 1.

FIG. 13 is a partial plane view of a heating top cover of the atomizer shown in FIG. 1.

FIG. 14 is a perspective view of a sealing member of the atomizer shown in FIG. 1 when being upright.

FIG. 15 is a perspective view of a sealing member of the atomizer shown in FIG. 1 when being inverted.

FIG. 16 is a top view of a sealing member of the atomizer shown in FIG. 1.

FIG. 17 is a perspective cross-sectional view of a sealing member of the atomizer shown in FIG. 1.

FIG. 18 is a perspective view of a base of the atomizer shown in FIG. 1.

FIG. 19 is a top view of a base of the atomizer shown in FIG. 1.

FIG. 20 is a perspective cross-sectional view of a base of the atomizer shown in FIG. 1.

### DETAILED DESCRIPTION OF THE EMBODIMENTS

[0008] In order to facilitate the understanding of the present application, the present application will be described in a more comprehensive manner with reference to the relevant drawings. Exemplary embodiments of the present application are shown in the drawings. However, the present application can be implemented in many different forms and is not limited to the embodiments described herein. On the contrary, the purpose of providing these embodiments is to make the application of the present application more thorough and comprehensive.

[0009] It should be noted that when an element is referred to as being "fixed to" another element, it can be directly on another element or an intermediate element may also be present. When an element is considered to be "connected to" another element, it can be directly connected to another element or an intermediate element may be present at the same time. Terms "inner", "outer", "left", "right" and similar expressions used herein are for illustrative purposes only, and do not mean that they are the only embodiments.

[0010] Referring to FIGS. 1, 2 and 3, an electronic atomizing device according to an embodiment of the present application includes an atomizer 10 and a power supply (not labeled). The atomizer 10 is detachably and electrically connected to the power supply. In other em-

bodiments, the atomizer 10 and the power supply can also be packaged in the same housing, and cannot be detached from each other. The power supply can supply power to the atomizer 10. The atomizer 10 converts electrical power into heat, so as to atomize liquid in the atomizer 10 to form an aerosol that can be inhaled by the user. The liquids can be e-liquid and other aerosol generating substrates.

**[0011]** The atomizer 10 includes a housing 100, a top cover assembly 200, a sealing member 300, a flow guiding member 360, a base 400, an atomizing core 510, and a liquid absorbing member 520. In other embodiments, components such as the flow guiding member 360 and the base 400 of the atomizer 10 can be omitted as needed, and which are not limited herein.

**[0012]** Referring to FIGS. 3, 4 and 5, the housing 100 includes a shell 110 and a central post 120. The central post 120 is connected to the housing 100 and is located in a cavity enclosed by the shell 110. The central post 120 is provided with an inhaling hole 121 therein. An upper end of the inhaling hole 121 forms a nozzle 121a. The nozzle 121a is in a direct fluid communication with an outside atmosphere, thus the user can inhale the aerosol at the nozzle 121a. The central post 120 includes a tip portion 123 provided away from the nozzle 121a. A cross-sectional size of the tip portion 123 gradually decreases in a direction from top to bottom, such that the tip portion 123 is substantially frustum-shaped. The central post 120 has a second inner surface 122 that defines a boundary of the inhaling hole 121. The second inner surface 122 is recessed to form a receiving groove 122a. The receiving groove 122a extends along a central axis of the inhaling hole 121. Referring to FIGS. 4, 5 and 6, the top cover assembly 200 is provided in the cavity enclosed by the shell 110. The top cover assembly 200 includes a heating top cover 210 and a blocking portion 220. The blocking portion 220 is sleeved on the heating top cover 210. The blocking portion 220 and the housing 100 cooperatively enclose a liquid reservoir for storing the liquid. The heating top cover 210 is provided with an air guiding hole 211 and a guiding passage 212. A lower end of the central post 120 is inserted into the air guiding hole 211, and the central post 120 and the air guiding hole 211 can be in an interference fit. The tip portion 123 is located in the air guiding hole 211, such that the inhaling hole 121 and the air guiding hole 211 are coaxially arranged. In addition, the inhaling hole 121 and the air guiding hole 211 cooperatively form an inhaling passage 11. A central axis of the inhaling passage 11 extends in the vertical direction. The top cover assembly 200 has a first inner surface 211a that defines a boundary of the air guiding hole 211. The other portion of the central post 120 abuts against the first inner surface 211a, such that the central post 120 and the air guiding hole 211 are in an interference fit. The tip portion 123 of the center post 120 and the first inner surface 211a are spaced apart from each other along a direction perpendicular to a central axis of the air guiding hole 211, such that an annular gap

124 is formed between the tip portion 123 and the first inner surface 211a.

**[0013]** Referring to FIGS. 8, 9, and 10, the heating top cover 210 has an inner wall surface 213 and an outer wall surface 214. The blocking portion 220 is sleeved on the outer wall surface 214. The inner wall surface 213 defines the boundary of the guiding passage 212. The guiding passage 212 extends through the outer wall surface 214 and the first inner surface 211a, such that the guiding passage 212 is in a direct fluid communication with the air guiding hole 211. That is, the air guiding hole 211 is in fluid communication between the guiding passage 212 and the inhaling hole 121. The inner wall surface 213 includes an inner sidewall surface 213a and an inner top wall surface 213b. Two inner sidewall surfaces 213a are provided, which are arranged opposite to each other. The inner top wall surface 213b is connected between the two inner sidewall surfaces 213a, such that the two inner sidewall surfaces 213a are both located on the same side (i.e., the lower side) of the inner top wall surface 213b. The inner sidewall surface 213a is parallel to the central axis of the inhaling passage 11, and the inner top wall surface 213b is perpendicular to the central axis of the inhaling passage 11. In other words, the inner sidewall surface 213a extends in a vertical direction, and the inner top wall surface 213b extends in a horizontal direction. The central axis of the guiding passage 212 and the central axis of the inhaling passage 11 intersect to form a certain angle. For example, the angle may be 90°. In this case, the inhaling passage 11 extends in the vertical direction, and the guiding passage 212 extends in the horizontal direction.

**[0014]** Referring to FIGS. 9, 11, and 12, a part of the inner sidewall surface 213a away from the air guiding hole 211 is recessed in a left-and-right direction to form a first groove 213c, which extends through the outer wall surface 214. The heating top cover 210 further has a first inner bottom wall surface 215, which can define a part of a boundary of the first groove 213c. The first inner bottom wall surface 215 is connected to a portion of the inner sidewall surface 213a that is not recessed and adjacent to the air guiding hole 211. The first inner bottom wall surface 215 is recessed in a front-and-rear direction to form a second groove 215a. The first groove 213c and the second groove 215a are in fluid communication with each other, and the extending directions of the two can form a certain angle, for example, 90°. The heating top cover 210 further has a second inner bottom wall surface 216. The second inner surface 122 defines a part of a boundary of the second groove 215a. The second inner bottom wall surface 216 is recessed in the front-and-rear direction to form a micro-groove 216a. A width of the micro-groove 216a is less than a width of the second groove 215a. An extending direction of the micro-groove 216a forms an angle with the central axis of the inhaling passage 11. For example, referring to FIG. 13, the extending direction of the micro-groove 216a and the central axis of the inhaling passage 11 are perpendicular to

each other. In this case, the extending direction of the micro-groove 216a is the horizontal direction. In other embodiments, the extending direction of the micro-groove 216a can form an acute angle with the central axis of the inhaling passage 11. In this case, the extending direction of the micro-groove 216a forms a certain inclined angle with the horizontal direction. A plurality of micro-grooves 216a may be provided. The plurality of micro-grooves 216a are arranged on the second inner bottom wall surface 216 at intervals. A part of the inner top wall surface 213b away from the air guiding hole 211 is recessed upward to form a third groove 213d. The third groove 213d also extends through the outer wall surface 214.

**[0015]** The first groove 213c, the second groove 215a, the third groove 213d, and the micro-groove 216a are recessed structures formed on the inner wall surface 213. The abovementioned recessed structures are located between the guiding passage 212 and the air guiding hole 211. In other embodiments, protrusions can also be provided on the inner wall surface 213 to form a protruding structure.

**[0016]** Referring to FIGS. 4, 6, and 7, the sealing member 300 is connected to the heating top cover 210. The sealing member 300, the heating top cover 210, and the shell 110 cooperatively enclose a liquid directing passage 12. The liquid directing passage 12 is in fluid communication with the guiding passage 212, and the atomizing core 510 is at least partially located in the liquid directing passage 12. The atomizing core 510 is located outside the inhaling passage 11 and the guiding passage 212. The atomizing core 510 may include a liquid guiding element and a heating element. The liquid guiding element may be a columnar structure made of cotton material. The heating element may be made of metal material. The heating element is electrically connected to the power supply. When the power supply supplies power to the heating element, the heating element can convert the electrical energy into the heat. The heating element can be in a spiral shape, and the heating element is spirally wound on the liquid guiding element. The liquid guiding element is used to absorb the liquid in the liquid reservoir. When the heating element is energized, the generated heat can atomize the liquid on the liquid guiding element to form the aerosol. The aerosol can be discharged into the liquid directing passage 12. In other embodiments, the liquid guiding element can be made of porous ceramic, and the heating element is attached to a surface of the porous ceramic. The porous ceramic can absorb the liquid in the liquid reservoir through the capillary action of the micropores. When the heating element is energized, the liquid on the porous ceramic can be atomized to generate the aerosol.

**[0017]** The liquid directing passage 12 includes an atomizing cavity 350 and a directing hole 340. The atomizing cavity 350 is formed by the sealing member 300, the heating top cover 210, and the shell 110. The atomizing core 510 is at least partially located in the atomizing

cavity 350. The aerosol generated by the atomizing core 510 is discharged into the atomizing cavity 350. Referring to FIGS. 16 and 17, the directing hole 340 is provided on the sealing member 300. The sealing member 300 has a mounting surface 310 and a connecting surface 320. The mounting surface 310 faces upward, and the mounting surface 310 faces downward. That is, the connecting surface 320 faces away from the mounting surface 310. The connecting surface 320 defines a part of the boundary of the atomizing cavity 350. The sealing member 300 includes a boss 330 located in the atomizing cavity 350. A lower end of the boss 330 is fixed to the connecting surface 320. An upper end of the boss 330 protrudes from the connecting surface 320 by a certain height. The boss 330 has a free end surface 331 at the upper end thereof. The free end surface 331 and the connecting surface 320 are spaced apart in the vertical direction. In other words, the free end surface 331 is higher than the connecting surface 320 in the vertical direction. The upper end of the directing hole 340 extends upwardly through the free end surface 331, such that the directing hole 340 is in fluid communication with the atomizing cavity 350. The lower end of the directing hole 340 extends laterally through the mounting surface 310 to form an input port 341.

**[0018]** Referring to FIGS. 6, 18, and 17, at least a part of the base 400 is received in the cavity enclosed by the shell 110. The sealing member 300 is provided on the base 400. The sealing member 300 and the base 400 cooperatively enclose an air guiding cavity 410. The mounting surface 310 define a part of the boundary of the air guiding cavity 410. Since the input port 341 is located on the mounting surface 310, the directing hole 340 is in a direct fluid communication with the air guiding cavity 410.

**[0019]** Referring to FIGS. 14 and 15, the flow guiding member 360 is substantially plate-shaped. The flow guiding member 360 is connected to the mounting surface 310 and is located on an edge of the input port 341. The flow guiding member 360 is used to transfer the liquid from the input port 341, and transfer the liquid into the air guiding cavity 410. The liquid absorbing member 520 is located in the air guiding cavity 410. The liquid output by the flow guiding member 360 can be absorbed by the liquid absorbing member 520, so as to prevent the liquid from flowing freely in the air guiding cavity 410. The base 400 is provided with an air inlet 441. The air inlet 441 is in fluid communication with the outside atmosphere and the air guiding cavity 410.

**[0020]** Referring to FIGS. 18, 19, and 20, the base 400 has a fixing surface 420 facing the mounting surface 310. The fixing surface 420 defines a part of the boundary of the air guiding cavity 410. The base 400 further includes a protruding post 430 located in the air guiding cavity 410. A lower end of the protruding post 430 is a fixed end and is fixed to the fixing surface 420. An upper end of the protruding post 430 is a free end and protrudes from the fixing surface 420 by a certain height. The base 400

is provided with an air inlet channel 440. At least a part of the air inlet channel 440 is located in the boss 430. The air inlet channel 440 has an output port 442a allowing the air to flow out. The output port 442a is located on the boss 430. The air inlet channel 440 is in a direct fluid communication with the air guiding cavity 410 via the output port 442a. A certain distance is kept between the output port 442a and the fixing surface 420. In other words, the output port 442a is higher than the fixing surface 420 in the vertical direction.

**[0021]** In the illustrated embodiment, the boss 430 has a top surface 431 and a side surface 432. The side surface 432 extends vertically and is connected to the top surface 431. The top surface 431 and the fixing surface 420 are spaced apart from each other in the vertical direction. The top surface 431 faces upward. The side surface 432 is connected between the top surface 431 and the fixing surface 420. The air inlet channel 440 includes the air inlet 441 and an output groove 442. The air inlet 441 is in fluid communication with the outside atmosphere. The output groove 442 is in fluid communication with the air guiding cavity 410 and the air inlet 441. The output groove 442 extends through the side surface 432 and the top surface 431. The output port 442a is located on the output groove 442. Specifically, when the sealing member 300 is provided on the base 400, the mounting surface 310 of the sealing member 300 is attached to and abuts against the top surface 431 of the protruding post 430, such that the mounting surface 310 blocks an opening of the output groove 442 on the top surface 431. In this case, the opening of the output groove 442 on the side surface 432 can form the output port 442a.

**[0022]** In other embodiments, for example, the mounting surface 310 may be spaced apart from the top surface 431. That is, the mounting surface 310 does not cover the opening of the output groove 442 on the top surface 431. In this case, the openings of the output groove 442 on the top surface 431 and on the side surface 432 cooperatively form the output port 442a. For another example, the output groove 442 may only extend through the top surface 431. The opening of the output groove 442 on the top surface 431 forms the output port 442a. Since the top surface 431 is a horizontal surface, the output port 442a is arranged horizontally. For another example, the output groove 442 may only extend through the side surface 432, and the opening of the output groove 442 on the side surface 432 forms the output port 442a. Since the side surface 432 is a vertical surface, the output port 442a is arranged vertically.

**[0023]** Referring to FIGS. 3 and 7, in some embodiments, a plane perpendicular to the axial direction of the atomizer 10 is referred as a reference plane. The reference plane is perpendicular to the central axis of the inhaling passage 11. That is, the reference plane is a horizontal plane. A distance between the orthographic projections of the input port 341 and the output port 442a on the reference plane is greater than zero. In other words, the input port 341 is offset from the output port 442a in

the horizontal direction. Similarly, a distance between the orthographic projections of the flow guiding member 360 and the output port 442a on the reference plane is greater than zero. In other words, the flow guiding member 360 is offset from the output port 442a in the horizontal direction. Two dashed lines in FIG. 7 are the projections' trajectories of the input port 341 and the flow guiding member 360 on the reference plane, respectively. A distance between the orthographic projections of the flow guiding member 360 and the directing hole 340 on the reference plane is greater than zero, such that the flow guiding member 360 is offset from the directing hole 340.

**[0024]** When the user inhales at the nozzle 121a, the outside air flows through the air inlet channel 440, the air guiding cavity 410, and the directing hole 340 successively and enters the atomizing cavity 350 to carry the aerosol. Then, the air carrying the aerosol can flow through the guiding passage 212, the air guiding hole 211, and the inhaling hole 121 successively and reaches the nozzle 121a, such that the aerosol is inhaled by the user. The dashed arrows in FIG. 4, FIG. 6 and FIG. 20 indicate the flow trajectory of the air.

**[0025]** Generally, when the atomizer 10 is out of use, the aerosol remained in the atomizing cavity 350 can be liquefied to form a condensate. While a seeping liquid can be formed on the atomizing core 510, and the seeping liquid can drop from the atomizing core 510. The seeping liquid and the condensate together form the leakage liquid. Since the sealing member 300 includes a boss 330 located in the atomizing cavity 350, and the boss 330 protrudes from the connecting surface 320. A part of the leakage liquid can be attached to the connecting surface 320. That is, the leakage liquid can be stored in a recessed space of the atomizing cavity 350 located on the edge of the boss 330. The directing hole 340 extends through the free end surface 331 of the boss 330 and is in fluid communication with the atomizing cavity 350, such that the leakage liquid stored in the recessed space is difficult to reach the free end surface 331, thus preventing the leakage liquid from entering the directing hole 340, and ensuring that the recessed space in the atomizing cavity 350 can effectively store the leakage liquid.

**[0026]** Sometimes a part of the seeping liquid will drop directly into the directing hole 340, and some aerosol can enter the directing hole 340 from the atomizing cavity 350. This part of the aerosol can also be liquefied in the directing hole 340 to form the condensate. In short, a part of the leakage liquid cannot be stored in the recessed space, but can be transferred from the directing hole 340 to the flow guiding member 360 via the input port 341, such that the leakage liquid on the flow guiding member 360 can eventually drop onto the liquid absorbing member 520. Since the flow guiding member 360 is offset from the output port 442a in the horizontal direction, the leakage liquid dropped from the flow guiding member 360 cannot fall into the output port 442a. As such, the leakage liquid is prevented from leaking out from the atomizer 10 via the air inlet channel 440 to enter the power supply,

thus preventing the leakage liquid from corroding the power supply or even causing the power supply to explode, thereby improving the service life and safety of the power supply. In addition, the input port 341 is also offset from the output port 442a in the horizontal direction. Even if a part of the leakage liquid cannot enter the flow guiding member 360 and drops directly from the input port 341, it can effectively prevent the leakage liquid dropped from the input port 341 from directly entering the output port 442a, thereby effectively avoiding the leakage liquid from leaking out of the atomizer 10 via the air inlet channel 440. Since the side surface 432 can be vertically connected to the top surface 431, when the output port 442a is located above the side surface 432 that is vertically arranged, the output port 442a can be arranged vertically. Even if the output port 442a is not offset from the input port 341, when the leakage liquid drops from the input port 341, the dropped leakage liquid is difficult to enter the output port 442a.

**[0027]** After the flow guiding member 360 guides the leakage liquid into the air guiding cavity 410, the leakage liquid can be stored in the recessed space at the edge of the protruding post 430. Since a certain distance is kept between the output port 442a and the fixing surface 420, that is, the height of the output port 442a is higher than that of the fixing surface 420, it can ensure that the leakage liquid in the recessed space cannot reach the output port 442a, thus avoiding the leakage liquid from leaking via the air inlet channel 440. Further, the liquid absorbing member 520 can be fixed on the fixing surface 420 of the base 400. The leakage liquid on the flow guiding member 360 can be directly input to the liquid absorbing member 520. Due to the absorption and restraining effect of the liquid absorbing member 520, it can effectively prevent the liquid from flowing freely in the air guiding cavity 410, thereby preventing the liquid level in the recessed space in the air guiding cavity 410 from reaching the output port 442a.

**[0028]** When the user inhales at the nozzle 121a, subjected to the negative pressure, the condensate and non-liquefied suspended droplets in the atomizing cavity 350 can flow into the guiding passage 212. In this case, due to the recessed structures such as the first groove 213c, the second groove 215a, the third groove 213d and the micro-groove 216a, the recessed structures can obstruct and adsorb the leakage liquid formed by the condensate and suspended droplets, such that the leakage liquid is received in the recessed structures and is difficult to enter the inhaling passage 11, thus preventing the user from inhaling the leakage liquid into the mouth. In addition, since the annular gap 124 is formed between the tip portion 123 of the central post 120 and the first inner surface 211a, even if the leakage liquid enters the air guiding hole 211 from the guiding passage 212, the annular gap 124 can receive and obstruct the leakage liquid, thus preventing the leakage liquid from entering the nozzle 121a to be inhaled by the user. Furthermore, since the receiving groove 122a is formed on the second surface

of the center post 120, even if the leakage liquid enters the air inlet 441 via the air guiding hole 211, the receiving groove 122a can receive and obstruct the leakage liquid to prevent the leakage liquid from entering the nozzle 121a to be inhaled by the user. Therefore, due to the triple obstruction of the recessed structures on the inner wall surface 213, the annular gap 124, and the receiving groove 122a, the leakage liquid can be effectively prevented from being inhaled by the user.

**[0029]** When the atomizer 10 is tilted or inverted, the nozzle 121a faces downward, and the condensate in the atomizing cavity 350 and the seeping liquid dropping from the atomizing core 510 into the atomizing cavity 350 will form the leakage liquid. Under the action of gravity, the leakage liquid will flow from the atomizing cavity 350 into the guiding passage 212. Based on the similar principle, due to the triple obstruction of the recessed structures on the inner wall surface 213, the annular gap 124, and the receiving groove 122a, the leakage liquid can be effectively prevented from flowing out of the atomizer 10 via the nozzle 121a.

**[0030]** Accordingly, the atomizer 10 can not only effectively prevent the leakage liquid from leaking out of the atomizer 10 via the air inlet channel 440, preventing the leakage liquid from corroding the power supply or causing the power supply to explode, but also can effectively prevent the leakage liquid from leaking out of the atomizer 10 via the nozzle 121a of the air inlet channel 11. If the air inlet channel 440, the air guiding cavity 410, the liquid directing passage 12, the guiding passage 212, and the inhaling passage 11 are regarded as an airflow passage through which the outside air flows, the atomizer 10 can prevent the leakage liquid from leaking out of the atomizer 10 via the upper and lower ends of the airflow passage. In addition, it can prevent the condensate and suspended droplets from being inhaled by the user during inhalation, which can improve the user's inhaling experience.

**[0031]** The technical features of the above described embodiments can be combined arbitrarily. To simplify the description, not all possible combinations of the technical features in the above embodiments are described. However, all of the combinations of these technical features should be considered as being fallen within the scope of the present application, as long as such combinations do not contradict with each other.

**[0032]** The foregoing embodiments merely illustrate some embodiments of the present application, and descriptions thereof are relatively specific and detailed. However, it should not be understood as a limitation to the patent scope of the present application. The protection scope of the present application shall be subject to the appended claims.

## Claims

1. An atomizer (10), comprising:

- a top cover assembly (200) provided with a guiding passage (212) and an air guiding hole (211) therein, the top cover assembly (200) comprising a protruding or recessed structure between the guiding passage (212) and the air guiding hole (211); and  
 an atomizing core (510) at least partially received in the top cover assembly (200), wherein the atomizing core (510) is configured to discharge an aerosol formed by atomizing a liquid into the air guiding hole (211) via the guiding passage (212);  
 wherein the top cover assembly (200) has an inner wall surface (213) defining a boundary of the guiding passage (212), the protruding or recessed structure is located on the inner wall surface (213).
2. The atomizer (10) according to claim 1, wherein the top cover assembly (200) further has an outer wall surface (214) connected to the inner wall surface (213), the guiding passage (212) extends through the outer wall surface (214), the inner wall surface (213) comprises an inner sidewall surface (213a) parallel to a central axis of the atomizer (10), the recessed structure comprises a first groove (213c) formed on the inner sidewall surface (213a) extending through the outer wall surface (214).
  3. The atomizer (10) according to claim 2, wherein the recessed structure further comprises a second groove (215a) in fluid communication with the first groove (213c), an extending direction of the second groove (215a) forms an angle with an extending direction of the first groove (213c).
  4. The atomizer (10) according to claim 3, wherein the top cover assembly (200) further has a second inner bottom wall surface (216) defining a part of a boundary of the second groove (215a), the recessed structure further comprises a micro-groove (216a) formed on the second inner bottom wall surface (216), a width of the micro-groove (216a) is less than a width of the second groove (215a), an extending direction of the micro-groove (216a) forms an angle with the central axis of the atomizer (10).
  5. The atomizer (10) according to claim 2, wherein the inner wall surface (213) comprises an inner top wall surface (213b), the inner top wall surface (213b) forms an angle with the central axis of the atomizer (10) and is connected to the inner sidewall surface (213a), the recessed structure further comprises a third groove (213d) formed on the inner top wall surface (213b) extending through the outer wall surface (214).
  6. The atomizer (10) according to claim 1, further comprising a housing (100), wherein the top cover assembly (200) and the atomizing core (510) are at least partially received in the housing (100), the housing (100) is provided with an inhaling hole (121) coaxially with the air guiding hole (211), the air guiding hole (211) is in fluid communication between the inhaling hole (121) and the guiding passage (212), an end of the inhaling hole (121) away from the air guiding hole (211) forms a nozzle (121a) that is in fluid communication with an outside atmosphere.
  7. The atomizer (10) according to claim 6, wherein the housing (100) comprises a shell (110) and a central post (120), the central post (120) is located in the shell (110) and inserted into the air guiding hole (211), the central post (120) comprises a tip portion (123) located in the air guiding hole (211), the top cover assembly (200) further has a first inner surface (211a) defining a boundary of the air guiding hole (211), a gap (124) is formed between the tip portion (123) and the first inner surface (211a).
  8. The atomizer (10) according to claim 7, wherein the central post (120) has a second inner surface (122) defining a boundary of the inhaling hole (121), the second inner surface (122) is recessed to form an receiving groove (122a) extending along a central axis of the inhaling hole (121).
  9. An electronic atomizing device, comprising a power supply and the atomizer (10) according to any one of the preceding claims electrically connected to the power supply.

## Patentansprüche

### 1. Zerstäuber (10), umfassend:

eine obere Abdeckungsanordnung (200), die mit einem Führungsdurchgang (212) und einem Luftleitloch (211) darin versehen ist, wobei die obere Abdeckungsanordnung (200) eine hervorstehende oder vertiefte Struktur zwischen dem Führungsdurchgang (212) und dem Luftleitloch (211) aufweist; und  
 einen Zerstäubungskern (510), der zumindest teilweise in der oberen Abdeckungsanordnung (200) aufgenommen ist,  
 wobei der Zerstäubungskern (510) konfiguriert ist, um ein Aerosol, das durch Zerstäuben einer Flüssigkeit gebildet wird, über den Führungsdurchgang (212) in das Luftleitloch (211) abzugeben;  
 wobei die obere Abdeckungsanordnung (200) eine Innenwandfläche (213) aufweist, die eine Begrenzung des Führungsdurchgangs (212) definiert, wobei sich die hervorstehende oder

vertiefte Struktur an der Innenwandfläche (213) befindet.

2. Zerstäuber (10) nach Anspruch 1, wobei die obere Abdeckungsanordnung (200) ferner eine äußere Wandfläche (214) aufweist, die mit der inneren Wandfläche (213) verbunden ist, sich der Führungsdurchgang (212) durch die äußere Wandfläche (214) erstreckt, die innere Wandfläche (213) eine innere Seitenwandfläche (213a) parallel zu einer Mittelachse des Zerstäubers (10) umfasst, die vertiefte Struktur eine erste Nut (213c) umfasst, die an der inneren Seitenwandfläche (213a) gebildet ist und sich durch die äußere Wandfläche (214) erstreckt. 5
3. Zerstäuber (10) nach Anspruch 2, wobei die vertiefte Struktur ferner eine zweite Nut (215a) in Fluidverbindung mit der ersten Nut (213c) umfasst, wobei eine Erstreckungsrichtung der zweiten Nut (215a) einen Winkel mit einer Erstreckungsrichtung der ersten Nut (213c) bildet. 10
4. Zerstäuber (10) nach Anspruch 3, wobei die obere Abdeckungsanordnung (200) ferner eine zweite innere Bodenwandfläche (216) aufweist, die einen Teil einer Begrenzung der zweiten Nut (215a) definiert, wobei die vertiefte Struktur ferner eine Mikronut (216a) umfasst, die an der zweiten inneren Bodenwandfläche (216) gebildet ist, wobei eine Breite der Mikronut (216a) geringer ist als eine Breite der zweiten Nut (215a), wobei eine Erstreckungsrichtung der Mikronut (216a) einen Winkel mit der Mittelachse des Zerstäubers (10) bildet. 15
5. Zerstäuber (10) nach Anspruch 2, wobei die innere Wandfläche (213) eine innere obere Wandfläche (213b) umfasst, die innere obere Wandfläche (213b) einen Winkel mit der Mittelachse des Zerstäubers (10) bildet und mit der inneren Seitenwandfläche (213a) verbunden ist, die vertiefte Struktur ferner eine dritte Nut (213d) umfasst, die an der inneren oberen Wandfläche (213b) gebildet ist und sich durch die äußere Wandfläche (214) erstreckt. 20
6. Zerstäuber (10) nach Anspruch 1, ferner umfassend ein Gehäuse (100), wobei die obere Abdeckungsanordnung (200) und der Zerstäubungskern (510) zumindest teilweise in dem Gehäuse (100) aufgenommen sind, das Gehäuse (100) mit einem Inhalationsloch (121) versehen ist, das koaxial zu dem Luftleitloch (211) verläuft, das Luftleitloch (211) in Fluidverbindung zwischen dem Inhalationsloch (121) und dem Führungsdurchgang (212) ist, ein Ende des Inhalationslochs (121), das von dem Luftleitloch (211) entfernt ist, eine Düse (121a) bildet, die in Fluidverbindung mit einer äußeren Atmosphäre ist. 25
7. Zerstäuber (10) nach Anspruch 6, wobei das Gehäu-

se (100) eine Schale (110) und einen mittleren Ständer (120) umfasst, wobei der mittlere Ständer (120) in der Schale (110) angeordnet und in das Luftleitloch (211) eingesetzt ist, der mittlere Ständer (120) einen Spitzenabschnitt (123) umfasst, der sich in dem Luftleitloch (211) befindet, die obere Abdeckungsanordnung (200) ferner eine erste Innenfläche (211a) aufweist, die eine Begrenzung des Luftleitlochs (211) definiert, und ein Spalt (124) zwischen dem Spitzenabschnitt (123) und der ersten Innenfläche (211a) gebildet ist.

8. Zerstäuber (10) nach Anspruch 7, wobei der mittlere Ständer (120) eine zweite Innenfläche (122) aufweist, die eine Begrenzung des Inhalationslochs (121) definiert, wobei die zweite Innenfläche (122) vertieft ist, um eine Aufnahmenut (122a) zu bilden, die sich entlang einer Mittelachse des Inhalationslochs (121) erstreckt. 30
9. Elektronische Zerstäubungsvorrichtung, umfassend eine Stromversorgung und den Zerstäuber (10) nach einem der vorherigen Ansprüche, der elektrisch mit der Stromversorgung verbunden ist. 35

#### Revendications

1. Atomiseur (10) comprenant :

un ensemble couvercle supérieur (200) comportant un passage de guidage (212) et un trou de guidage d'air (211), l'ensemble couvercle supérieur (200) comprenant une structure en saillie ou en retrait entre le passage de guidage (212) et le trou de guidage d'air (211) ; et  
un noyau d'atomisation (510) au moins en partie reçu dans l'ensemble couvercle supérieur (200), dans lequel le noyau d'atomisation (510) est configuré pour décharger un aérosol formé par l'atomisation d'un liquide dans le trou de guidage d'air (211) via le passage de guidage (212) dans lequel l'ensemble couvercle supérieur (200) a une surface de paroi intérieure (213) définissant une limite du passage de guidage (212), la structure en saillie ou en creux étant située sur la surface de paroi intérieure (213). 40

2. Atomiseur (10) selon la revendication 1, dans lequel l'ensemble couvercle supérieur (200) possède en outre une surface de paroi extérieure (214) reliée à la surface de paroi intérieure (213), le passage de guidage (212) traversant la surface de paroi extérieure (214), la surface de paroi intérieure (213) comprenant une surface de paroi latérale intérieure (213a) parallèle à un axe central de l'atomiseur (10), la structure encastrée comprenant une première rainure (213c) formée sur la surface de paroi latérale 45

- intérieure (213a) s'étendant à travers la surface de paroi extérieure (214).
3. Atomiseur (10) selon la revendication 2, dans lequel la structure encastrée comprend en outre une deuxième rainure (215a) en communication fluide avec la première rainure (213c), une direction d'extension de la deuxième rainure (215a) formant un angle avec une direction d'extension de la première rainure (213c). 5
  4. Atomiseur (10) selon la revendication 3, dans lequel l'ensemble couvercle supérieur (200) a en outre une deuxième surface de paroi inférieure intérieure (216) qui définit une partie d'une limite de la deuxième rainure (215a), la structure encastrée comprend en outre une micro-gorge (216a) formée sur la deuxième surface de paroi inférieure intérieure (216), une largeur de la micro-gorge (216a) est inférieure à une largeur de la deuxième rainure (215a), une direction d'extension de la micro-gorge (216a) forme un angle avec l'axe central de l'atomiseur (10). 10 15 20
  5. Atomiseur (10) selon la revendication 2, dans lequel la surface de la paroi intérieure (213) comprend une surface de paroi supérieure intérieure (213b), la surface de paroi supérieure intérieure (213b) forme un angle avec l'axe central de l'atomiseur (10) et est reliée à la surface de paroi latérale intérieure (213a), la structure en retrait comprend en outre une troisième rainure (213d) formée sur la surface de paroi supérieure intérieure (213b) s'étendant à travers la surface de la paroi extérieure (214). 25 30
  6. Atomiseur (10) selon la revendication 1, comprenant en outre un boîtier (100), dans lequel l'ensemble couvercle supérieur (200) et le noyau d'atomisation (510) sont au moins en partie reçus dans le boîtier (100), le boîtier (100) étant équipé d'un trou d'inhalation (121) coaxial avec le trou de guidage d'air (211), le trou de guidage d'air (211) est en communication fluide entre le trou d'inhalation (121) et le passage de guidage (212), une extrémité du trou d'inhalation (121) éloignée du trou de guidage d'air (211) forme une buse (121a) qui est en communication fluide avec une atmosphère extérieure. 35 40 45
  7. Atomiseur (10) selon la revendication 6, dans lequel le boîtier (100) comprend une coque (110) et un montant central (120), le montant central (120) est situé dans la coque (110) et inséré dans le trou de guidage d'air (211), le montant central (120) comprend une partie de pointe (123) située dans le trou de guidage d'air (211), l'ensemble couvercle supérieur (200) possède en outre une première surface intérieure (211a) définissant une limite du trou de guidage d'air (211), un espace (124) étant formé entre la partie de pointe (123) et la première surface intérieure (211a). 50 55
  8. Atomiseur (10) selon la revendication 7, dans lequel le montant central (120) a une deuxième surface intérieure (122) définissant une limite du trou d'inhalation (121), la deuxième surface intérieure (122) est encastrée pour former une rainure de réception (122a) s'étendant le long d'un axe central du trou d'inhalation (121).
  9. Système électronique d'atomisation, comprenant une alimentation électrique et l'atomiseur (10) selon l'une quelconque des revendications précédentes, connecté de manière électrique à l'alimentation électrique.

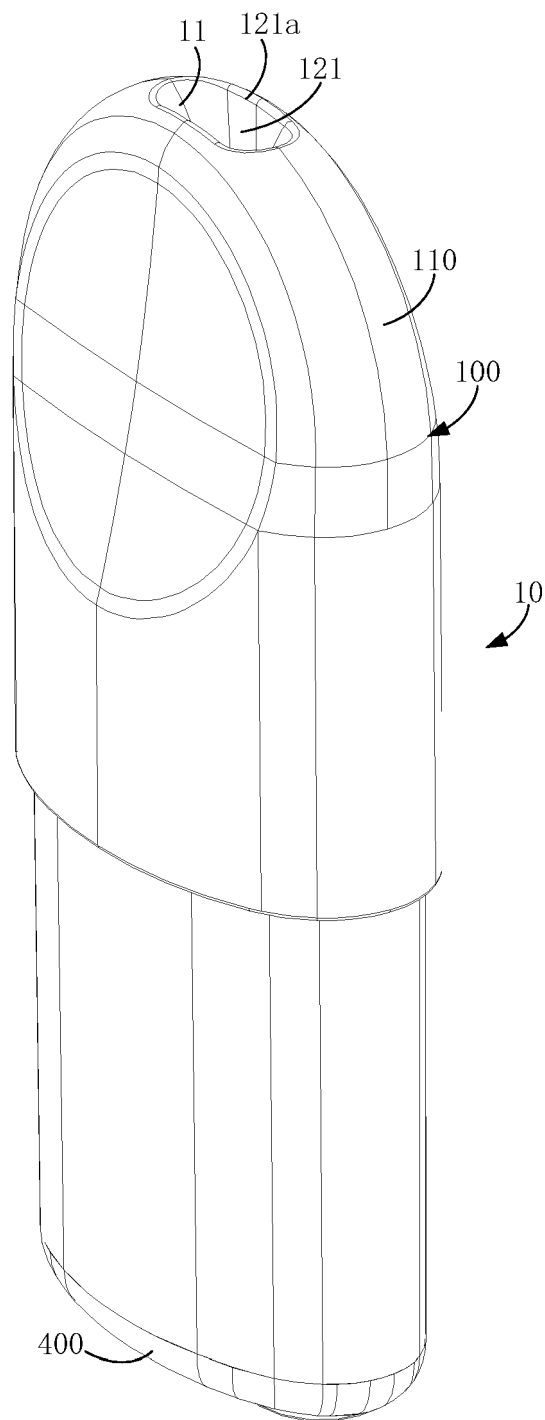


FIG. 1

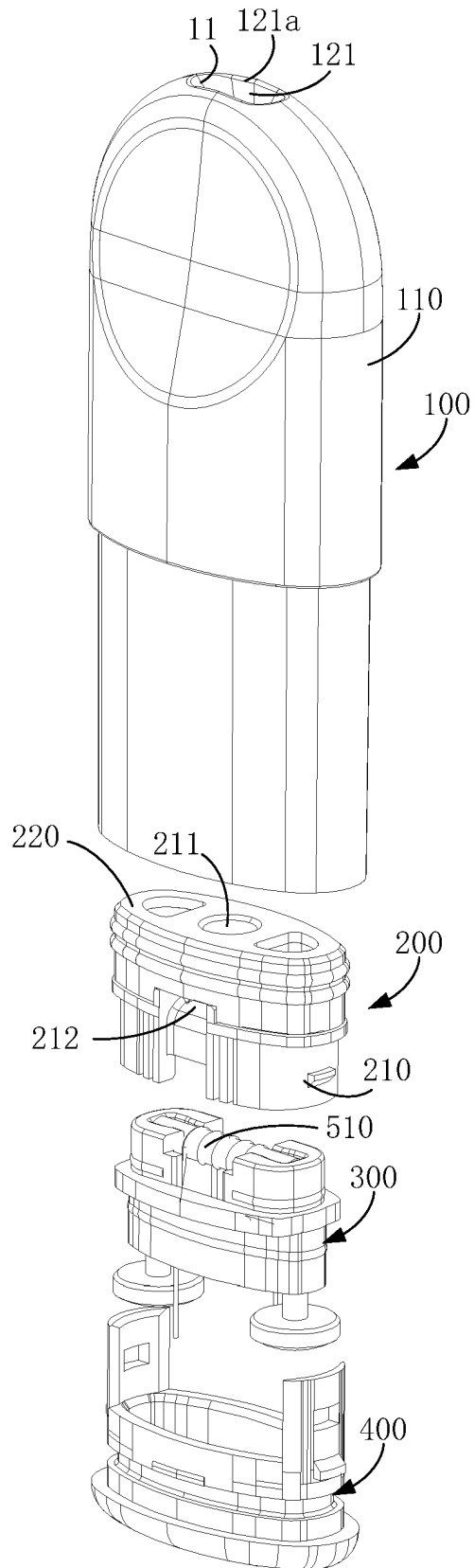


FIG. 2

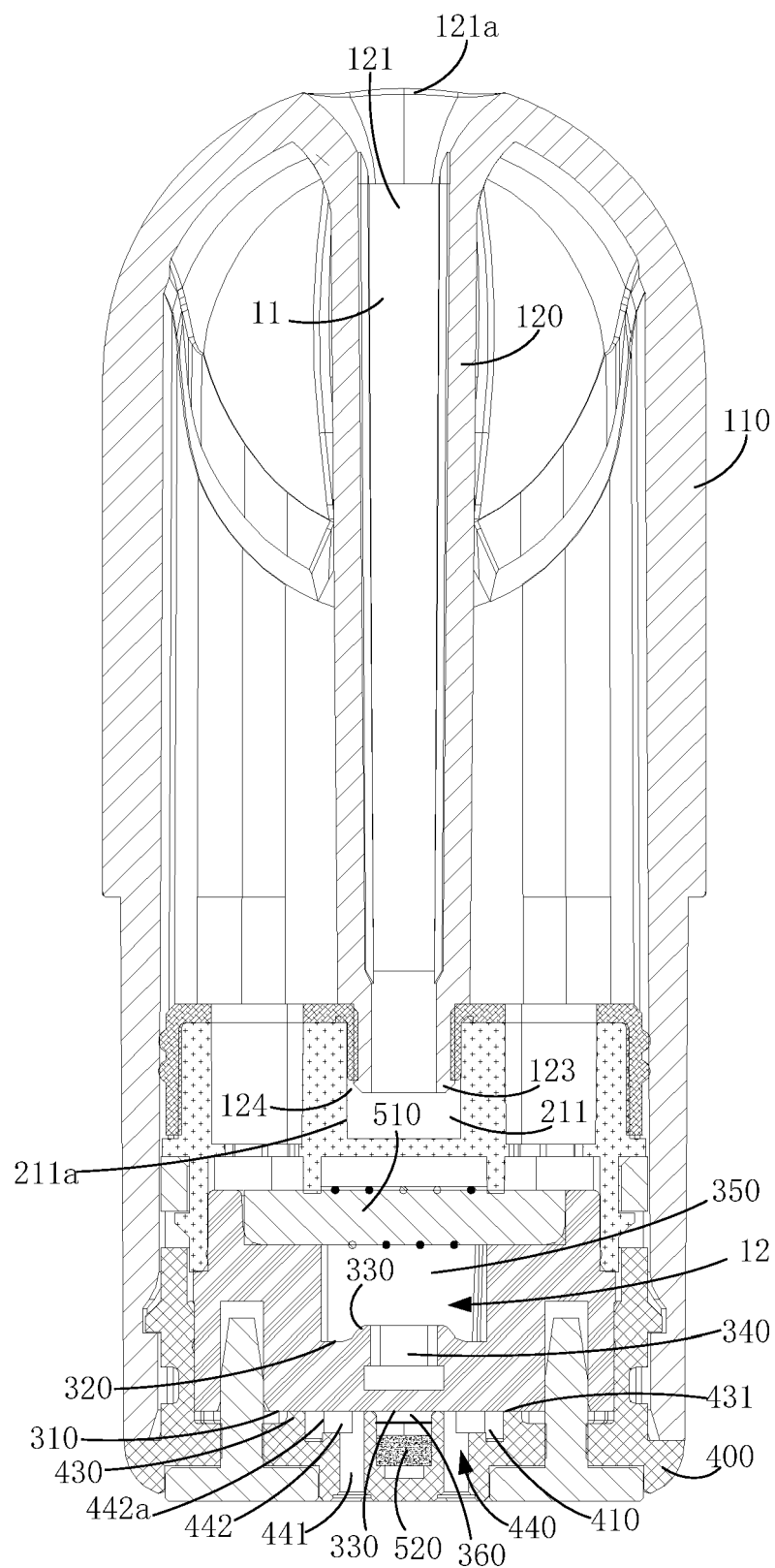


FIG. 3

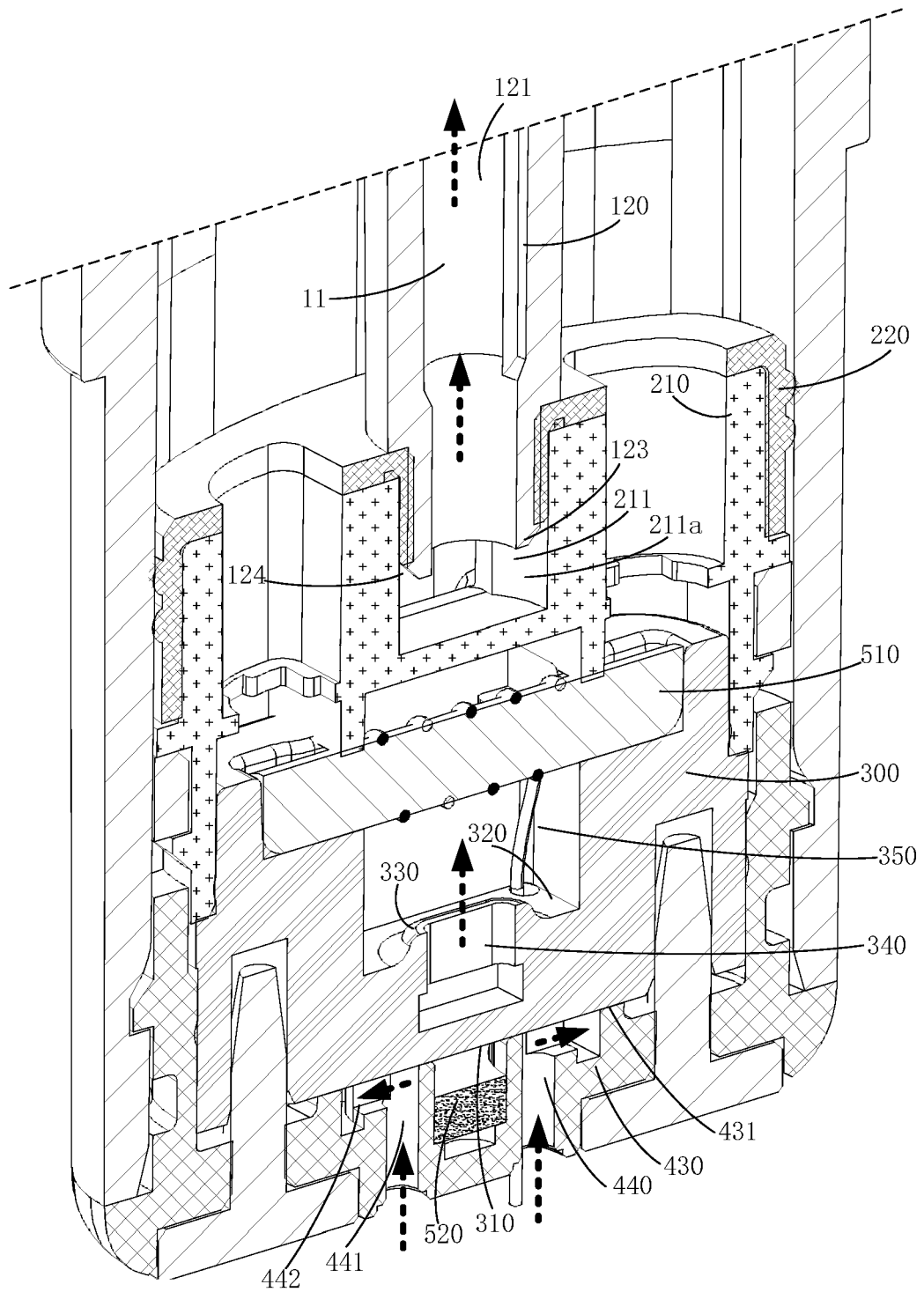


FIG. 4

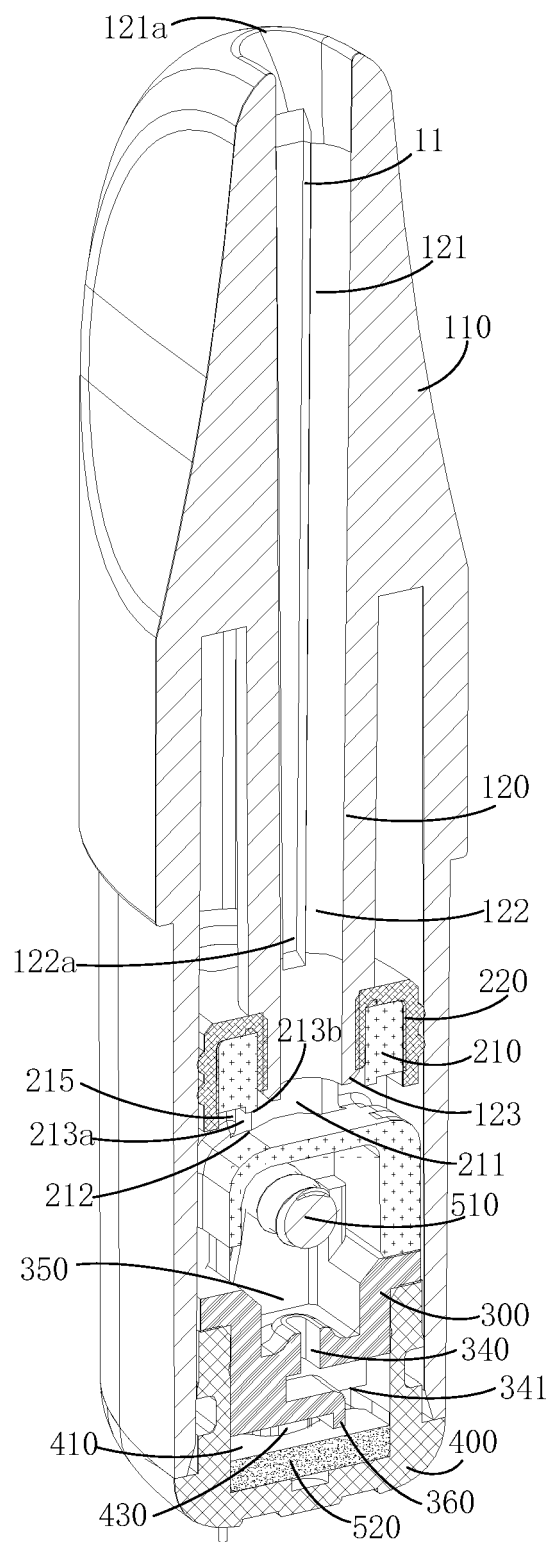


FIG. 5

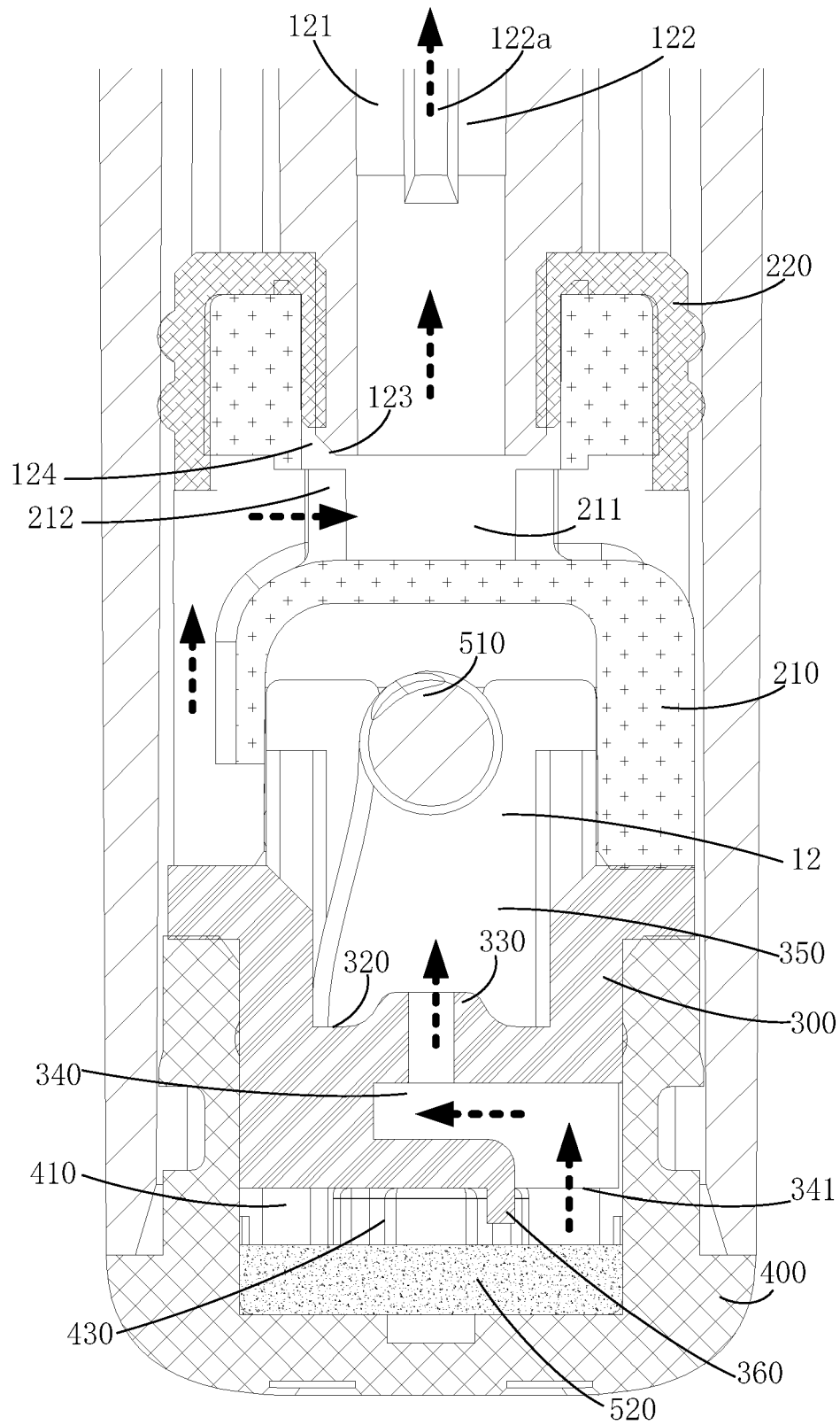


FIG. 6

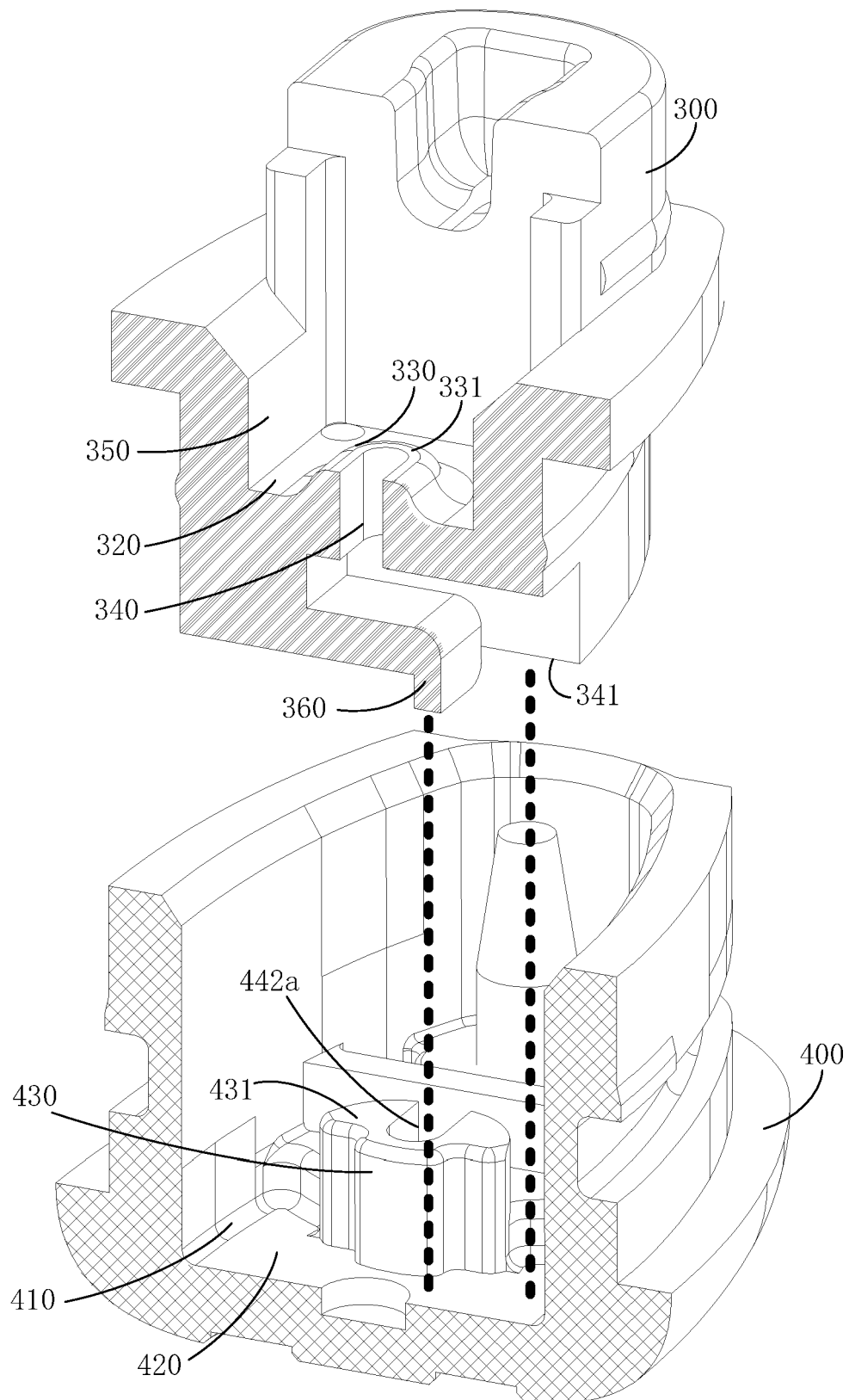


FIG. 7

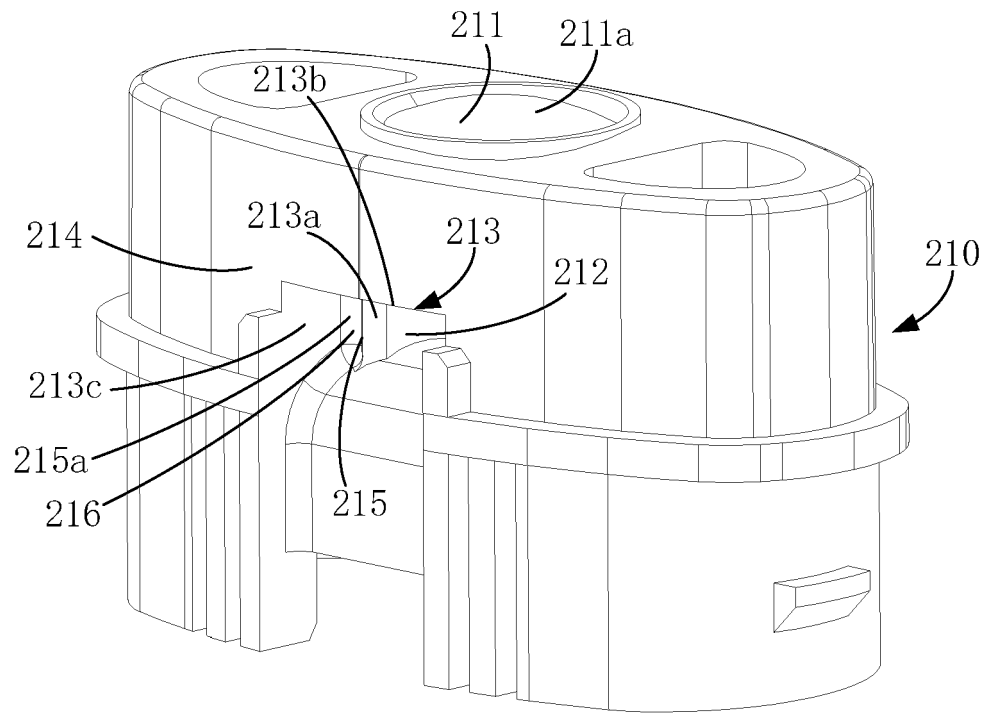


FIG. 8

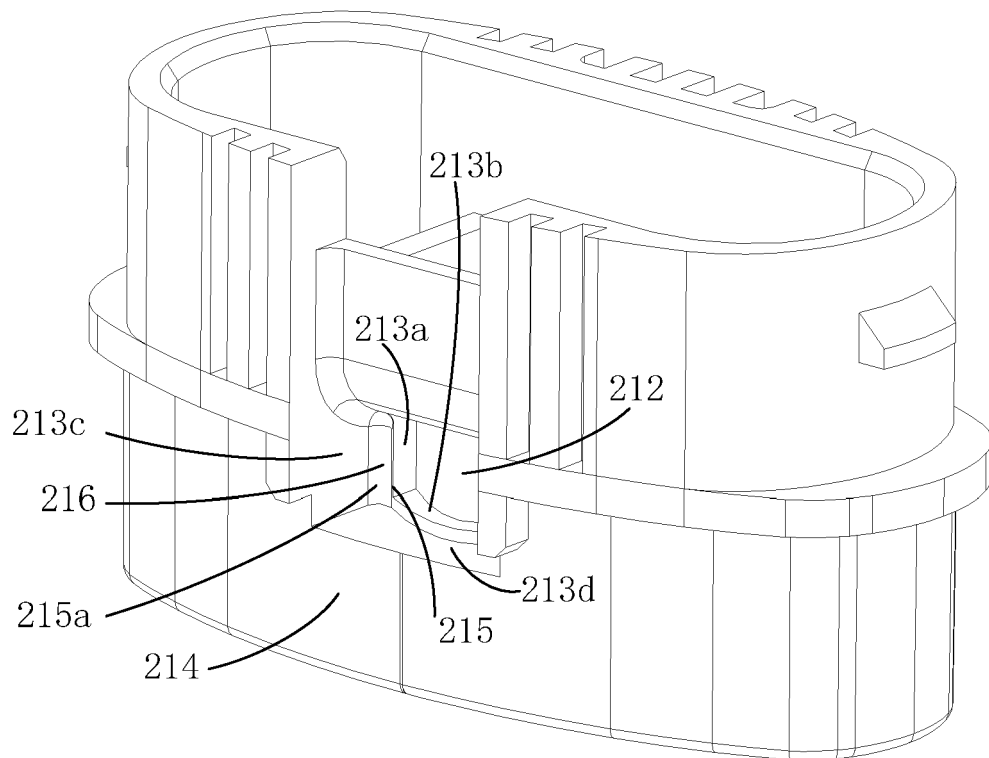


FIG. 9

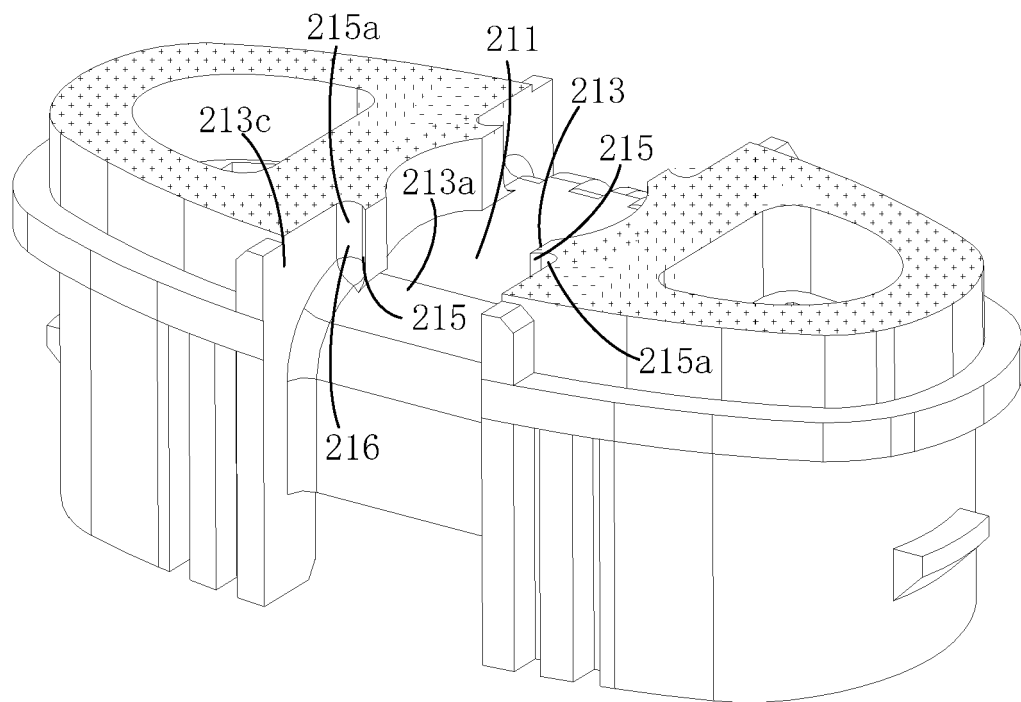


FIG. 10

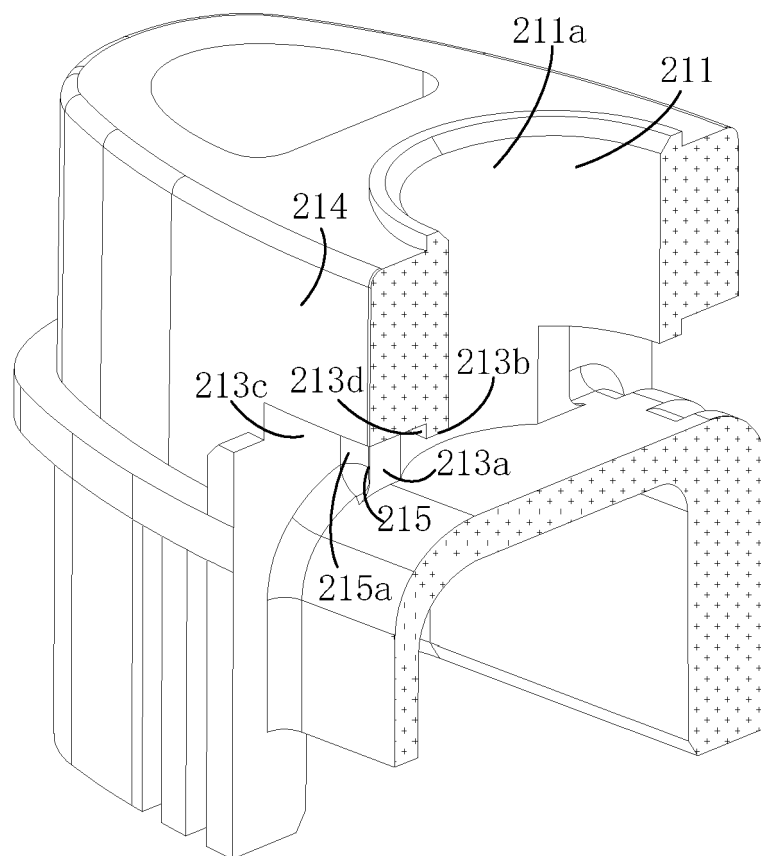


FIG. 11

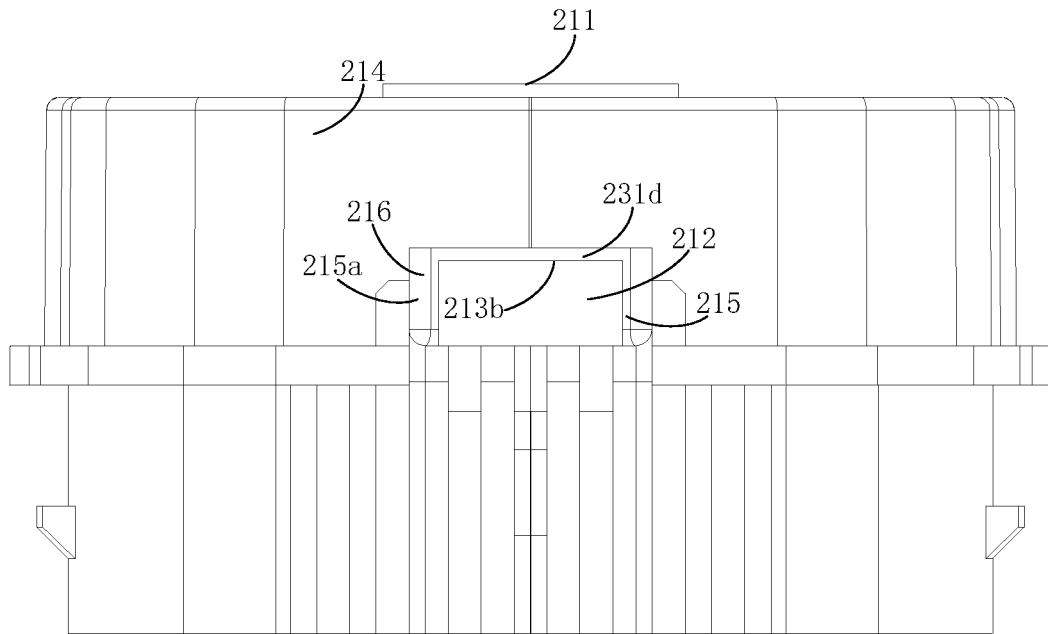


FIG. 12

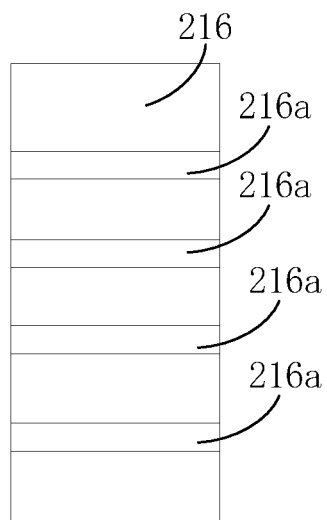


FIG. 13

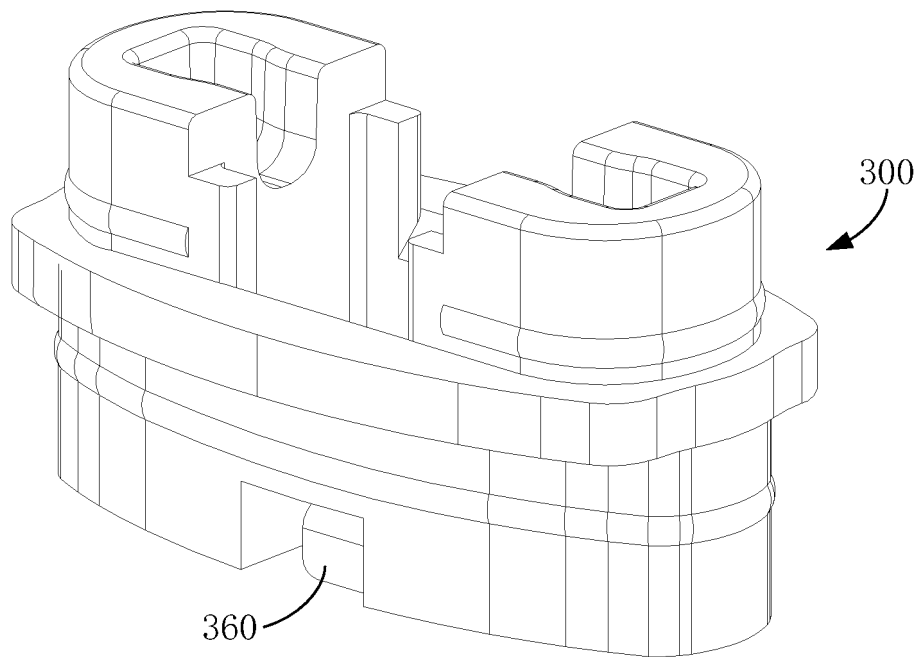


FIG. 14

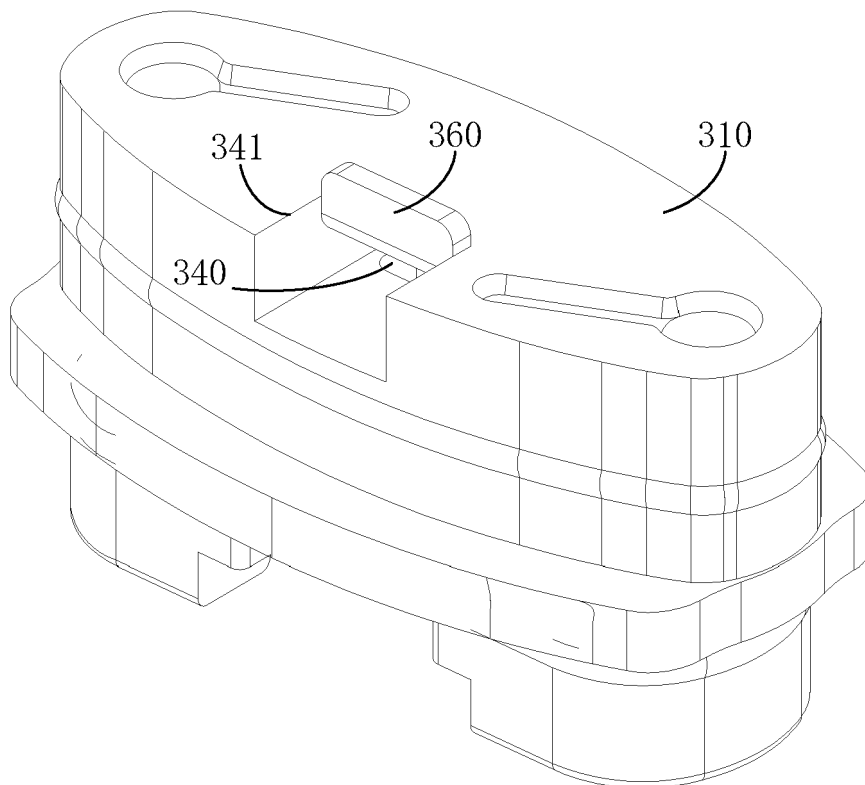


FIG. 15

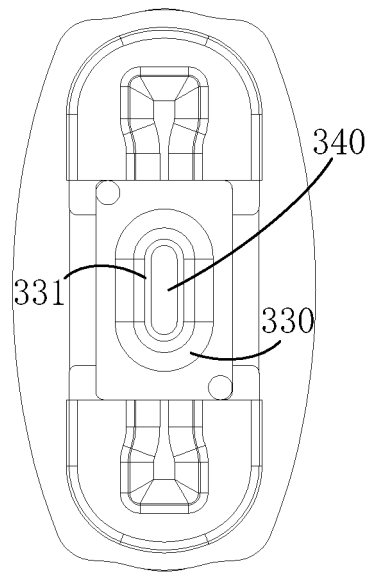


FIG. 16

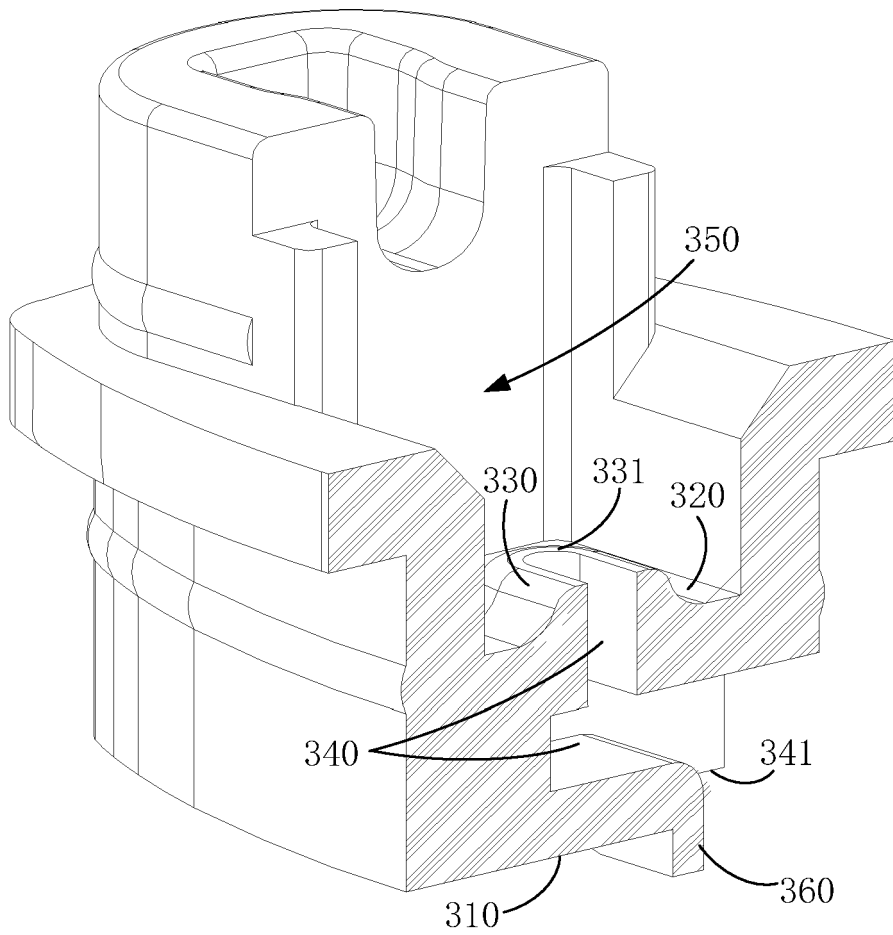


FIG. 17

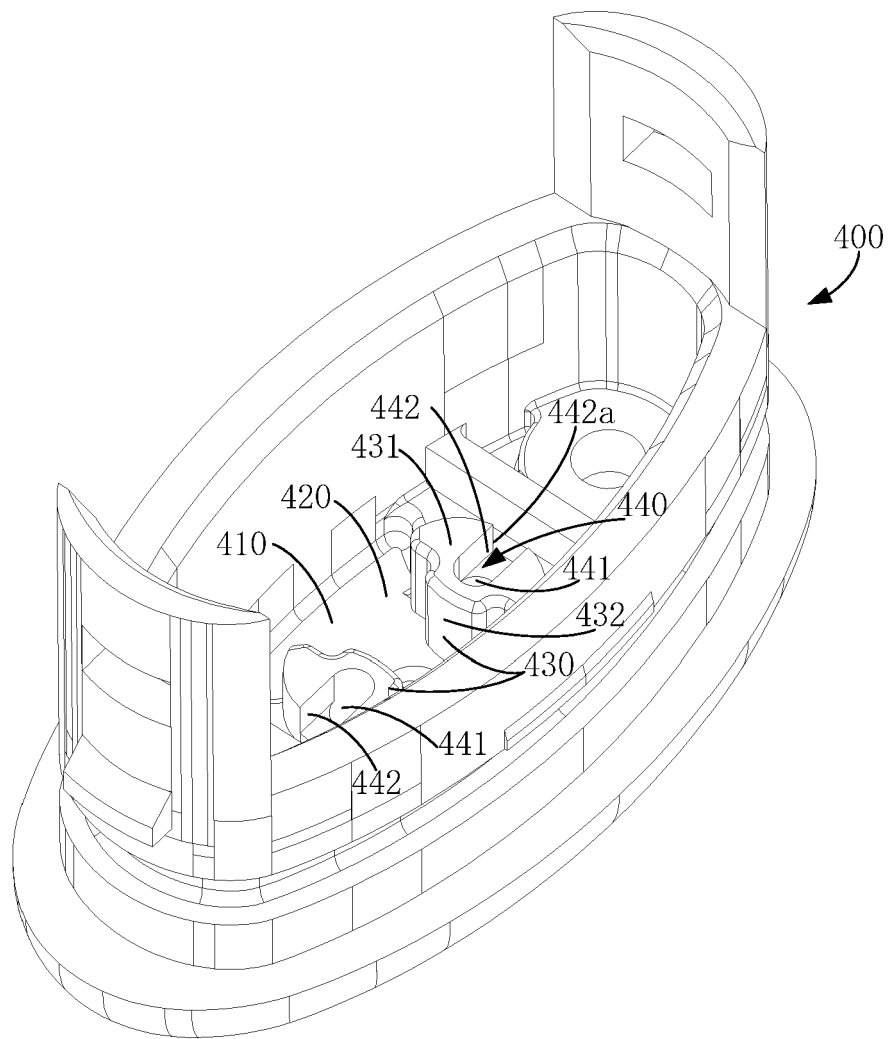


FIG. 18

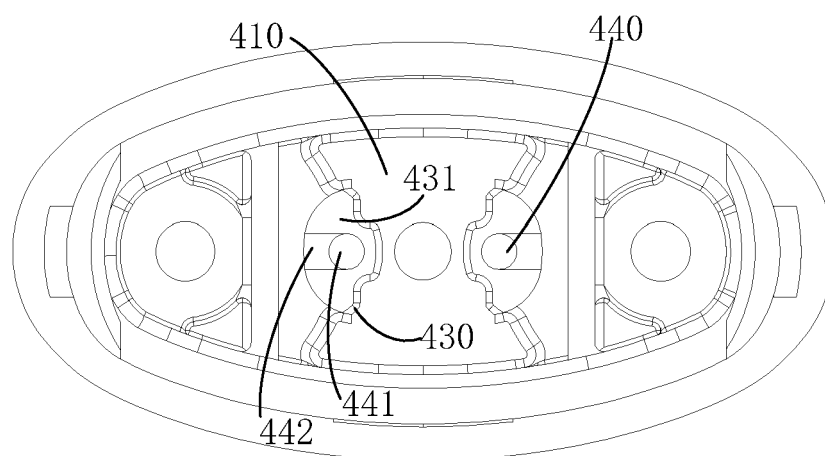


FIG. 19

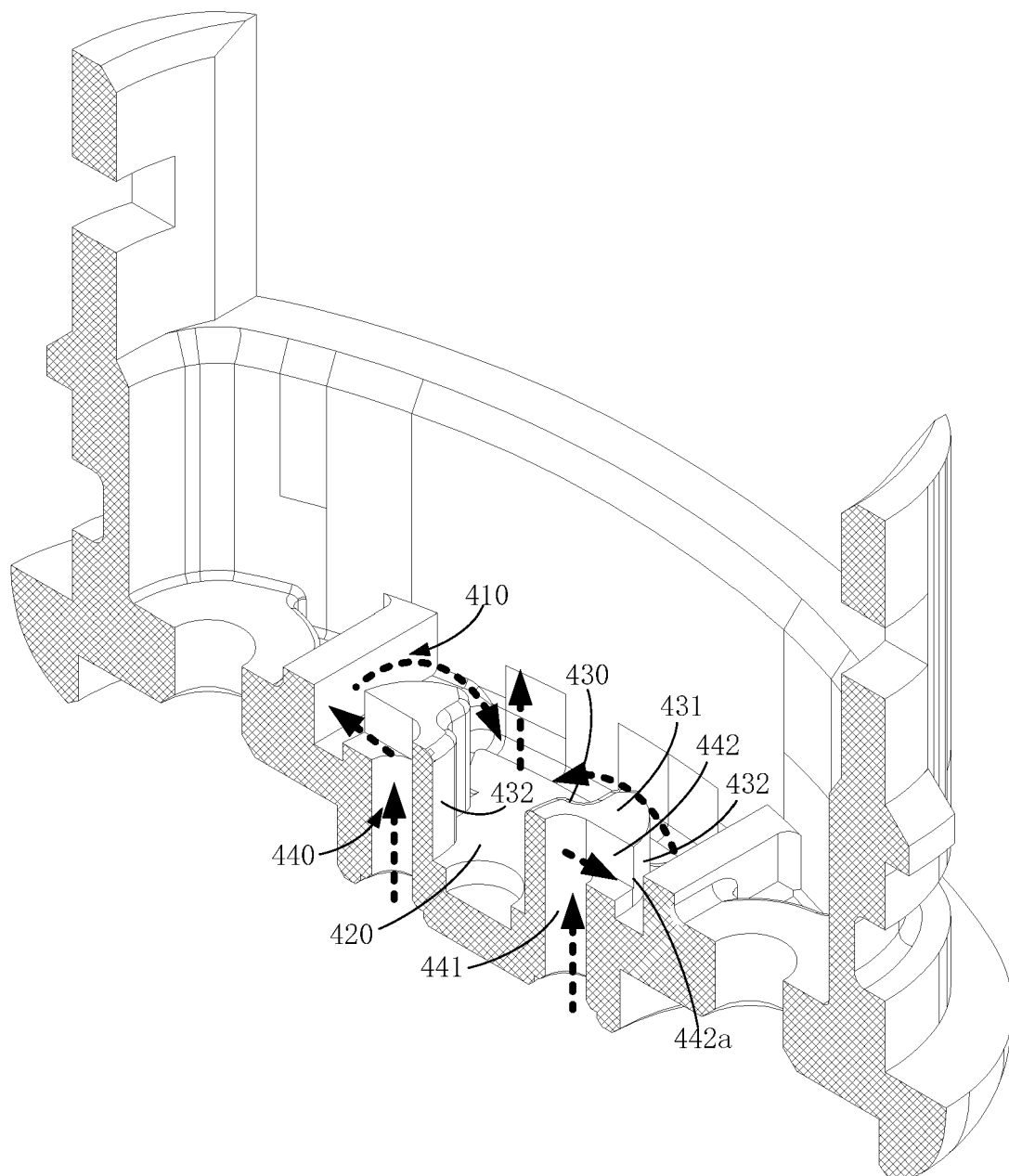


FIG. 20

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- CN 109393570 A [0002]
- WO 2016154994 A1 [0002]