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(71) Applicant: **Shenzhen Huachengda Precision Industry Co.Ltd.**
Shenzhen, Guangdong (CN)

(72) Inventor: **CHEN, Ping**
Shenzhen (CN)

(74) Representative: **Westphal, Mussnug & Partner, Patentanwälte mbB**
Werinherstraße 79
81541 München (DE)

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(54) ELECTRONIC AEROSOL GENERATION DEVICE AND ATOMIZER THEREOF

(57) The present invention discloses an electronic aerosol generation device and atomizer thereof, the atomizer comprises a shell (10), a fixing component (20), and an atomizing component (30). The atomizing component comprises a liquid conducting member (31) and a heating element (32). The liquid conducting member (31) is provided with an air guide hole (311) running through itself longitudinally, and a liquid guide groove (312). The liquid guide groove includes a first sub-liquid guide groove (3121) and a second sub-liquid guide groove (3122) in communication with the first sub-liquid guide groove. The first sub-liquid guide groove is in communication with a liquid guide channel. The aerosol generated by the atomizing component can directly enter the air guide tube through the air guide hole, with a short flow path. The liquid conducting member injects liquid from the top, which is less prone to oil and liquid leakage compared to injecting liquid from the side.

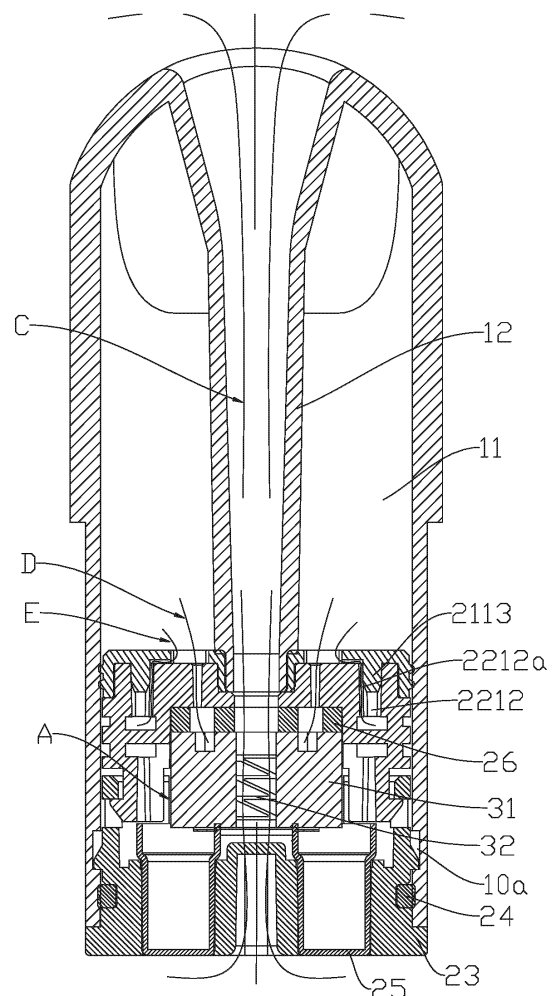


Fig.3

Description

FIELD

[0001] The present invention relates to the field of atomization technology, and more specifically, to an electronic aerosol generating device and atomizer thereof.

BACKGROUND

[0002] Electronic atomization device is a kind of device that uses electric energy to heat liquid, so that liquid reaches boiling point and changes into steam, which is widely used in electronic cigarettes and medical cosmetology fields.

[0003] The electronic atomization device comprises an atomizer, the core of which is the atomizing core. The atomizing core typically includes a liquid conducting member and a heating element that are being assembled together. Porous ceramic and other types of rigid liquid-conducting materials are widely used due to their ease of assembly. The liquid conducting member is usually a bulk structure that typically injects oil from the side, while the bottom surface (i.e. atomization surface) is provided with a heating element for heating and atomizing the atomizing liquid.

[0004] The atomizing liquid gradually permeates from the liquid-conducting surface to the atomization surface, where the heating element on the atomization surface heats and vaporizes the atomizing liquid to form an aerosol. The aerosol is then expelled from the circumferential side of the liquid conducting member to the outside of the atomizer for the consumer to inhale. The long path of aerosol flow may alter the taste due to cooling, and some of the aerosol may condense, leading to inconsistent atomization taste and potential health issues from inhaling condensed liquid.

[0005] Furthermore, if the condensed liquid flows inside the atomizer, it may leak out, severely damaging the circuit components of the electronic atomization device and affecting its service life.

[0006] Additionally, the current atomizing core allows the atomizing liquid to permeate from its liquid-conducting surface to the atomization surface. If the liquid is not vaporized by the heating element on the atomization surface, there is a possibility of the atomizing liquid seeping or dripping out of the atomizing core. If this atomizing liquid enters the air passage, it may be inhaled by the consumer along with the aerosol due to the airflow. Also, if the atomizing liquid seeps out of the atomizer, it could similarly damage the electronic atomization device's circuit components.

[0007] Lastly, the vertically placed liquid conducting member, which injects oil from the side, has difficulty to sealed assembly or requires additional assembly parts for sealed assembly, leading to problems with oil leakage and high costs.

SUMMARY

[0008] The technical problem to be solved by the present invention is to provide an electronic aerosol generation device and atomizer thereof.

[0009] The technical solution adopted by the present invention to solve its technical problem is to construct an atomizer comprising a shell and an atomizing body arranged in the shell, wherein the atomizing body comprises a fixing component and an atomizing component arranged in the fixing component;

the shell has a liquid storage cavity and an air guide tube, the air guide tube extends longitudinally, and the atomizing body is provided with an air guide channel and a liquid guide channel, the air guide channel is connected and in communication with the air guide tube, and the liquid guide channel is in communication with the liquid storage cavity;

the atomizing component comprises a liquid conducting member and a heating element, the liquid conducting member is provided with an air guide hole running through itself longitudinally, and the liquid conducting member is also provided with at least one liquid guide groove, at least one of the liquid guide grooves includes at least one first sub-liquid guide groove and at least one second sub-liquid guide groove, the first sub-liquid guide groove is in communication with the second sub-liquid guide groove, and the first sub-liquid guide groove is in communication with the liquid guide channel;

a wall surface of the air guide hole which is opposite to the second sub-liquid guide groove forms an atomization surface, and the heating element is located on the atomization surface.

[0010] In some embodiments, the depth of the first sub-liquid guide groove is smaller than the depth of the second sub-liquid guide groove, and the longitudinal cross-sectional width of the first sub-liquid guide groove is equal to the longitudinal cross-sectional width of the second sub-liquid guide groove.

[0011] In some embodiments, the depth of the first sub-liquid guide groove is smaller than the depth of the second sub-liquid guide groove, and the longitudinal cross-sectional width of the first sub-liquid guide groove is greater than the longitudinal cross-sectional width of the second sub-liquid guide groove.

[0012] In some embodiments, the number of liquid guide grooves is at least two, and at least two of the liquid guide grooves are spaced apart on the outer periphery of the air guide hole.

[0013] In some embodiments, the second sub-liquid guide grooves of the at least two liquid conducting grooves are in communication with each other, or the second sub-liquid guide grooves of the at least two

liquid conducting grooves are not in communication with each other.

[0014] In some embodiments, the wall surface of the air guide hole which is opposite to the second sub-liquid guide groove is flat or curved.

[0015] In some embodiments, the heating element comprises a heating portion and at least two electrode portions connected to the heating portion, the heating portion is attached on or embedded in the atomization surface, and the ends of the at least two electrode portions are attached on or embedded in the liquid conducting member.

[0016] In some embodiments, the bottom of the liquid conducting member is further provided with a liquid storage groove.

[0017] In some embodiments, the cross-section of the liquid storage groove is arc-shaped.

[0018] In some embodiments, the fixing component comprises a sealing cover and a bracket that cooperate with each other;

the sealing cover is cylindrical and comprising a top wall and a surrounding wall extending from the top wall, the top wall is provided with an air guide part and at least one liquid inlet hole; the air guide part extends longitudinally to connect and in communication with the air guide tube; the liquid inlet hole is in communication with the liquid storage cavity; the bracket is cylindrical and comprising a top portion and a side portion extending from the top portion, the top portion is provided with at least one liquid guide hole, and the inner cavity of the side portion forms a receiving chamber, the atomizing component is arranged in the receiving chamber, and the liquid guide hole is arranged opposite to and in communication with the liquid inlet hole and the first sub-liquid guiding groove, respectively, the liquid guide hole and the liquid inlet hole jointly form the liquid guide channel.

[0019] In some embodiments, the top wall is further provided with a protrusion on the side facing the bracket; the top portion is also provided with at least one air exchange hole, and the side portion is provided with an airflow channel, the air exchange hole is in communication with the airflow channel; the protrusion and the air exchange hole are fastened together by insertion, and a gap is formed between the outer periphery of the protrusion and the inner periphery of the air exchange hole, the gap, the liquid inlet hole, and the airflow channel jointly form an air exchange balance pathway.

[0020] In some embodiments, a groove is provided on a side of the top portion which is facing the sealing cover for accommodating the air guide part.

[0021] In some embodiments, the side portion is further provided with a liquid storage channel, and the liquid storage channel is in communication with the receiving chamber and the liquid conducting member re-

spectively.

[0022] In some embodiments, the fixing component further comprises a base, and the bracket is detachably connected to the base.

[0023] In some embodiments, a sealing ring is further provided between the outer periphery of the base and the inner periphery of the shell.

[0024] In some embodiments, the base is also provided with a conductive element, and the conductive element is connected to the heating element.

[0025] The present invention also constructs an electronic aerosol generation device, comprising an atomizer as described in any one of the above embodiments, and a power supply device connected to the atomizer.

[0026] The implementation of the present invention has the following beneficial effects: the atomizer comprises a shell, a fixing component and an atomizing component, the atomizing component comprises a liquid conducting member and a heating element, the liquid conducting member is provided with an air guide hole running through itself longitudinally, the liquid conducting member is also provided with at least one liquid guide groove, the at least one liquid guide groove includes at least one first sub-liquid guide groove and at least one second sub-liquid guide groove, where the first sub-liquid guide groove is in communication with the second sub-liquid guide groove, and the first sub-liquid guide groove is in communication with a liquid guide channel; a wall surface of the air guide hole which is opposite to the second sub-liquid guide groove forms an atomization surface, and the heating element is located on the atomization surface; the air guide hole is located at the center of the liquid conducting member, close to the outlet of the atomizer, the aerosol generated by the atomizing component can directly enter the air guide tube through the air guide hole, the flow path of the aerosol is short, so that it is not easy to affect the taste due to cooling, and its taste is closer to the original taste of the atomizing liquid, and it can effectively prevent the aerosol from condensing due to cooling during the flow process, it can thus prevent the generated condensate from following the aerosol flow and being sucked by consumers, and can avoid damage to the atomizer or the power supply device caused by the condensate, effectively improving the service life of the atomizer, and the liquid conducting member injects liquid from the top, which is less prone to oil and liquid leakage compared to injecting liquid from the side.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027] In order to further explain the technical solution of the present invention more clearly, the following will combine the drawings and embodiments to further explain the present invention. It should be understood that the following drawings only show some embodiments of the present invention, and should not be seen as limiting the scope. For those skilled in the art, without creative

effort, other relevant drawings can also be obtained based on these drawings.

Figure 1 is a structural schematic diagram in front view of the atomizer in some embodiments of the present invention;

Figure 2 is a structural schematic diagram in bottom view of the atomizer in some embodiments of the present invention;

Figure 3 is a first structural schematic diagram of the atomizer in some embodiments of the present invention;

Figure 4 is a second structural schematic diagram of the atomizer in some embodiments of the present invention;

Figure 5 is a first cross-sectional view of the atomizing body in some embodiments of the present invention;

Figure 6 is a second cross-sectional view of the atomizing body in some embodiments of the present invention;

Figure 7 is a cross-sectional view of the bracket in some embodiments of the present invention;

Figure 8 is a cross-sectional view of the bracket with a sealing cover in some embodiments of the present invention;

Figure 9 is a cross-sectional view of the bracket with a sealing cover and atomizing component in some embodiments of the present invention;

Figure 10 is a structural schematic diagram of the atomizing component in some embodiments of the present invention;

Figure 11 is an exploded view of the atomizing component in some embodiments of the present invention;

Figure 12 is a partial cross-sectional view of the atomizing component in some embodiments of the present invention;

Figure 13 is a structural schematic diagram of the atomizing component in another embodiment of the present invention;

Figure 14 is an exploded view of the atomizing component in another embodiment of the present invention;

Figure 15 is a partial cross-sectional view of the atomizing component in another embodiment of the present invention.

5 DETAILED DESCRIPTION

[0028] In order to more clearly illustrate the present invention, the technical solutions in the embodiments of the present invention will be described in even greater detail below with reference to the accompanying drawings.

[0029] It should be noted that, in the present invention, the orientation or the position relationship indicated by relative terms such as "upper", "lower", "left", "right", "front", "back", "vertical", "horizontal", "top", "bottom", "inner", "outer" should be construed to refer to the orientation or the position relationship as then described or as illustrated in the drawings under discussion. These relative terms are for convenience of description and cannot be understood as limitation to the technical solution.

[0030] It should be noted that, unless otherwise explicitly specified and limited, terms such as "installation," "connection," "fixation," "setting," etc., should be broadly interpreted. For example, it can be a fixed connection, a detachable connection, or integral; it can be a mechanical connection, an electrical connection; it can be directly connected, or indirectly connected through an intermediary medium; it can be an internal communication between two components or an interaction relationship between two components. When one component is referred to as being "above" or "below" another component, the component can be "directly" or "indirectly" located above the other component, or there may also be one or more intermediary components. The terms "first," "second," "third," etc., are used solely for the purpose of describing the present technical solution and should not be construed as indicating or implying relative importance or the quantity of the indicated technical features. Therefore, features designated as "first," "second," "third," etc., may explicitly or implicitly include one or more of those features. For ordinary skilled artisans in this field, the specific meanings of the above terms in the present invention can be understood based on the specific circumstances.

[0031] In the following description, specific details such as particular system structures and technologies are provided not to limit but to illustrate in order to facilitate a thorough understanding of the embodiments of the present invention. However, those skilled in the art should be aware that the present invention can also be implemented in other embodiments without these specific details. In other instances, detailed descriptions of well-known systems, devices, circuits, and methods are omitted to prevent unnecessary details from obstructing the description of the present invention.

[0032] The present invention discloses an electronic aerosol generating device, which may include an atomizer and a power supply device connected to the atomizer.

The electronic aerosol generating device can be applied to various applications including but not limited to electronic cigarettes or medical beauty, and it can heat and atomize the atomizing liquid (such as e-liquid or medicinal liquid) into aerosol.

[0033] Referring to Figures 1 to 6, the present invention illustrates an atomizer, which may include a shell 10 and an atomizing body arranged in the shell 10. The atomizing body includes a fixing component 20 and an atomizing component 30 arranged in the fixing component 20.

[0034] The shell 10 has a liquid storage cavity 11 and an air guide tube 12 extending longitudinally. The atomizing body is provided with an air guide channel and a liquid guide channel, where the air guide channel is connected and in communication with the air guide tube 12, and the liquid guide channel is connected to the liquid storage cavity 11.

[0035] Referring to Figures 10 to 12, or alternatively, Figures 13 to 15, the atomizing component 30 may include a liquid conducting member 31 and a heating element 32. The liquid conducting member 31 is provided with an air guide hole 311 running through itself longitudinally, and at least one liquid guide groove 312. The at least one liquid guide groove 312 includes at least one first sub-liquid guide groove 3121 and at least one second sub-liquid guide groove 3122, where the first sub-liquid guide groove 3121 is in communication with the second sub-liquid guide groove 3122, and the first sub-liquid guide groove 3121 is in communication with the liquid guide channel.

[0036] A wall surface of the air guide hole 311 which is opposite to the second sub-liquid guide groove 3122 forms an atomization surface 3122a, and the heating element 32 is located on the atomization surface 3122a.

[0037] Understandably, the air guide hole 311 is located at the center of the liquid conducting member 31, close to the outlet of the atomizer. The aerosol generated by the atomizing component 30 can directly enter the air guide tube 12 through the air guide hole 311. The flow path of the aerosol is short, so that it is not easy to affect the taste due to cooling, and its taste is closer to the original taste of the atomizing liquid, and it can effectively prevent the aerosol from condensing due to cooling during the flow process. It can thus prevent the generated condensate from following the aerosol flow and being sucked by consumers, and can avoid damage to the atomizer or the power supply device caused by the condensate, effectively improving the service life of the atomizer.

[0038] In addition, the heating element 32 is mainly installed on the wall surface of the air guide hole 311, which is opposite to the second sub-liquid guiding groove 3122. The heating element 32 mainly heats and atomizes the atomizing liquid from the interior of the second sub-liquid guiding groove 3122, so that the atomizing liquid in the liquid storage cavity 11 can first pass through the first sub-liquid guiding groove 3121 and then enter the second sub-liquid guiding groove 3122. When the atomizing

liquid in the second sub-liquid guiding groove 3122 is consumed, the atomizing liquid in the first sub-liquid guiding groove 3121 will be replenished to the second sub-liquid guiding groove 3122, making the liquid supply smooth and less prone to oil leakage and seepage.

[0039] Specifically, the liquid conducting member 31 is roughly a square structure with an upper surface and a lower surface arranged in opposition. The liquid guide groove 312 is formed by a concave groove on the upper surface extending toward the lower surface, which is a groove structure that do not run through the liquid conducting member 31.

[0040] In some embodiments, as shown in Figure 12, the depth of the first sub-liquid guide groove 3121 is smaller than the depth of the second sub-liquid guide groove 3122, and the longitudinal cross-sectional width of the first sub-liquid guide groove 3121 is equal to the longitudinal cross-sectional width of the second sub-liquid guide groove 3122.

[0041] In some embodiments, the depth of the first sub-liquid guide groove 3121 is less than the depth of the second sub-liquid guide groove 3122, and the longitudinal cross-sectional width of the first sub-liquid guide groove 3121 is greater than that of the second sub-liquid guide groove 3122.

[0042] Understandably, the relative dimensions of the depth and longitudinal cross-sectional width between the first sub-liquid guide groove 3121 and the second sub-liquid guide groove 3122 can be adjusted according to requirements. The heating element 32 is mainly set on the wall surface of the air guide hole 311, which is opposite to the second sub-liquid guide groove 3122, and mainly heats and atomizes the atomizing liquid from the interior of the second sub-liquid guide groove 3122, so that the atomizing liquid in the liquid storage cavity 11 can first pass through the first sub-liquid guide groove 3121 and then enter the second sub-liquid guide groove 3122. When the atomizing liquid in the second sub-liquid guide groove 3122 is consumed, the atomizing liquid in the first sub-liquid guide groove 3121 will be replenished to the second sub-liquid guide groove 3122. Within 3122, it ensures smooth liquid supply and reduces the risk of oil leakage and oil seepage.

[0043] In some embodiments, as shown in Figure 10, the liquid guide groove 312 is arranged on the outer circumference of the air guide hole 311. The liquid guide groove 312 can be roughly C-shaped or U-shaped. The liquid guide groove 312 can include two first sub-liquid guide grooves 3121 and a second sub-liquid guide groove 3122. The two ends of the second sub-liquid guide groove 3122 are respectively connected and in communication with the two first sub-liquid guide grooves 3121. The atomizing liquid can first pass through the two first sub-liquid guide grooves 3121 and then be conducted into the second sub-liquid guide groove 3122.

[0044] In some embodiments, as shown in Figure 13, the number of liquid conducting grooves 312 is at least two, and at least two liquid conducting grooves 312 are

spaced apart on the outer periphery of the air guide hole 311. Among them, the second sub-liquid guide grooves 3122 of the at least two liquid conducting grooves 312 are in communication with each other, or the second sub-liquid guide grooves 3122 of the at least two liquid conducting grooves 312 are not in communication with each other. Preferably, the second sub-liquid guide grooves 3122 of the at least two liquid conducting grooves 312 are not in communication, it can independently control the atomization amount.

[0045] In some embodiments, the wall surface of the air guide hole 311 which is opposite to the second sub-liquid guide groove 3122 may be flat or curved, that is, the atomization surface 3122a may be a flat structure (as shown in Figure 12) or a curved structure (as shown in Figure 13).

[0046] In some embodiments, the bottom of the liquid conducting member 31 is also provided with a liquid storage groove 313. The liquid storage groove 313 should avoid the above-mentioned liquid conducting groove 312 and avoid direct communication with the liquid conducting groove 312. The liquid storage groove 313 can be set with an opening facing downwards, and its width can be 0.1-0.8mm. For example, it can be selected as 0.1mm, 0.2mm, 0.3mm, 0.4mm, 0.5mm, 0.6mm, 0.7mm, or 0.8mm. The depth of the liquid storage groove 313 can be 0.5mm-2mm, etc., such as 0.5mm, 1mm, 1.5mm, 2mm.

[0047] It can be understood that in some special environments, such as when the external atmospheric pressure is low, due to the pressure inside the shell 10 (or the atomizer) being higher than the external atmospheric pressure, that is, there is a pressure difference between the two, the gas inside the shell 10 may expand, causing some of the atomizing liquid in the liquid conducting member 31 to be squeezed out of the liquid conducting member 31. The inner cavity of the liquid storage groove 313 can form a containment space to absorb this part of the atomizing liquid, and due to the narrow groove width of the liquid storage groove 313, the atomizing liquid can keep in the liquid storage groove 313 through its own capillary tension, and won't drip out of the liquid conducting member 31, which can achieve a good effect of preventing oil leak and liquid leak.

[0048] Preferably, the cross-section of the liquid storage groove 313 is arc-shaped. The cross-sectional shape of the liquid storage groove 313 can be C-shaped, U-shaped, straight or L-shaped, etc. Its structure and size can be selected and set according to actual needs, and there is no specific limitation here.

[0049] In some embodiments, the heating element 32 may include a heating portion 321 and at least two electrode portions 322 connected to the heating portion 321. The heating portion 321 is attached on or embedded in the atomization surface 3122a, and the ends of the at least two electrode portions 322 are attached on or embedded in the liquid conducting member 31. Preferably, the heating element 32 is a planar structure, which is

relatively flat and not easily deformed, and the combination processing with the liquid conducting member 31 is simpler. In addition, when the end of the electrode portion 322 is embedded on the bottom of the liquid conducting member 31, it can avoid unstable circuit contact caused by pulling or other factors, and improve the stability of the atomizer operation.

[0050] In some embodiments, the above-mentioned liquid conducting member 31 can be made of porous ceramics. It can be understood that the material used to make the liquid conducting member 31 can also be porous materials with microporous capillary effects, such as foam metal, porous glass, or hard glass fiber tubes.

[0051] After the heating element 32 is powered on, it heats the atomizing liquid stored in the second sub-liquid guide groove 3122, thereby generating aerosols that can be directly aspirated by the user. The heating portion 321 can be a sheet-like heating mesh, which is attached and fixed to the atomization surface 3122a. The heating portion 321 can be a disc-shaped heating wire that is bent or a grid shaped heating sheet. The heating portion 321 can be sintered into an integrated structure with the liquid conducting member 31 to adhere to the atomization surface 3122a. In some embodiments, the above-mentioned heating portion 321 may also be a heating circuit, heating trajectory, heating coating or heating film formed on the atomization surface 3122a. Its structural and shape can be diverse and can be selected according to needs. The above-mentioned heating mesh, heating wire, heating sheet, heating circuit, heating trajectory, heating coating or heating film are correspondingly set with the second sub-liquid guide groove 3122, so that the distance between the second sub-liquid guide groove 3122 and the heating portion 321 is the closest, which is used for atomizing liquids such as smoke and oil to quickly reach the heating portion 321 for atomization. The electrode portion 322 mentioned above can be a sheet-like structure or a columnar or rod-shaped structure.

[0052] Preferably, the material of the heating element 32 can be a metal material with appropriate impedance, a metal alloy, graphite, carbon, conductive ceramic, or a composite material of other ceramic materials and metal materials. Suitable impedance metal or alloy materials include at least one of nickel, cobalt, zirconium, titanium, nickel alloys, cobalt alloys, zirconium alloys, titanium alloys, nickel chromium alloys, nickel iron alloys, iron chromium alloys, iron chromium aluminum alloys, titanium alloys, iron manganese aluminum based alloys, and stainless steel.

[0053] Referring to Figures 3 and 4, in some embodiments, the shell 10 is provided with a liquid storage cavity 11 for storing atomizing liquid, and an air outlet is provided at the upper end of the shell 10. The circumference of the air outlet extends downward with an air guide tube 12.

[0054] Furthermore, the shell 10 is made of hard insulating materials, such as phenolic plastic, polyurethane plastic, epoxy plastic, unsaturated polyester plas-

tic, furan plastic, organosilicon resin, acrylic resin, and their modified resins, which are prepared for the body. The shell 10 is roughly a longitudinal structure extending along a central axis direction, that is, its length along the central axis direction is much greater than its width and thickness in two perpendicular directions in the cross-section. The upper end of the shell 10 is provided with an air outlet, and an air guide tube 12 extends downward from the periphery of the air outlet. The lower end of the shell 10 is open, and the interior of the shell 10 forms a liquid storage cavity 11 for storing atomizing liquid. The air guide tube 12 is made of metal components such as stainless steel, and is a hollow circular tube structure. Of course, the air guide tube 12 can also be made of stable polymer materials, and its material, shape, and size can be selected and set according to the needs, without specific limitations here.

[0055] Referring to Figures 3 to 9, in some embodiments, the fixing component 20 includes a sealing cover 21 and a bracket 22 that cooperate with each other. The sealing cover 21 and the bracket 22 can both be made of insulating materials, such as silicone or rubber materials.

[0056] Specifically, referring to Figures 5 and 6, the sealing cover 21 is cylindrical and is sleeved on the upper part of the bracket 22. The sealing cover 21 may include a top wall 211 and a surrounding wall 212 extending from the top wall 211. The top wall 211 is provided with an air guide part 2111 and at least one liquid inlet hole 2112; The air guide part 2111 extends longitudinally to connect and in communication with the air guide tube 12; The liquid inlet hole 2112 is in communication with the liquid storage cavity 11. The number and location of the liquid inlet holes 2112 correspond to the first sub-liquid guide groove 3121.

[0057] The bracket 22 is cylindrical and includes a top portion 221 and a side portion 222 extending from the top portion 221. The top portion 221 is provided with at least one liquid guide hole 2211, and the inner cavity of the side portion 222 forms a receiving chamber A (as shown in Figures 7 and 8). The atomizing component 30 is arranged inside the receiving chamber A (as shown in Figure 9), and the atomizing component 30 can be installed in the receiving chamber A by interference fit.

[0058] The liquid guide hole 2211 is arranged opposite to and in communication with the liquid inlet hole 2112 and the first sub-liquid guiding groove 3121, respectively. The liquid guide hole 2211 and the liquid inlet hole 2112 jointly form a liquid guide channel. The number and location of the liquid guide holes 2211 correspond to the first sub-liquid guiding groove 3121. Preferably, the aperture of the liquid inlet hole 2112 and the guide hole 2211 mentioned above can be adjusted appropriately according to actual needs to further adjust the inlet flow rate and inlet flow rate of the atomizing liquid.

[0059] Of course, the above-mentioned receiving chamber A can also be formed by a recess on the lower side of the top portion 221, and the shape and spatial dimensions of the receiving chamber A are similar to those of the liquid conducting chamber 31.

[0060] In some embodiments, the top wall 211 is further provided with a protrusion 2113 on the side facing the bracket 22; the top portion 221 is also provided with at least one air exchange hole 2212, and the side portion 222 is provided with an airflow channel 2221 (as shown in Figure 5). The air exchange hole 2212 is in communication with the airflow channel 2221. The airflow channel 2221 can pass through the side portion 222 and extends to in communication with the air exchange hole 2212. The airflow channel 2221 can be one or more channels. Of course, the airflow channel 2221 can also be set on the top portion 221, which extends from the side wall of the top portion 221 to the air exchange hole 2212.

[0061] The protrusion 2113 and the air exchange hole 2212 are fastened together by insertion, and a gap 2212a is formed between the outer periphery of the protrusion 2113 and the inner periphery of the air exchange hole 2212. The width of the gap 2212a can be roughly 0.1-0.8mm, such as 0.1mm, 0.2mm, 0.3mm, 0.4mm. The smaller cross-sectional area of the gap 2212a can prevent oil leak and liquid leak (the smaller cross section can allow the liquid to gather in the gap 2212a; The capillary tension of the liquid in the gap 2212a resists the pressure of the liquid storage cavity 11 to form a valve composed of the liquid; When the air pressure in the liquid storage cavity 11 is lower than a certain threshold, the liquid in the air exchange hole 2212 will be squeezed into the liquid storage cavity 11 by the external space, and after the external air is added to the liquid storage cavity 11 till the air pressure in the liquid storage cavity 11 is balanced, the liquid will flow into the air exchange hole 2212 and form a seal through the liquid's own tension. Since it is more difficult to process the small holes formed on the bracket 22, the protrusion 2113 and the air exchange hole 2212 cooperate with each other can be designed in the sealing cover 21 and the bracket 22. The cross section size of the protrusion 2113 is slightly smaller than that of the air exchange hole 2212, and a smaller gap 2212a is formed by combining the two. In addition, a gap is also formed between the top wall 211 and the top portion 221, so that the gap 2212a can be in communication with the liquid inlet hole 2112.

[0062] The gap 2212a, the liquid inlet hole 2112, and the airflow channel 2221 jointly form an air exchange balance pathway E (as shown in Figures 3 and 8).

[0063] It can be understood that due to an extra space produced by the consumption of atomizing liquid in the liquid storage cavity 11, the air pressure in the liquid storage cavity 11 will be lower than the external air pressure, and the external air tends to enter the liquid storage cavity 11. If air enters through the microporous channel of the liquid conducting member 31, it will occupy the microporous channel and affect the supply of liquid. Therefore, the air exchange balance pathway E is needed for the external air to flow into the liquid storage cavity 11, so that the liquid guide efficiency of the atomizing component 30 will not be affected. The air exchange balance pathway E can be used to balance the air pres-

sure in the liquid storage cavity 11 to ensure smooth liquid supply to the atomizing component 30.

[0064] In some embodiments, a groove 2213 is provided on a side of the top portion 221 which is facing the sealing cover 21 for accommodating the air guide part 2111, and the two can be fixed by interference fit. Preferably, the groove 2213 can be in the form of a load-bearing groove structure (as shown in Figure 7). The inner cavity of the groove 2213 and the air guide part 2111 cooperate to form an air guide channel.

[0065] In some embodiments, referring to Figures 6 and 7, the side portion 222 is also provided with a liquid storage channel B, and the liquid storage channel B is in communication with the receiving chamber A and the liquid conducting member 31 respectively. The cross-section of the liquid storage channel B is roughly T-shaped. Setting up the liquid storage channel B can prevent deformation of the bracket 22 caused by the mold overfilled with plastic during injection molding. Another function is to store some liquid through the formed groove. At some unconventional air exchange situation such as high altitude and low pressure, the air pressure in the liquid storage cavity 11 rises, and the gas expands to squeeze out some of the atomizing liquid. The excess atomizing liquid will reach the outside of the liquid storage cavity 11 through the liquid conducting member 31 or the air exchange hole 2212. At this time, a small part of the atomizing liquid can be stored in the liquid storage channel B, without the atomizing liquid dripping outside the atomizer and causing leakage. The liquid storage channel B extends to the upper receiving chamber A. When there is less atomizing liquid in the liquid conducting member 31, the atomizing liquid in the liquid storage channel B can be absorbed by the liquid conducting member 31 through capillary phenomenon, which can avoid leakage and waste of atomizing liquid.

[0066] In some embodiments, referring to Figures 3, 4, 5, and 6, the fixing component 20 may further include a sealing gasket 26, which is provided in the receiving chamber A. The sealing gasket 26 is provided with an air conducting hole 261 and a liquid conducting hole 262, and the air conducting hole 261 is in communication with to the air guide hole 311. The liquid conducting holes 262 are respectively arranged opposite and in communication with the liquid guide hole 2211 and the second sub-liquid conducting groove 3122.

[0067] As shown in Figures 3, 4, 5, and 6, in some embodiments, the fixing component 20 further includes a base 23, and the bracket 22 is detachably connected to the base 23. Preferably, a sealing ring 24 is also provided between the outer periphery of the base 23 and the inner periphery of the shell 10.

[0068] The base 23 is also provided with a conductive element 25, and the conductive element 25 is connected to the heating element 32.

[0069] Specifically, the base 23 may include a bottom wall 231 and a support wall 232 extending from the bottom wall 231. The support wall 232 may be a ring-

shaped structure, such that the base 23 is approximately cylindrical or semi enclosed. The bottom wall 231 may be provided with an air inlet portion 2311, which may be approximately cylindrical or cylindrical. The bottom wall 231 is also provided with an installation groove 2312, and a conductive member 25 is inserted into the installation groove 2312 to connect with the electrode portion 322 of the heating element 32. The conductive member 25 is preferably a conductive pillar, which can also provide certain support for the liquid conducting member 31.

[0070] The support wall 232 is provided with a first buckle groove 2321, and the aforementioned side portion 222 is provided with a first buckle portion 2222 that is interlocked with the first buckle groove 2321, and the two can be connected by buckle. In addition, the outer side of the support wall 232 is also provided with a second buckle part 2322, and the inner wall of the shell 10 near its open part may also have a second buckle groove 10a, which is connected to the second buckle part 2322 by interlocking with the second buckle groove 10a.

[0071] In addition, an annular sealing groove 232a can be provided on the outer side of the support wall 232, and the aforementioned sealing ring 24 is installed inside the sealing groove 232a to improve the sealing performance of the atomizer. The sealing ring 24 can be made of rubber or silicone.

[0072] As shown in Figures 3 and 4, when the atomizer is in operation, the atomizing liquid in the liquid storage cavity 11 enters the first sub-liquid guide groove 3121 through the liquid guide channel, and is then introduced into the second sub-liquid guide groove 3122 through the first sub-liquid guide groove 3121. The electrode portion 322 of the heating element 32 is powered, and the atomizing liquid that penetrates into the atomization surface 3122a is heated and atomized to generate aerosols through the heating portion 321. Among them, as shown in Figure 3, route C is the gas guiding route, and route D is the liquid guiding route.

[0073] The external air enters the air guide hole 311 of the atomizing component 30 through the air inlet portion 2311 of the base 23, and is exported to consumers for consumption through the air guide channel and air guide tube 12.

[0074] Understandably, the air guide hole 311 is located at the center of the liquid conducting member 31, close to the outlet of the atomizer. The aerosol generated by the atomizing component 30 can directly enter the air guide tube 12 through the air guide hole 311. The flow path of the aerosol is short, and it is not easy to affect the taste due to cooling. Its taste is closer to the original taste of the atomizing liquid, and it can effectively prevent the aerosol from condensing due to cooling during the flow process. It can also prevent the generated condensate from following the aerosol flow and being sucked by consumers, and can avoid damage to the atomizer or power supply device caused by the condensate, effectively improving the service life of the atomizer.

[0075] And the liquid conducting member 31 injects

liquid from the top, which is less prone to oil and liquid leakage compared to injecting liquid from the side. In addition, the installation of the atomizing component 30 is simpler and requires fewer sealing components.

[0076] It can be understood that the above embodiments only express the preferred embodiments of the present invention, and their descriptions are more specific and detailed, but should not be understood as limiting the scope of the present invention patent; It should be pointed out that for ordinary technical personnel in this field, without departing from the inventive concept, the above technical features can be freely combined, and several modifications and improvements can be made, all of which are within the scope of protection of the present invention; Therefore, any equivalent transformations and modifications made to the scope of the claims of the present invention shall fall within the scope of the claims of the present invention.

Claims

1. An atomizer, **characterized by** comprising a shell (10) and an atomizing body arranged in the shell (10), wherein the atomizing body comprises a fixing component (20) and an atomizing component (30) arranged in the fixing component (20);

the shell (10) has a liquid storage cavity (11) and an air guide tube (12), the air guide tube (12) extends longitudinally, and the atomizing body is provided with an air guide channel and a liquid guide channel, the air guide channel is connected and in communication with the air guide tube (12), and the liquid guide channel is in communication with the liquid storage cavity (11);

the atomizing component (30) comprises a liquid conducting member (31) and a heating element (32), the liquid conducting member (31) is provided with an air guide hole (311) running through itself longitudinally, and the liquid conducting member (31) is also provided with at least one liquid guide groove (312), at least one of the liquid guide grooves (312) includes at least one first sub-liquid guide groove (3121) and at least one second sub-liquid guide groove (3122), the first sub-liquid guide groove (3121) is in communication with the second sub-liquid guide groove (3122), and the first sub-liquid guide groove (3121) is in communication with the liquid guide channel;

a wall surface of the air guide hole (311) which is opposite to the second sub-liquid guide groove (3122) forms an atomization surface (3122a), and the heating element (32) is located on the atomization surface (3122a).

2. The atomizer according to claim 1, **characterized in that** the depth of the first sub-liquid guide groove (3121) is smaller than the depth of the second sub-liquid guide groove (3122), and the longitudinal cross-sectional width of the first sub-liquid guide groove (3121) is equal to or greater than the longitudinal cross-sectional width of the second sub-liquid guide groove (3122).
3. The atomizer according to claim 1, **characterized in that** the number of liquid guide grooves (312) is at least two, and at least two of the liquid guide grooves (312) are spaced apart on the outer periphery of the air guide hole (311).
4. The atomizer according to claim 3, **characterized in that** the second sub-liquid guide grooves (3122) of the at least two liquid conducting grooves (312) are in communication with each other, or the second sub-liquid guide grooves (3122) of the at least two liquid conducting grooves (312) are not in communication with each other.
5. The atomizer according to claim 1, **characterized in that** the wall surface of the air guide hole (311) which is opposite to the second sub-liquid guide groove (3122) is flat or curved.
6. The atomizer according to claim 1, **characterized in that** the heating element (32) comprises a heating portion (321) and at least two electrode portions (322) connected to the heating portion (321), the heating portion (321) is attached on or embedded in the atomization surface (3122a), and the ends of the at least two electrode portions (322) are attached on or embedded in the liquid conducting member (31).
7. The atomizer according to claim 1, **characterized in that** the bottom of the liquid conducting member (31) is further provided with a liquid storage groove (313).
8. The atomizer according to claim 7, **characterized in that** the cross-section of the liquid storage groove (313) is arc-shaped.
9. The atomizer according to claim 1, **characterized in that** the fixing component (20) comprises a sealing cover (21) and a bracket (22) that cooperate with each other;

the sealing cover (21) is cylindrical and comprising a top wall (211) and a surrounding wall (212) extending from the top wall (211), the top wall (211) is provided with an air guide part (2111) and at least one liquid inlet hole (2112); the air guide part (2111) extends longitudinally to connect and in communication with the air guide

tube (12); the liquid inlet hole (2112) is in communication with the liquid storage cavity (11); the bracket (22) is cylindrical and comprising a top portion (221) and a side portion (222) extending from the top portion (221), the top portion (221) is provided with at least one liquid guide hole (2211), and the inner cavity of the side portion (222) forms a receiving chamber (A), the atomizing component (30) is arranged in the receiving chamber (A), and the liquid guide hole (2211) is arranged opposite to and in communication with the liquid inlet hole (2112) and the first sub-liquid guiding groove (3121), respectively, the liquid guide hole (2211) and the liquid inlet hole (2112) jointly form the liquid guide channel.

10. The atomizer according to claim 9, **characterized in that** the top wall (211) is further provided with a protrusion (2113) on the side facing the bracket (22); the top portion (221) is also provided with at least one air exchange hole (2212), and the side portion (222) is provided with an airflow channel (2221), the air exchange hole (2212) is in communication with the airflow channel (2221); the protrusion (2113) and the air exchange hole (2212) are fastened together by insertion, and a gap (2212a) is formed between the outer periphery of the protrusion (2113) and the inner periphery of the air exchange hole (2212), the gap (2212a), the liquid inlet hole (2112), and the airflow channel (2221) jointly form an air exchange balance pathway (E).
11. The atomizer according to claim 10, **characterized in that** a groove (2213) is provided on a side of the top portion (221) which is facing the sealing cover (21) for accommodating the air guide part (2111).
12. The atomizer according to claim 10, **characterized in that** the side portion (222) is further provided with a liquid storage channel (B), and the liquid storage channel (B) is in communication with the receiving chamber (A) and the liquid conducting member (31) respectively.
13. The atomizer according to any one of claims 9 to 12, **characterized in that** the fixing component (20) further comprises a base (23), and the bracket (22) is detachably connected to the base (23).
14. The atomizer according to claim 13, **characterized in that** the atomizer further comprises at least one of the following features:

a sealing ring (24) is further provided between the outer periphery of the base (23) and the inner periphery of the shell (10);
the base (23) is also provided with a conductive

element (25), and the conductive element (25) is connected to the heating element (32).

15. An electronic aerosol generation device, **characterized by** comprising an atomizer according to any one of claims 1 to 14, and a power supply device connected to the atomizer.

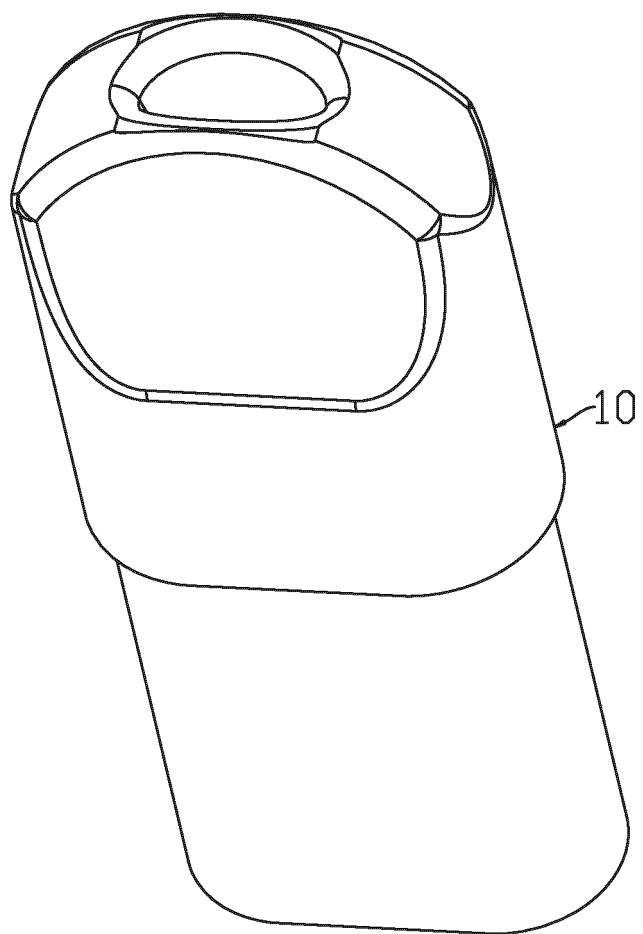


Fig.1

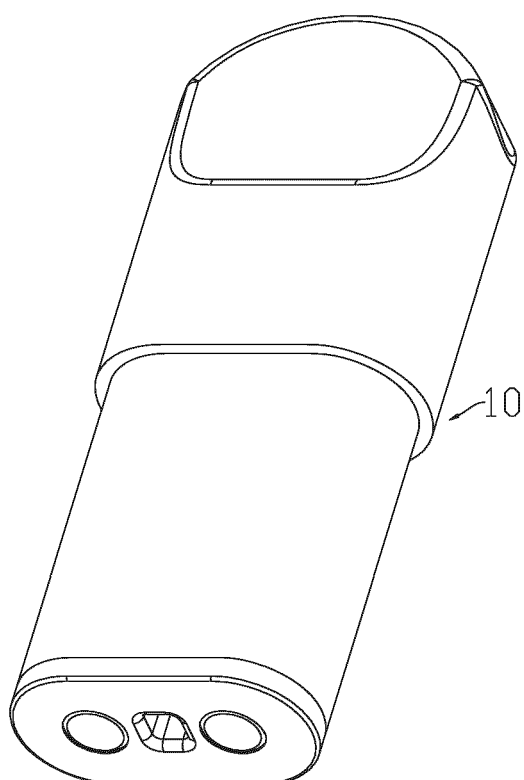


Fig.2

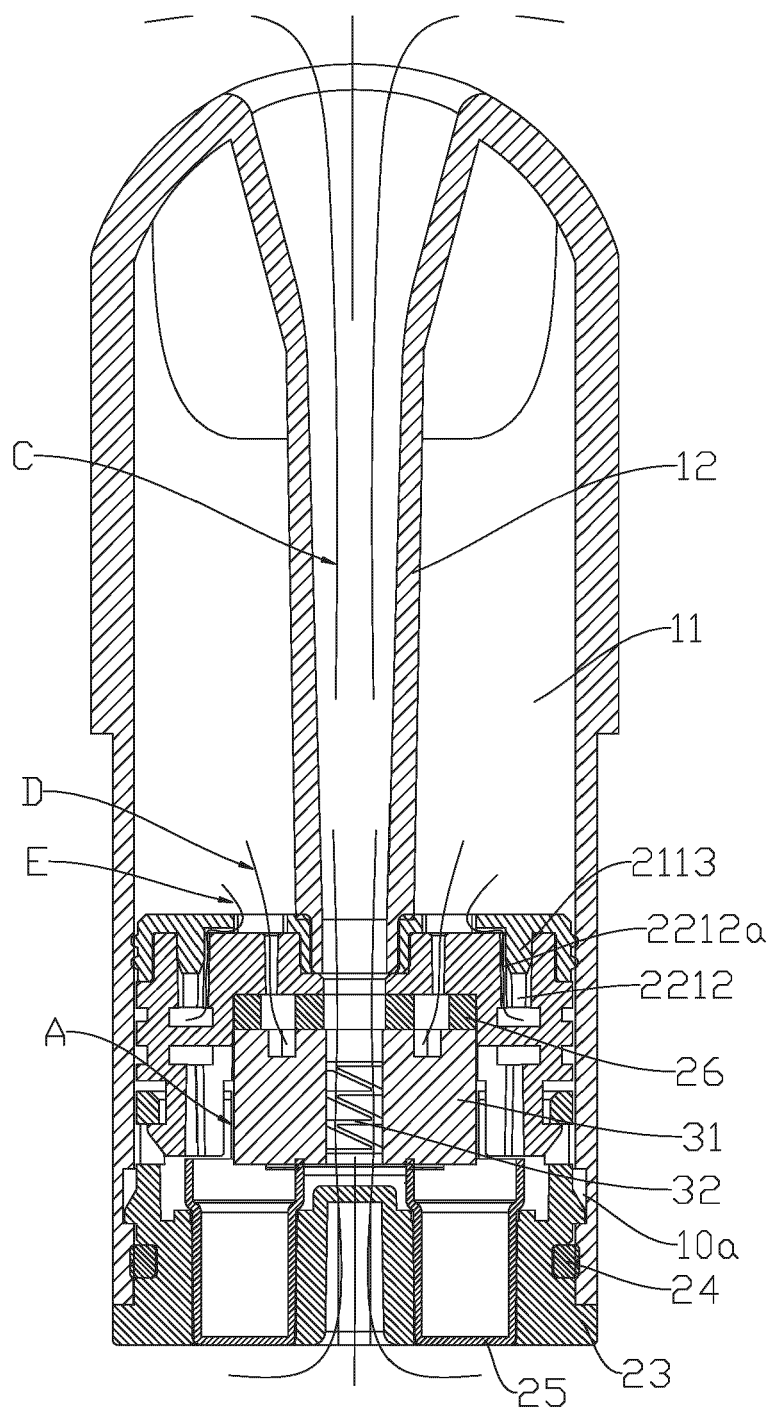


Fig.3

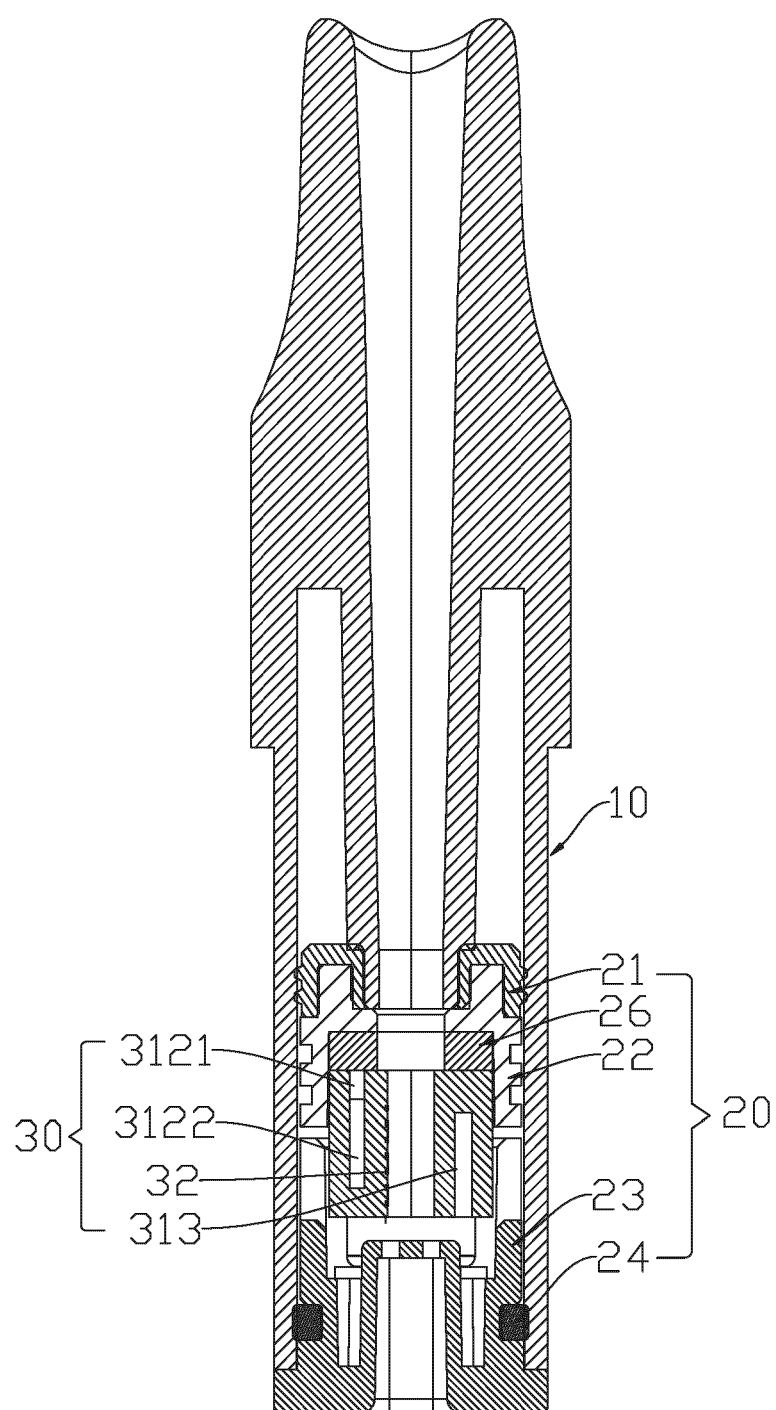


Fig.4

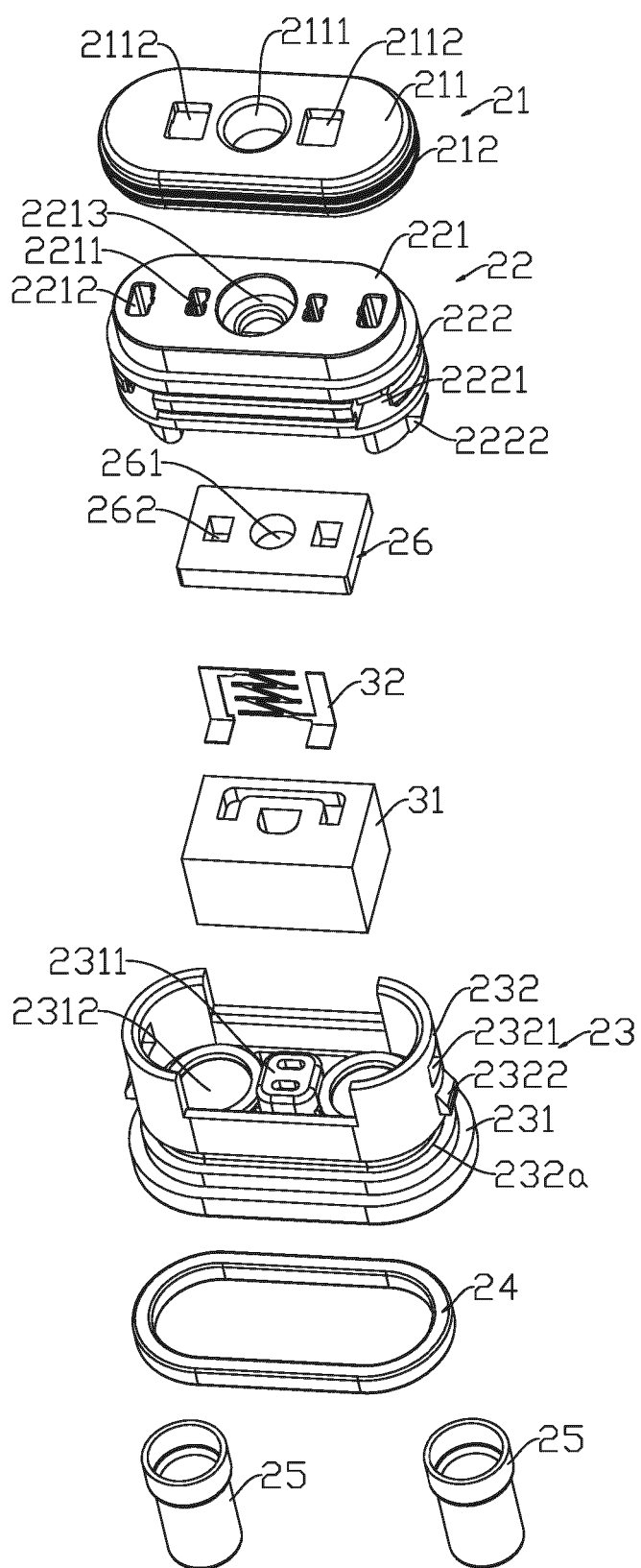


Fig.5

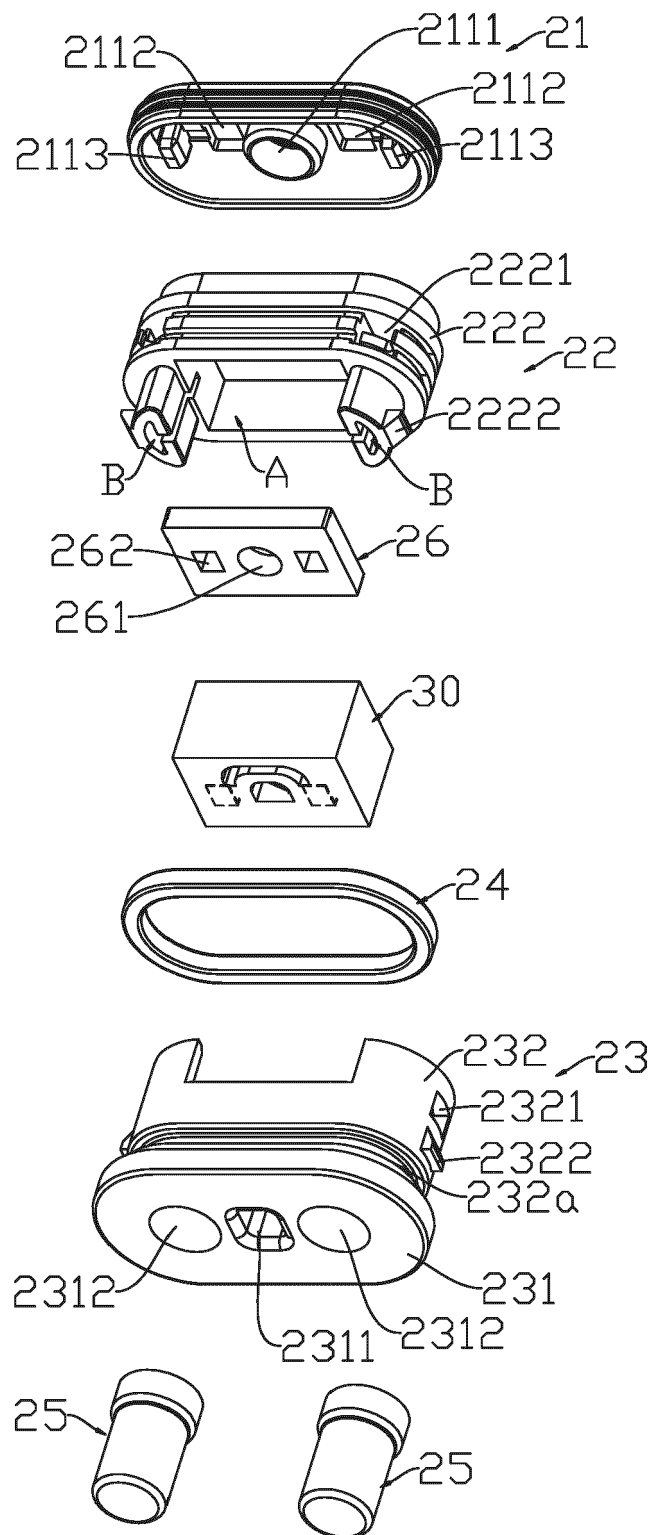


Fig.6

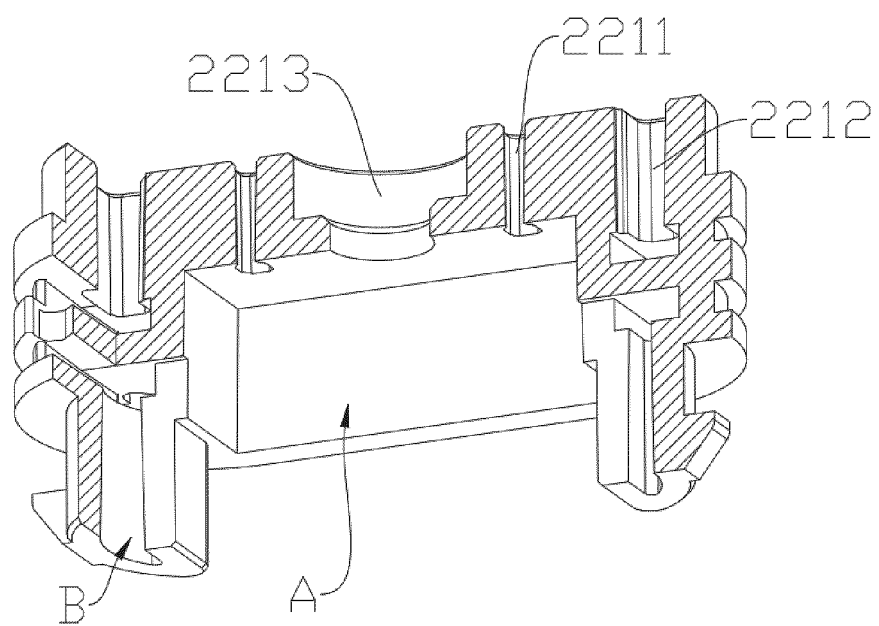


Fig.7

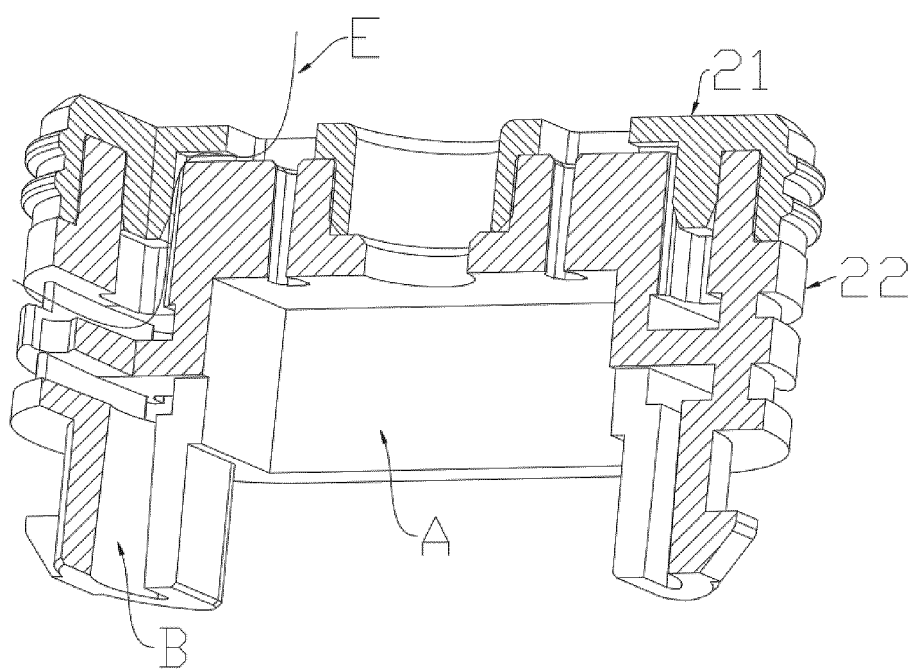


Fig.8

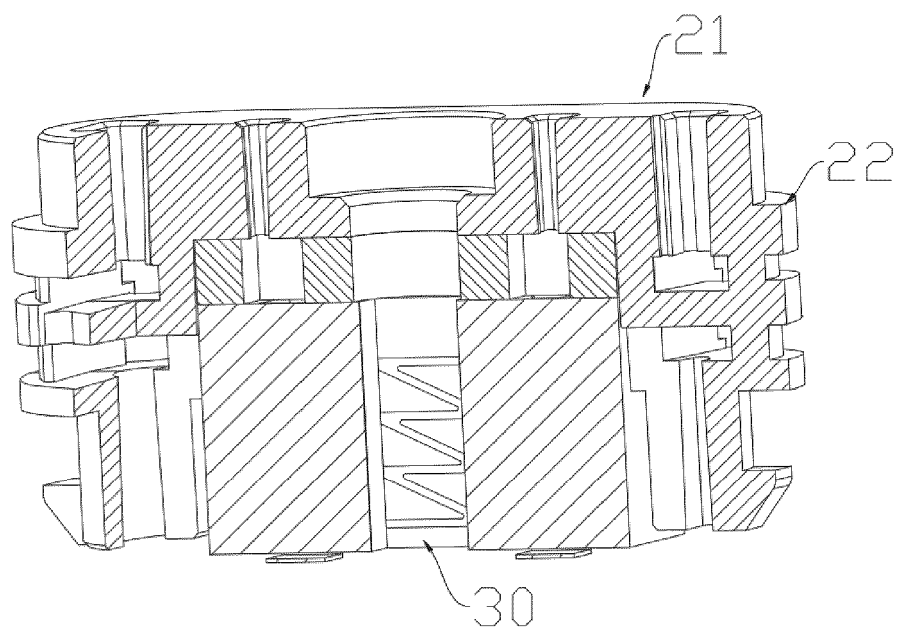


Fig.9

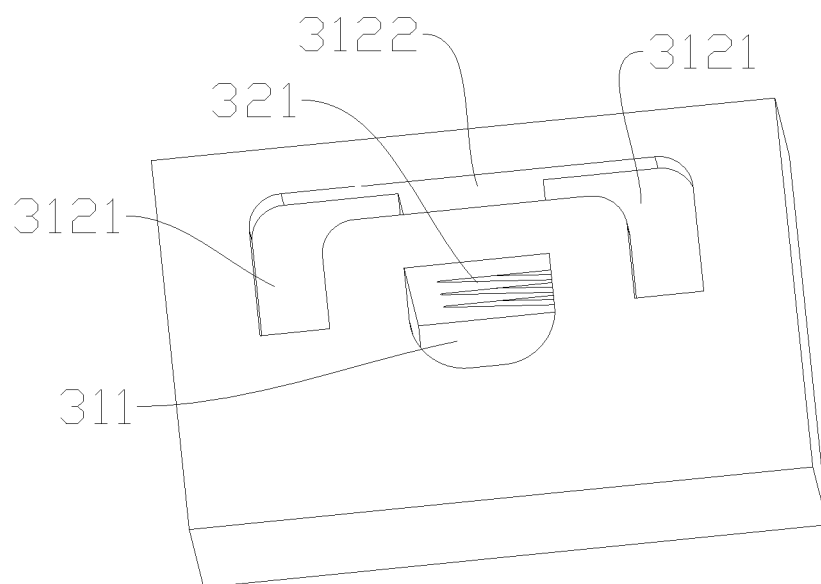


Fig.10

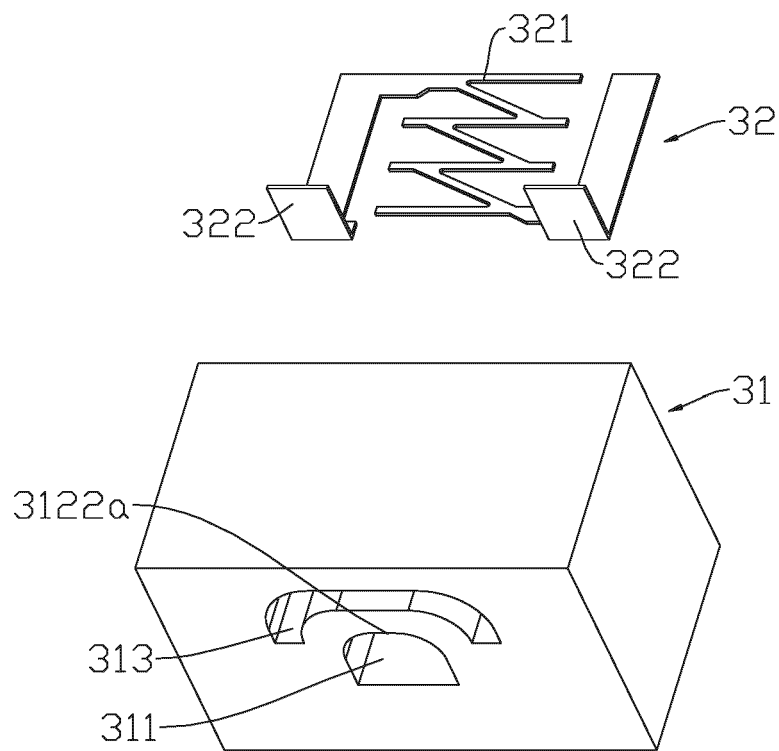


Fig.11

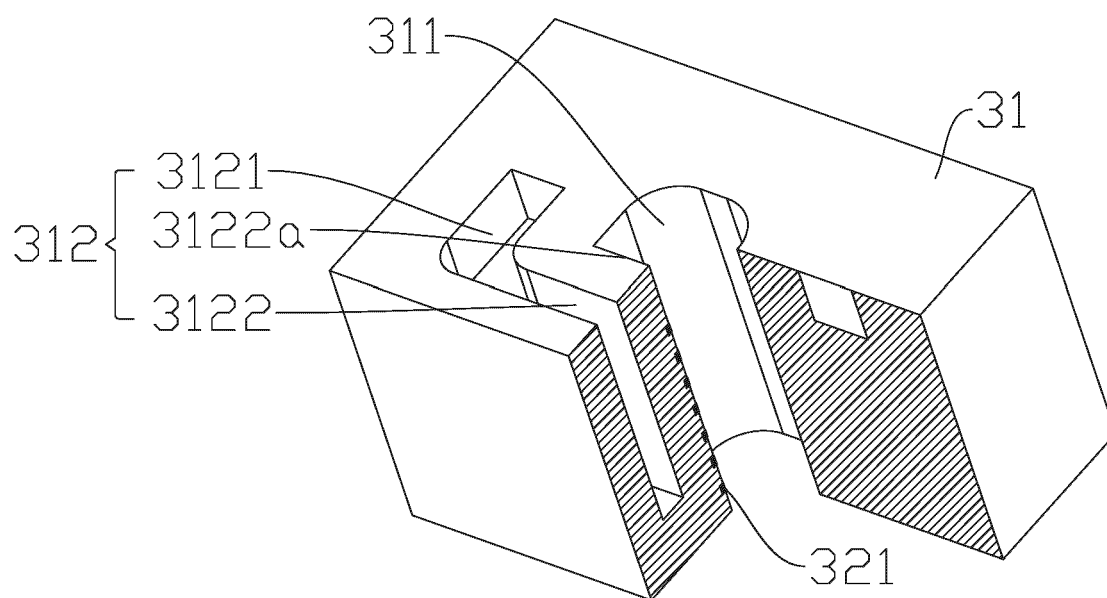


Fig.12

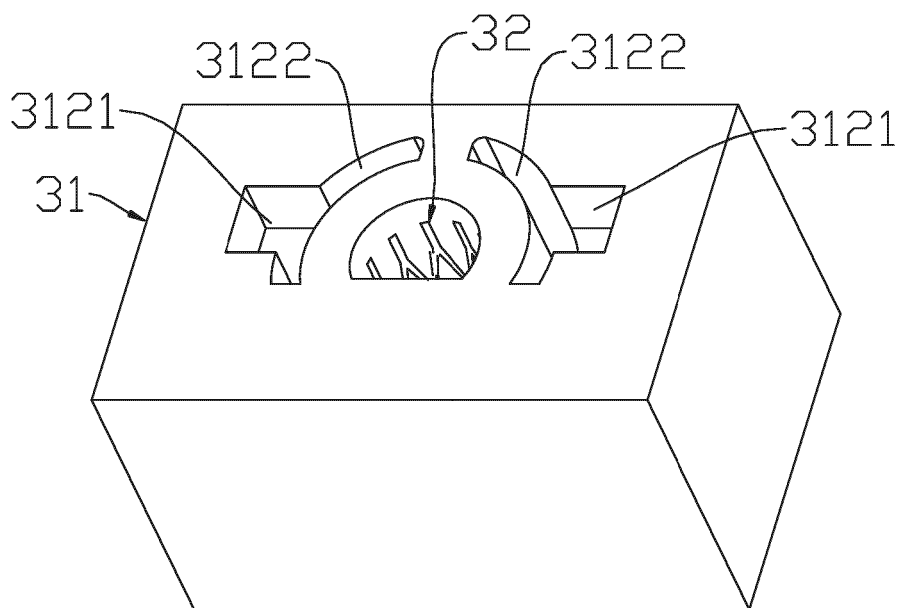


Fig.13

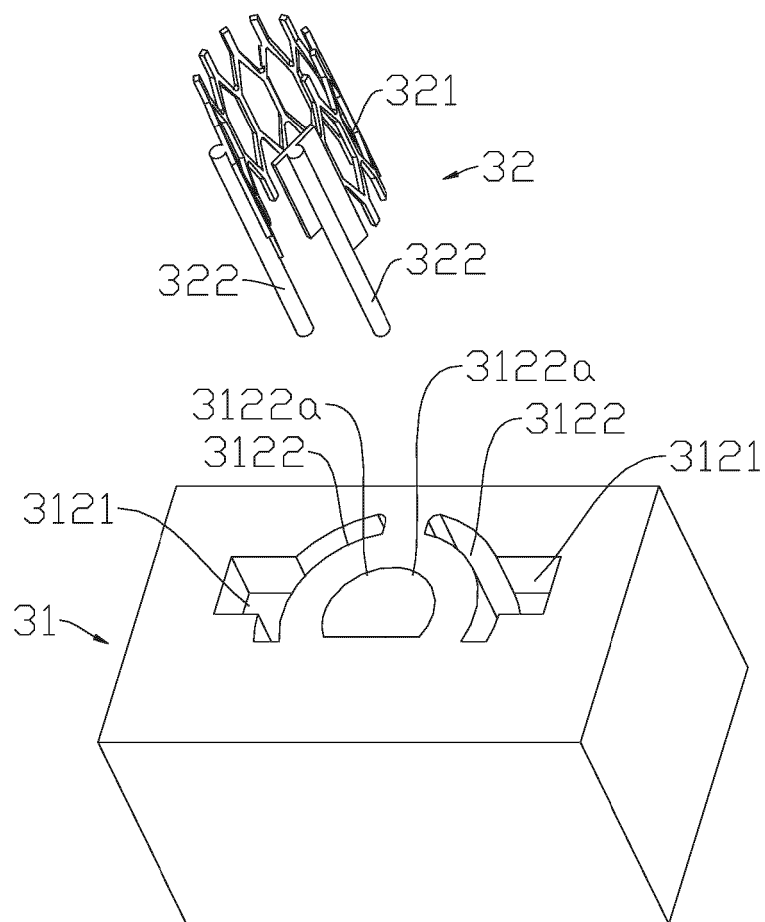


Fig.14

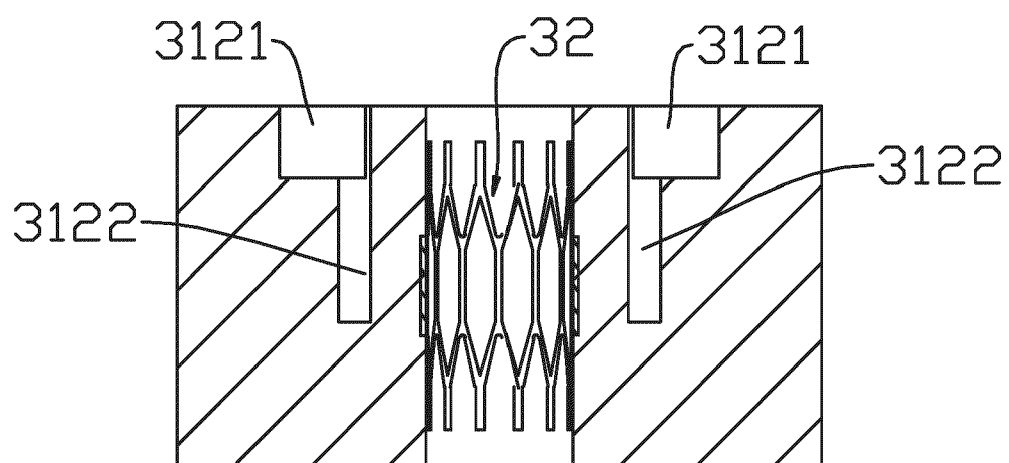


Fig.15



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Application Number

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