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(54) **ELECTRONIC ATOMIZATION SYSTEM**

(57) The present disclosure relates to an electronic atomization system, including a main unit and an electronic atomization device. The main unit includes a liquid supply module, and the liquid supply module includes a liquid storage tank and a first accommodating cavity in fluid communication with liquid storage tank. The electronic atomization device includes a liquid storage module, an atomization core module, and a power module. The atomization core module includes an atomization core, and the liquid storage module includes a first liquid guide component. After the liquid storage module is assembled with the atomization core module, the first liquid guide component is in fluid communication with the atomization core. The liquid storage module can be at least partially accommodated in the first accommodating cavity, to enable the liquid storage module to be in fluid communication with the liquid storage tank. The liquid storage module can be connected to the liquid supply module to inject liquid. In this way, after a user assembles the electronic atomization device, a liquid substrate in the first liquid guide component can be quickly guided to the atomization core, so as to avoid scorched taste for the first sip caused by smoking directly after the user gets the electronic atomization device, and avoid a problem of waiting for a long time for injecting the liquid for the first time.

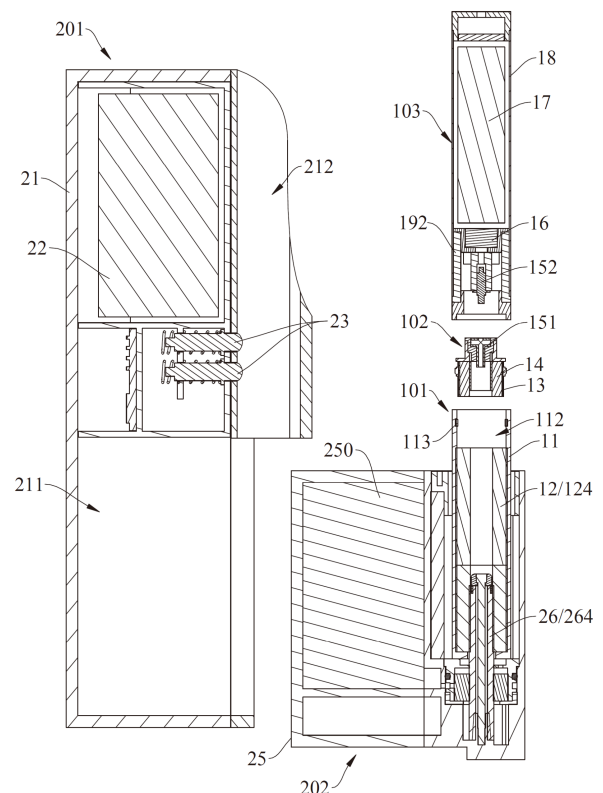


FIG. 1

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Description**TECHNICAL FIELD**

5 **[0001]** The present disclosure relates to the technical field of atomization, and in particular, to an electronic atomization system.

BACKGROUND

10 **[0002]** Electronic atomization devices are usually classified into open electronic atomization devices and closed (liquid pre-injected) electronic atomization devices.

15 **[0003]** The closed electronic atomization device is pre-injected with liquid before delivery, and then sold to a customer. The closed electronic atomization device has the following problems: (1) during storage or transportation, the electronic atomization device is prone to liquid leakage due to factors such as oscillation, a temperature difference, and a pressure difference, and the liquid leakage is prone to pollution of electronic components such as a battery cell; (2) a user cannot add a liquid substrate by himself or herself, and discards the electronic atomization device after the liquid substrate is used up, which leads to relatively high costs; (3) compared with the open electronic atomization device, options for tastes of the closed electronic atomization device are relatively limited; and (4) the liquid substrate is in contact with a component such as a heating element inside the electronic atomization device for a long time, which is prone to pollution of the liquid substrate.

20 **[0004]** During delivery, the open electronic atomization device is not injected with liquid, and the user manually injects liquid into the electronic atomization device after getting it, so that the foregoing problem can be solved. However, after getting the electronic atomization device, if the user operates improperly and smokes directly without injecting the liquid, which is prone to a problem of scorched taste for the first sip. In addition, currently, an electronic atomization device needs a relatively long time when liquid is injected for the first time, affecting user experience.

SUMMARY

30 **[0005]** A technical problem to be solved by the present disclosure is to provide an improved electronic atomization system for the foregoing disadvantages in a related technology.

[0006] The technical solution adopted in the present disclosure to solve the technical problem is that: an electronic atomization system is constructed, including a main unit and an electronic atomization device,

35 the main unit including a liquid supply module, the liquid supply module including a liquid storage tank and a first accommodating cavity in fluid communication with the liquid storage tank,
the electronic atomization device including a liquid storage module, an atomization core module, and a power module, the power module including a battery housing component and a battery cell disposed in the battery housing component, the atomization core module including an atomization cylinder and an atomization core disposed in the atomization cylinder, the liquid storage module including a liquid storage housing and a first liquid guide component disposed in the liquid storage housing,
40 the first liquid guide component being in fluid communication with the atomization core after the liquid storage module is assembled with the atomization core module, and
the liquid storage module being capable of being at least partially accommodated in the first accommodating cavity, to enable the liquid storage module to be in fluid communication with the liquid storage tank.

45 **[0007]** In some embodiments, the atomization cylinder is at least partially sleeved with the liquid storage housing, and is connected to the liquid storage housing by means of a non-detachable snap-fit.

50 **[0008]** In some embodiments, the atomization core module includes a casing pipe sleeved outside at least part of the atomization cylinder, and
the liquid storage housing is at least partially embedded into the casing pipe and is connected to the casing pipe by means of a non-detachable snap-fit.

[0009] In some embodiments, the atomization cylinder includes a cylindrical connection portion, the outer wall surface of the cylindrical connection portion is provided with an external thread, and the inner wall surface of the battery housing component is provided with an internal thread matching the external thread.

55 **[0010]** In some embodiments, the atomization cylinder is conductive, the atomization core module further includes a first electrode post disposed in the atomization cylinder in an insulated manner, and the first electrode post and the atomization cylinder are respectively electrically connected to the atomization core.

[0011] In some embodiments, the power module includes a second electrode post disposed in the battery housing

component, and the first electrode post is capable of abutting to the second electrode post to be conductive.

[0012] In some embodiments, the main unit includes a power supply module, and the power supply module includes a housing, a power supply disposed in the housing, and at least two charging electrodes electrically connected to the power supply, where

the housing is provided with a second accommodating cavity configured to accommodate at least part of the power module,

the power module includes at least two conductive electrodes, and the at least two conductive electrodes are capable of abutting to the at least two charging electrodes to be conductive.

[0013] In some embodiments, the housing is provided with an accommodating cavity configured to accommodate at least part of the liquid supply module.

[0014] In some embodiments, the battery housing component includes a first conductive housing, a second conductive housing, and an insulating housing at least partially disposed between the first conductive housing and the second conductive housing, and the at least two conductive electrodes include the first conductive housing and the second conductive housing.

[0015] In some embodiments, the liquid supply module includes a second liquid guide component in fluid communication with the liquid storage tank, the second liquid guide component at least partially extends into the first accommodating cavity, and

the second liquid guide component is in fluid communication with the first liquid guide component when the liquid storage module is at least partially accommodated in the first accommodating cavity.

[0016] Implementation of the present disclosure at least has the following beneficial effects: the electronic atomization device includes three modules: the liquid storage module, the atomization core module, and the power module. The liquid storage module can be connected to the liquid supply module of the main unit to inject liquid. In this way, after a user assembles the electronic atomization device, a liquid substrate in the first liquid guide component can be quickly guided to the atomization core, so as to avoid scorched taste for the first sip caused by smoking directly after the user gets the electronic atomization device, and avoid a problem of waiting for a long time for injecting the liquid for the first time.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The present disclosure is further described below with reference to the accompanying drawings and embodiments. In the accompanying drawings:

FIG. 1 is a schematic diagram of a longitudinal sectional structure when both a main unit and an electronic atomization device are not assembled in a first embodiment of the present disclosure;

FIG. 2 is a schematic diagram of a longitudinal sectional structure of an atomization core module in FIG. 1;

FIG. 3 is a schematic diagram of a longitudinal sectional structure of a liquid supply module in FIG. 1;

FIG. 4 is a schematic diagram of a longitudinal sectional structure after the main unit and the electronic atomization device shown in FIG. 1 are assembled;

FIG. 5 is a schematic diagram of a longitudinal sectional structure after the electronic atomization device is connected to the main unit in FIG. 4;

FIG. 6 is a schematic diagram of a longitudinal sectional structure when both a main unit and an electronic atomization device are not assembled in a second embodiment of the present disclosure; and

FIG. 7 is a schematic diagram of a longitudinal sectional structure after the main unit and the electronic atomization device shown in FIG. 6 are assembled.

DETAILED DESCRIPTION

[0018] To provide a clearer understanding of technical features, objectives, and effects of the present disclosure, specific implementations of the present disclosure are described in detail with reference to accompanying drawings. In the following description, many specific details are described for thorough understanding of the present disclosure. However, the present disclosure may be implemented in many other modes different from those described herein. A person skilled in

the art may make similar improvements without departing from the connotation of the present disclosure. Therefore, the present disclosure is not limited to the specific embodiments disclosed below.

[0019] In the description of the present disclosure, it is to be understood that, orientation or position relationships indicated by terms such as "longitudinal", "transverse", "upper", "lower", "top", "bottom", "inner", and "outer" are orientation or position relationships shown based on the accompanying drawings or orientation or position relationship that a product of the present disclosure is usually placed in use, and are merely used for describing the present disclosure and simplifying the description, rather than indicating or implying that the mentioned device or element has to have a particular orientation or be constructed and operated in a particular orientation. Therefore, the terms cannot be construed as limiting the present disclosure.

[0020] In addition, terms "first" and "second" are used merely for the purpose of description, and cannot be construed as indicating or implying relative importance or implying a quantity of indicated technical features. Therefore, a feature limited by "first" or "second" may explicitly indicate or implicitly include at least one of the features. In the descriptions of the present disclosure, unless explicitly specified, "plurality of" means at least two, for example, two or three.

[0021] In the present disclosure, unless otherwise explicitly specified or defined, terms such as "mount", "interconnect", "connect", and "fix" are to be understood in a broad sense. For example, the "connect" may be fixedly connected, detachably connected, or integrated, or may be mechanically connected, or electrically connected, or may be directly connected, or may be indirectly connected through an intermediate medium, or may be an internal communication between two components or an interaction relationship between two components. For those of ordinary skill in the art, specific meanings of the terms described above in the present disclosure may be understood according to specific conditions.

[0022] In the present disclosure, unless otherwise explicitly specified or defined, the first feature being located "above" or "below" the second feature may be the first feature being in direct contact with the second feature, or the first feature being in indirect contact with the second feature through an intermediate medium. In addition, the first feature being "above" the second feature may be that the first feature is right above the second feature or at an inclined top of the second feature, or may merely indicate that a horizontal position of the first feature is higher than that of the second feature. The first feature being "below" the second feature may be that the first feature is right below the second feature or at an inclined bottom of the second feature, or may merely indicate that the horizontal position of the first feature is lower than that of the second feature.

[0023] FIG. 1 to FIG. 5 show an electronic atomization system 1 according to a first embodiment of the present disclosure. The electronic atomization system 1 includes a main unit 200 and an electronic atomization device 100 matching the main unit 200. The electronic atomization device 100 is configured to store a liquid substrate and atomize the liquid substrate after being powered on. The main unit 200 is configured to perform liquid injection and charging on the electronic atomization device 100. The electronic atomization system 1 may be applied to the field of e-cigarettes, or may be applied to fields such as medical treatment or aesthetic treatment.

[0024] The electronic atomization device 100 and the main unit 200 may be combined together in a detachable manner. The electronic atomization device 100 may be inserted into or connected to the main unit 200 in another manner. A use manner of the electronic atomization device 100 includes: (1) a user may independently use the electronic atomization device 100 to atomize a liquid substrate to generate an aerosol; and (2) the electronic atomization device 100 is attached to the main unit 200, and the electronic atomization device 100 is injected with liquid by using the main unit 200; (3) the electronic atomization device 100 is attached to the main unit 200, and the electronic atomization device 100 is charged by using the main unit 200; and (4) the electronic atomization device 100 is attached to the main unit 200, and the electronic atomization device 100 is injected with liquid and/or charged by using the main unit 200.

[0025] An atomization manner of the electronic atomization device 100 is not limited, for example, the electronic atomization device 100 may use one or more of atomization manners such as resistance heating, electromagnetic heating, infrared heating, chemical heating, ultrasonic atomization, and plasma heating.

[0026] Outlines of the electronic atomization device 100 and the main unit 200 are not limited. For example, the electronic atomization device 100 and the main unit 200 may have various shapes such as a racing-track cylindrical shape, an elliptic cylindrical shape, a cylindrical shape, a square cylindrical shape, and a polygonal cylindrical shape. In some embodiments, the electronic atomization device 100 may have a shape and a size similar to those of a cigarette, so that a user can obtain an experience similar to that of smoking the cigarette, and the electronic atomization device 100 is small in size and is easy to carry.

[0027] The main unit 200 may include a liquid supply module 202 and a power supply module 201. The liquid supply module 202 is configured to inject liquid to the electronic atomization device 100, and the power supply module 201 is configured to charge the electronic atomization device 100. The liquid supply module 202 and the power supply module 201 may be connected in a detachable or non-detachable manner.

[0028] Certainly, in another embodiment, the main unit 200 may alternatively only include the liquid supply module 202, or the main unit 200 may alternatively only include the power supply module 201.

[0029] The liquid supply module 202 includes a housing 25, and the housing 25 has a liquid storage tank 250 storing a

liquid substrate and a first accommodating cavity 251 communicating with the liquid storage tank 250. The first accommodating cavity 251 can be configured to accommodate at least part of the electronic atomization device 100.

[0030] In addition, the liquid supply module 202 further includes a liquid guide component 26 disposed in the housing 25 and in fluid communication with the liquid storage tank 250.

[0031] The liquid guide component 26 can transport the liquid substrate by using a capillary force. The liquid guide component 26 at least partially extends into the first accommodating cavity 251, so as to be in fluid communication with the electronic atomization device 100 in the first accommodating cavity 251 to inject liquid to the electronic atomization device 100.

[0032] In some embodiments, the liquid supply module 202 further includes a holder 27, and the holder 27 is disposed in the housing 25 and is configured to fix the liquid guide component 26 in the housing 25. The holder 27 may be connected to the housing 25 in a detachable or non-detachable manner.

[0033] In some embodiments, a buffer cavity 254 may further be formed in the housing 25. The buffer cavity 254 may be located below the liquid storage tank 250 and is configured to store a liquid substrate that leaks from the liquid storage tank 250 and the like, thereby reducing liquid leakage. The buffer cavity 254 may further be in fluid communication with the liquid guide component 26, and the liquid substrate in the buffer cavity 254 may reflux to the liquid guide component 26 for reuse, thereby improving the utilization rate of the liquid substrate.

[0034] Certainly, in another embodiment, the buffer cavity 254 may not be formed in the housing 25. In this way, a liquid storage space of the liquid storage tank 250 may be enlarged.

[0035] The power supply module 201 includes a housing 21, and a power supply 22, at least two charging electrodes 23, and a control circuit that are disposed in the housing 21. The control circuit is electrically connected to each of the power supply 22 and the at least two charging electrodes 23. The power supply module 201 charges the electronic atomization device 100 by using the charging electrodes 23.

[0036] Certainly, in another embodiment, the power supply module 201 may alternatively charge the electronic atomization device 100 in a wireless charging manner. In this way, the power supply module 201 does not need to be provided with the charging electrodes 23. Certainly, the electronic atomization system 1 may alternatively have two manners: wired charging and wireless charging.

[0037] The electronic atomization device 100 includes a liquid storage module 101, an atomization core module 102, and a power module 103. The liquid storage module 101 is configured to store a liquid substrate and includes a liquid storage housing 11 and a liquid guide component 12 disposed in the liquid storage housing 11. The power module 103 includes a battery housing component 18, and a battery cell 17 and a control circuit electrically connected to the battery cell 17 that are disposed in the battery housing component 18. The atomization core module 102 includes an atomization core 14, and the atomization core 14 is in fluid communication with the liquid guide component 12, is electrically connected to the control circuit, and can atomize the liquid substrate after being powered on.

[0038] The atomization core 14 includes a liquid guide element 141 and an atomization element 142. The liquid guide element 141 is in fluid communication with the liquid guide component 12. The atomization element 142 is in fluid communication with the liquid guide element 141, is electrically connected to the battery cell 17, and is configured to atomize the liquid substrate on the liquid guide element 141 after being powered on.

[0039] The liquid guide element 141 includes any appropriate material or a combined material of a plurality of materials that can transport the liquid substrate to the atomization element 142. Preferably, selection of one or more materials of the liquid guide element 141 depends on physical properties of the liquid substrate. An appropriate material of the liquid guide element 141 includes a capillary material.

[0040] The capillary material preferably includes a capillary bundle. For example, the capillary material may include a plurality of fibers or threads or other fine-bored tubes. The fibers or threads may be roughly aligned to transport the liquid to the atomization element 142. Certainly, the capillary material may alternatively include a spongy or foamy material. The structure of the capillary material may form a plurality of small pores or tubes, and the liquid substrate may be transported through the small pores or tubes through a capillary action.

[0041] The capillary material may include any appropriate material or combination of materials. For example, the capillary material may include at least one of the following materials: a sponge or foam material, a ceramics-based or graphite-based material in a form of fibers or sintered powder, a foam metal or plastic material, a fiber material (for example, made of as-spun fibers or extruded fibers (such as an cellulose acetate fibers, polyester fibers, bonded polyolefin fibers, polyethylene fibers, polyester fibers, polypropylene fibers, or nylon fibers)), and ceramics. Generally, the capillary material may be made of one or a combination of ceramics, carbon, fabric, or plastics. The capillary material may have any appropriate capillary action and porosity, and is applicable to different liquid physical properties.

[0042] The capillary material is preferably a porous material having a plurality of pores, but does not necessarily have to be the porous material. The porous material includes, but is not limited to, a cotton material (for example, natural cotton and/or artificial cotton) or an inorganic porous material (for example, a ceramic material such as aluminum oxide, or glass fiber). Alternatively, the porous material may include a material having a plurality of small pores that are manufactured, to allow the liquid substrate to migrate to the atomization element 142. The porous material may include a hydrophilic

material, so as to improve distribution and diffusion of the liquid substrate. The porous material may have any appropriate porosity, so as to be used with different liquid physical properties. The liquid guide element with different porosity may be configured to adapt to different physical properties of the liquid substrate, such as density, viscosity, surface tension, and steam pressure.

[0043] Preferably, the liquid guide element 141 is made of a cotton material, for example, polymer integrated cotton. Exemplarily, the cotton material includes one or a combination of pure cotton, flax, hemp, jute, cellulose fiber, tencel fiber, cuprammonium fiber, and chemical fiber. The polymer integrated cotton material may include one or a combination of Polyamide 6 (PA6), Polyethylene Terephthalate (PET), Polyamide 66 (PA66), Polypropylene (PP), Polyethylene (PE), and Polytrimethylene Terephthalate (PTT), and the density may be 0.02 to 10 g/cm³, for example, 0.02 to 3 g/cm³ or 0.02 to 0.5 g/cm³.

[0044] Exemplarily, the liquid guide element 141 may be a cotton material of the flax and the cuprammonium fiber.

[0045] In some other embodiments, the liquid guide element 141 may alternatively include another material having capillary channels, or may be another material provided with micro-channels having a capillary force, for example, silicon, plastics, stainless steel, or glass. For example, a plurality of micro-channels having a capillary force may be formed on the liquid guide element 141 by using a micro-manufacturing process. The micro-channels include micro-pores and/or micro-grooves.

[0046] An atomization manner of the atomization element 142 is not limited. In some embodiments, the atomization element 142 may use a resistance heating manner. The atomization element 142 includes a conductive material, which can convert electric energy into heat energy by using a resistive heating effect generated when a current passes through the conductive material. A specific structure of the atomization element 142 is not limited. For example, the atomization element 142 may be a mesh, an array, or fabric formed by a metal conductive wires or conductive plates, or may be a heating film formed in a manner of screen printing, depositing, or the like.

[0047] The liquid guide element 141 may be in a tubular shape (for example, a round tubular shape), and the atomization element 142 may be disposed on the inner side of the liquid guide element 141. Certainly, in another embodiment, the atomization element 142 may alternatively be disposed on the end face and/or the inner side of the liquid guide element 141.

[0048] Certainly, in another embodiment, the atomization core 14 may alternatively use any known structure and shape. For example, the liquid guide element 141 is in a bowl shape with a groove provided on one side, and the atomization element 142 is disposed on the other side of the liquid guide element 141. For another example, the liquid guide element 141 is in a shape of a rod transversely or vertically disposed, and the atomization element 142 is disposed on the outer side of the liquid guide element 141 in a manner of wrapping, printing, or the like. For another example, the liquid guide element 141 is in a regular flat plate shape (for example, a cuboid shape) or an irregular flat plate shape. At least one side of the liquid guide element 141 may be provided with a groove. Certainly, the liquid guide element 141 may alternatively not be provided with a groove. The atomization element 142 is disposed on at least one side of the liquid guide element 141.

[0049] The battery housing component 18 includes at least two conductive electrodes 180, and the at least two conductive electrodes 180 are electrically connected to the battery cell 17. After the electronic atomization device 100 is assembled with the main unit 200, the at least two conductive electrodes 180 are respectively abutted to at least two charging electrodes 23 to be conductive, thereby charging the battery cell 17.

[0050] In some embodiments, the power module 103 further includes an air flow sensor 16 disposed in the battery housing component 18. The air flow sensor 16 is electrically connected to a control circuit, and can detect a change of an air flow when a user smokes. The control circuit may control, according to a signal sent by the air flow sensor 16, whether to start the electronic atomization device 100.

[0051] The liquid guide component 12 can transport and store a liquid substrate by using a capillary force. After the electronic atomization device 100 is connected to the main unit 200, the liquid guide component 12 is in fluid communication with the liquid guide component 26, and the liquid substrate in the liquid storage tank 250 can be transported to the liquid guide component 12 by using a capillary force of the liquid guide component 26, thereby automatically injecting liquid. A liquid injection operation is convenient, user experience is high, and another liquid injection structure and an additional operation are not required. After the liquid guide component 12 is saturated with liquid, the liquid guide component 26 cannot continue to transport the liquid substrate to the liquid guide component 12, so that liquid supply is adaptively stopped when the electronic atomization device 100 is full of liquid, so that liquid leakage due to over injection does not occur, an additional electric control structure is not required, the structure is simple, and costs are low.

[0052] As described in this specification, the "capillary force" may indicate a capability of the capillary material for transporting liquid, preferably a liquid substrate, through a capillary action.

[0053] As described in this specification, a saturated state refers to a saturated state of the liquid guide component 12 when the liquid guide component 26 does not transport an atomized substrate to the liquid guide component 12 regardless of whether the electronic atomization system 1 is placed at any angle (for example, a forward orientation, an inverted orientation, or an inclined orientation).

[0054] When the liquid guide component 12 is in the saturated state, the content of the liquid substrate of the liquid guide

component 12 usually reaches a maximum value. Certainly, factors such as a temperature, an ambient pressure, and a change of an atomized substrate (for example, an atomized substrates having a different component or a different viscosity) may affect the saturated state. The saturated state of the liquid guide component 12 described in this specification is a saturated state of the liquid guide component 12 when the electronic atomization system 1 is at a specific temperature and ambient pressure and uses a specific atomized substrate.

[0055] During delivery, the liquid supply module 202 and the power supply module 201 of the main unit 200 may be separately packaged, to avoid a case in which a liquid substrate in the liquid supply module 202 leaks to the power supply module 201 to pollute electronic components inside the power supply module 201. The liquid storage module 101 and the power module 103 of the electronic atomization device 100 are separately packaged, so that a liquid substrate in the liquid storage module 101 does not leak to the power module 103 to pollute electronic components inside the power module 103, and a case of scorched taste for the first sip caused by smoking directly after a user gets the electronic atomization device 100 is avoided.

[0056] The atomization core module 102 may be separately packaged, or may be packaged together with the liquid storage module 101 or the power module 103.

[0057] Preferably, the atomization core module 102 and the liquid storage module 101 are separately packaged, that is, the atomization core module 102 may be separately packaged or may be packaged together with the power module 103, so as to avoid a case in which the liquid substrate in the liquid storage module 101 is in contact with the atomization core 14 to be polluted.

[0058] The liquid storage module 101 and the liquid supply module 202 may be in one package. The liquid storage module 101 may be attached to the first accommodating cavity 251 of the liquid supply module 202, so that the liquid guide component 12 is in fluid communication with the liquid guide component 26 to wick liquid from the liquid storage tank 250. In this way, after a user assembles the electronic atomization device 100, the liquid substrate in the liquid guide component 12 can be quickly guided to the liquid guide element 141 of the atomization core 14, so as to avoid scorched taste for the first sip caused by smoking directly after the user gets the electronic atomization device 100, and avoid a problem of waiting for a long time for injecting the liquid for the first time.

[0059] Certainly, in another embodiment, the liquid storage module 101 and the liquid supply module 202 may alternatively be separately packaged. After getting the electronic atomization system 1, the user may first attach the liquid storage module 101 to the liquid supply module 202 to inject liquid, or may first assemble the electronic atomization device 100 and the main unit 200, and then attach the assembled electronic atomization device 100 to the main unit 200 to inject liquid.

[0060] Specifically, in this embodiment, as shown in FIG. 1, during delivery, the liquid storage module 101 is connected to the liquid supply module 202 to be in one package, and the power supply module 201, the atomization core module 102, and the power module 103 are separately packaged. After getting a product, as shown in FIG. 4, a user takes the liquid storage module 101 out from the liquid supply module 202, assembles the liquid supply module 202 and the power supply module 201 together to form the main unit 200, assembles the liquid storage module 101, the atomization core module 102, and the power module 103 together to form the electronic atomization device 100, and then can use the electronic atomization device 100 by smoking. As shown in FIG. 5, after electricity or a liquid substrate in the electronic atomization device 100 is used up, the electronic atomization device 100 may be connected to the main unit 200, and the electronic atomization device 100 is injected with liquid and charged by using the main unit 200.

[0061] After being assembled, the liquid supply module 202 and the power supply module 201 may form a non-detachable connection, or may form a detachable connection. For example, the liquid supply module 202 and the power supply module 201 may form the non-detachable connection by using an undercut (a non-detachable snap-fit). In this way, after a user assembles the liquid supply module 202 and the power supply module 201 together, the liquid supply module 202 cannot be separated from the power supply module 201 without damaging a structure. For another example, the liquid supply module 202 and the power supply module 201 may form the detachable connection by using a releasable snap-fit (a detachable snap-fit). In this way, the user may repeatedly assemble or disassemble the liquid supply module 202 and the power supply module 201.

[0062] Similarly, a non-detachable connection or a detachable connection may alternatively be formed between the liquid storage module 101 and the atomization core module 102 and/or between the atomization core module 102 and the power module 103 and/or between the liquid storage module 101 and the power module 103.

[0063] Further, as shown in FIG. 1 to FIG. 5, the housing 21 of the power supply module 201 has an accommodating cavity 211 with an opening on one side, and the liquid supply module 202 can be connected to the accommodating cavity 211 through the opening of the accommodating cavity 211. The housing 25 and the housing 21 may be connected to each other by using a detachable snap-fit or a non-detachable snap-fit.

[0064] In addition, the power supply module 201 further has a second accommodating cavity 212. After the liquid supply module 202 and the power supply module 201 are assembled together, the second accommodating cavity 212 communicates with the first accommodating cavity 251 to form an accommodating cavity 203 configured to accommodate at least part of the electronic atomization device 100.

[0065] The charging electrode 23 is at least partially located in the second accommodating cavity 212, so as to be in contact with the electronic atomization device 100 connected to the accommodating cavity 203 to be conductive. In some embodiments, the charging electrode 23 may be an electrode post, preferably an elastic electrode post. An axis direction of the charging electrode 23 may be perpendicular to an axis direction of the accommodating cavity 203. The at least two charging electrodes 23 may be located on the same side of a circumferential direction of the accommodating cavity 203, and may be spaced away from each other in an axial direction of the accommodating cavity 203. Certainly, in another embodiment, the at least two charging electrodes 23 may alternatively be located on different sides of the circumferential direction of the accommodating cavity 203. In some other embodiments, the charging electrode 23 may alternatively include another electrode connection structure such as an electrode connection piece.

[0066] It may be understood that, in another embodiment, a position where the charging electrode 23 is disposed is not limited, and the charging electrode 23 may be disposed anywhere that can be in contact with the conductive electrode 180 of the electronic atomization device 100. For example, the charging electrode 23 may alternatively be disposed at an end face of the accommodating cavity 203.

[0067] The liquid guide component 26 includes at least one liquid guide element 264, and the liquid guide component 12 includes at least one liquid guide element 124. Both the liquid guide element 264 and the liquid guide element 124 have a capillary structure that can transport a liquid substrate by using a capillary force. After the electronic atomization device 100 and the main unit 200 are connected together, the at least one liquid guide element 124 is in fluid communication with the at least one liquid guide element 264, and the liquid substrate in the liquid storage tank 250 can be transported to the at least one liquid guide element 124 by using a capillary force of the at least one liquid guide element 264.

[0068] The liquid guide element (the liquid guide element 264/the liquid guide element 124) may have any appropriate shape, preferably a round tubular shape or a cylindrical shape. The liquid guide element includes any appropriate material or a combined material of a plurality of materials that can transport the liquid substrate to the electronic atomization device 100. Preferably, selection of one or more materials of the liquid guide element depends on physical properties of the liquid substrate. An appropriate material of the liquid guide element includes a capillary material.

[0069] The capillary material preferably includes a capillary bundle. For example, the capillary material may include a plurality of fibers or threads or other fine-bored tubes. The fibers or threads may be roughly aligned to transport the liquid to the electronic atomization device 100. Certainly, the capillary material may alternatively include a spongy or foamy material. The structure of the capillary material may form a plurality of small pores or tubes, and the liquid substrate may be transported through the small pores or tubes through a capillary action.

[0070] The capillary material may include any appropriate material or combination of materials. For example, the capillary material may include at least one of the following materials: a sponge or foam material, a ceramics-based or graphite-based material in a form of fibers or sintered powder, a foam metal or plastic material, a fiber material (for example, made of as-spun fibers or extruded fibers (such as cellulose acetate fibers, polyester fibers, bonded polyolefin fibers, polyethylene fibers, polyester fibers, polypropylene fibers, or nylon fibers)), and ceramics. Generally, the capillary material may be made of one or a combination of ceramics, carbon, fabric, or plastics. The capillary material may have any appropriate capillary action and porosity, and is applicable to different liquid physical properties.

[0071] The capillary material is preferably a porous material having a plurality of pores, but does not necessarily have to be the porous material. The porous material includes, but is not limited to, a cotton material (for example, natural cotton and/or artificial cotton) or an inorganic porous material (for example, a ceramic material such as aluminum oxide, or glass fiber). Alternatively, the porous material may include a material having a plurality of small pores that are manufactured, to allow the liquid substrate to migrate to the electronic atomization device 100. The porous material may include a hydrophilic material, so as to improve distribution and diffusion of the liquid substrate. The porous material may have any appropriate porosity, so as to be used with different liquid physical properties. The liquid guide element with different porosity may be configured to adapt to different physical properties of the liquid substrate, such as density, viscosity, surface tension, and steam pressure.

[0072] Preferably, the liquid guide element is made of a cotton material, for example, polymer integrated cotton. Exemplarily, the cotton material includes one or a combination of pure cotton, flax, hemp, jute, cellulose fiber, tencel fiber, cuprammonium fiber, and chemical fiber. The polymer integrated cotton material may include one or a combination of PA6, PET, PA66, PP, PE, and PTT, and the density may be 0.02 to 10 g/cm³, for example, 0.02 to 3 g/cm³ or 0.02 to 0.5 g/cm³.

[0073] In some other embodiments, the liquid guide element may alternatively include another material having capillary channels, or may be another material provided with micro-channels having a capillary force, for example, silicon, plastics, stainless steel, or glass. For example, a plurality of micro-channels having a capillary force may be formed on the liquid guide element by using a micro-manufacturing process. The micro-channels include micro-pores and/or micro-grooves. The micro-grooves may be provided on the outer side and/or the inner side and/or the end face of the liquid guide element, and the micro-pores are provided in the liquid guide element in a penetrating manner.

[0074] By disposing the micro-channels, the liquid guide element is not limited to a porous material, and the liquid guide element may alternatively be made of a non-porous material such as silicon, plastics, glass, and metal, thereby expanding a selection range of materials of the liquid guide element.

[0075] In a transporting direction (a liquid guide direction) of the liquid substrate, capillary forces of the at least one liquid guide element 264 and the at least one liquid guide element 124 may be substantially the same. Specifically, the capillary force of the at least one liquid guide element 264 is substantially the same, the capillary force of the at least one liquid guide element 124 is substantially the same, and the capillary force of the at least one liquid guide element 264 is further

substantially the same as the capillary force of the at least one liquid guide element 124.

[0076] Alternatively, the at least one liquid guide element 264 and the at least one liquid guide element 124 may be provided with a plurality of sections of different capillary forces. This includes the following several cases:

(1) the capillary force of the at least one liquid guide element 264 is substantially the same, and the capillary force of the at least one liquid guide element 124 is substantially the same, but the capillary force of the at least one liquid guide element 264 is greater than or less than the capillary force of the at least one liquid guide element 124;

(2) the capillary force of the at least one liquid guide element 264 is substantially the same, and the at least one liquid guide element 124 is provided with a plurality of sections of different capillary forces;

(3) the at least one liquid guide element 264 is provided with a plurality of sections of different capillary forces, and the capillary force of the at least one liquid guide element 124 is substantially the same;

(4) the at least one liquid guide element 264 is provided with a plurality of sections of different capillary forces, and the at least one liquid guide element 124 is provided with a plurality of sections of different capillary forces.

[0077] The at least one liquid guide element 264 is provided with a plurality of sections of different capillary forces, which may include the following several cases: (1) a capillary force of one part or several parts of regions of the at least one liquid guide element 264 is relatively large or relatively small, for example, the capillary force of the at least one liquid guide element 264 is first increased and then decreased, or is first decreased and then increased; and (2) the plurality of sections of capillary forces of the at least one liquid guide element 264 gradually increases along a transporting direction of the liquid substrate.

[0078] The at least one liquid guide element 124 is provided with a plurality of sections of different capillary forces, which may include the following several cases: (1) a capillary force of one part or several parts of regions of the at least one liquid guide element 124 is relatively large or relatively small, for example, the capillary force of the at least one liquid guide element 124 is first increased and then decreased, or is first decreased and then increased; and (2) the plurality of sections of the capillary forces of the at least one liquid guide element 124 gradually increases along a transporting direction of the liquid substrate.

[0079] By using a gradient liquid guide structure with a difference between capillary forces, a liquid substrate can be better guided from a part with a relatively small capillary force to a part with a relatively large capillary force, thereby improving a liquid guiding effect.

[0080] A forming manner of the plurality of sections of capillary forces is not limited. For example, the at least one liquid guide element 264 and/or the at least one liquid guide element 124 includes a plurality of liquid guide elements, and the plurality of liquid guide elements are provided with different capillary forces. Specifically, the at least one liquid guide element 264 includes a plurality of liquid guide elements 264, and capillary forces of the plurality of liquid guide elements 264 gradually increase along a transporting direction of the liquid substrate; and/or, the at least one liquid guide element 124 includes a plurality of liquid guide elements 124, and capillary forces of the plurality of liquid guide elements 124 gradually increase along a transporting direction of the liquid substrate. Generally, the plurality of liquid guide elements may obtain different capillary forces by using different materials and/or having different density.

[0081] Capillary forces on the same liquid guide element may be substantially the same. Alternatively, the same liquid guide element may be provided with a plurality of sections of different capillary forces. For example, the liquid guide element is made of a cotton material. The liquid guide element has different density in a manner of pressing or the like, so as to form different capillary forces. For another example, the cross-sectional area of the micro-channels on the liquid guide element is set to several sections having different sizes, or the cross-sectional area of the micro-channels is set to gradually decrease in the transporting direction of the liquid substrate.

[0082] In addition, the capillary force of the at least one liquid guide element 124 may be greater than the capillary force of the at least one liquid guide element 264, which helps to guide the liquid substrate in the liquid guide element 264 to the liquid guide element 124 more quickly, thereby improving a liquid injecting speed. Specifically, capillary forces of all the liquid guide elements 124 may be greater than the capillary force of the at least one liquid guide element 264; alternatively, capillary forces of part liquid guide elements 124 may be greater than the capillary force of the at least one liquid guide element 264, and capillary forces of another part of the liquid guide elements 124 may be less than or equal to the capillary force of the at least one liquid guide element 264.

[0083] In some embodiments, the main unit 200 further includes a ventilation channel for communicating the liquid storage tank 250 and outside atmosphere. With consumption of the liquid substrate in the liquid storage tank 250, a negative pressure may be generated in the liquid storage tank 250, easily causing poor ventilation. However, by providing the ventilation channel, when the electronic atomization device 100 is connected to the main unit 200 to start injecting

liquid, external air can enter the liquid storage tank 250 through the ventilation channel, to at least partially balance the pressure in the liquid storage tank 250, thereby ensuring smooth liquid injection.

[0084] The liquid storage tank 250 may usually use the following two ventilation manners: (1) the liquid injection channel is separated from the ventilation channel; and (2) the liquid injection channel is combined with the ventilation channel. The liquid injection channel refers to a channel for transporting a liquid substrate.

[0085] The ventilation manner that the liquid injection channel is separated from the ventilation channel may generally include: (1) ventilation holes are provided in a cavity wall of the liquid storage tank 250 for ventilating, and certainly, to reduce liquid leakage from the ventilation holes, the ventilation holes may further be filled or covered with a porous material (for example, a waterproof breathable membrane); and (2) the liquid storage tank 250 deforms, for example, the liquid storage tank 250 includes a flexible material, and a pressure in the liquid storage tank 250 is balanced by deformation of the liquid storage tank 250.

[0086] The ventilation manner that the liquid injection channel is combined with the ventilation channel specifically refers to that ventilation is performed by using capillary channels of the at least one liquid guide element 264 in an unsaturated state. However, when the at least one liquid guide element 264 is in a saturated state, surface tension of a liquid may seal the capillary channels, thereby implementing leakage protection in a general environment (for example, at room temperature).

[0087] In some embodiments, the ventilation channel may include any space or gap on a flow transporting path from the at least one liquid guide element 264 to the liquid guide element 124, for example, a gap formed between the at least one liquid guide element 264 and another structure (for example, a housing 25 and/or a support element 263 and/or a holder 27) matching the at least one liquid guide element 264. And/or, the ventilation channel may include ventilation holes or ventilation grooves provided on a structure such as a liquid storage housing 11 and/or the holder 27.

[0088] Specifically, in this embodiment, the liquid guide component 26 includes a liquid guide element 261 and a liquid guide element 262. The liquid guide element 262 is in fluid communication with the liquid storage tank 250, and the liquid guide element 261 is in contact with the liquid guide element 262 or is in fluid communication with the liquid guide element 262 with a small gap reserved. Certainly, in another embodiment, the liquid guide element 261 and the liquid guide element 262 may be integrally formed.

[0089] The liquid guide element 261 may be in a rod shape (a hollow rod shape or a solid rod shape), for example, a cylindrical shape or a round tubular shape. The liquid guide element 261 may at least partially extend into the first accommodating cavity 251, so as to be in fluid communication with the liquid storage module 101 connected to the first accommodating cavity 251.

[0090] In some embodiments, the liquid guide element 262 may be in a tubular shape and is sleeved outside the liquid guide element 261, and the inner side of the liquid guide element 262 is in fluid communication with the outer side of the liquid guide element 261. The lower end of the liquid guide element 261 is fixed to the housing 25, and the upper end penetrates out from the liquid guide element 262 and extends into the first accommodating cavity 251.

[0091] In some embodiments, the liquid guide element 262 may be made of disordered cotton (for example, PE + PP bonded cotton), and the density may be 0.04 to 0.1 g/cm³. The liquid guide element 261 may be made of the disordered cotton (for example, PE + PP bonded cotton), and the density is 0.16 to 0.2 g/cm³. The density of the liquid guide element 261 is greater than that of the liquid guide element 262, and a capillary force of the liquid guide element 261 is greater than that of the liquid guide element 262, so that a liquid substrate can be better guided from the liquid guide element 262 having a relatively small capillary force to the liquid guide element 261 having a relatively large capillary force.

[0092] Considering that the liquid guide element 261 is made of a flexible cotton material, it is not easy to insert the liquid guide element 261 into the electronic atomization device 100. The liquid supply module 202 may further include the support element 263 at least partially disposed in the liquid guide element 261 in a penetrating manner. The support element 263 can provide support strength to the liquid guide element 261, to prevent the liquid guide element 261 from bending when the electronic atomization device 100 is connected. One end of the support element 263 may be fixed to the housing 25, and the other end of the support element 263 may penetrate out from the liquid guide element 261 or may be flush with the end face of the liquid guide element 261, so as to guide the liquid guide element 261 to be connected to the liquid guide component 12.

[0093] The support element 263 is made of a hard material. In some embodiments, the support element 263 may be made of porous ceramics. The support element 263 can alternatively guide liquid by using a porous structure, which is beneficial to improving a liquid guide effect. Certainly, in another embodiment, the support element 263 may be made of a non-porous material (for example, metal or plastics). Liquid may be guided by using the gap between the support element 263 and the liquid guide element 261, or the liquid may be guided by providing micro-channels on the support element 263, or the support element 263 may not participate in liquid guiding at all.

[0094] Certainly, in another embodiment, the liquid guide element 261 may alternatively be rigid. For example, the liquid guide element 261 may be made of a porous material such as porous ceramics, or may be another material in which micro-channels having a capillary action are provided. Because the liquid guide element 261 is rigid, the support element 263 for supporting does not need to be disposed, so that parts can be simplified, costs are lower, and mounting is simpler.

[0095] In some embodiments, the liquid supply module 202 may further include a liquid holding element 28 disposed in the first accommodating cavity 251. The liquid holding element 28 can adsorb leaked liquid in the first accommodating cavity 251 by using a capillary force, thereby reducing liquid leakage.

[0096] In some embodiments, the liquid holding element 28 may be made of a porous material such as cotton or porous ceramics. Preferably, the liquid holding element 28 is made of a cotton material, and can absorb and store more liquid substrate.

[0097] Certainly, the liquid holding element 28 may alternatively include another material having capillary channels, or may be another material provided with micro-channels having a capillary force, for example, silicon, plastics, stainless steel, or glass.

[0098] By disposing the liquid holding element 28, the main unit 200 can form third-level leakage prevention, so as to prevent the liquid substrate in the liquid storage tank 250 from leaking to the outside. Specific descriptions are as follows:

first-level leakage prevention: when the liquid guide element 262 is saturated, a plurality of gaps of the liquid guide element 262 are filled with a liquid substrate, and a plurality of ventilation channels are closed, thereby implementing leakage prevention in a general environment (for example, room temperature);

second-level leakage prevention: in a severe environment (for example, a temperature or atmospheric pressure sharply changes), the liquid substrate in the liquid storage tank 250 leaks to the buffer cavity 254, and the buffer cavity 254 is configured to store the leaked liquid; when the electronic atomization device 100 is attached to the main unit 200, because the liquid guide element 261 and/or the liquid guide element 262 are in fluid communication with the liquid substrate in the buffer cavity 254, the liquid substrate in the buffer cavity 254 may be wicked by the liquid guide element 261 and/or the liquid guide element 262; therefore, the liquid substrate in the buffer cavity 254 may be used; and

third-level leakage prevention: when an environment is extremely severe, the liquid substrate in the liquid storage tank 250 may leak to the first accommodating cavity 251, and is further adsorbed by the liquid holding element 28 disposed in the first accommodating cavity 251.

[0099] The liquid guide component 12 includes a liquid guide element 121 and a liquid guide element 122. The liquid guide element 121, the liquid guide element 122, and the liquid guide element 141 are sequentially disposed coaxially in an axial direction and are abutted at end faces to be in fluid communication. The liquid guide element 261 can be at least partially inserted into the liquid guide element 121, so as to be in fluid communication with the liquid guide element 121.

[0100] Certainly, in another embodiment, the liquid guide element 261 may not be inserted into the liquid guide element 121. Specifically, the liquid guide element 261 may be abutted to the liquid guide element 121 at an end face or a small gap is reserved for fluid communication, alternatively, the liquid guide element 261 may be sleeved outside the liquid guide element 121, so as to be in fluid communication with the liquid guide element 121. In some other embodiments, the liquid guide element 121 and the liquid guide element 122 may be integrally formed.

[0101] In some embodiments, the liquid guide element 121 may be made of disordered cotton (for example, PA + PET bonded cotton), and the density may be 0.12 to 0.16 g/cm³. The liquid guide element 122 may be made of the disordered cotton (for example, the PA + PET bonded cotton), and the density may be about 0.16 to 0.2 g/cm³.

[0102] It is to be noted that the density of the liquid guide element 121 is not necessarily greater than the density of the liquid guide element 261, for example, the density of the liquid guide element 261 is 0.2 g/cm³, and the density of the liquid guide element 121 is 0.14 g/cm³. The density of the liquid guide element 121 may be less than, equal to, or greater than the density of the liquid guide element 261. When the liquid substrate in the liquid guide element 121 is used up or substantially used up, the liquid substrate in the liquid guide element 261 can be guided to the liquid guide element 121 by using a capillary action and wettability.

[0103] Both the liquid guide element 121 and the liquid guide element 122 are in tubular shapes, and air flow through holes 120 are formed therein in a penetrating manner. An air suction port 110 is provided at one end of the liquid storage housing 11, and the air suction port 110 communicates with air flow through hole 120. An aerosol generated by the atomization core 14 after atomization sequentially flows out through the air flow through hole 120 and the air suction port 110, for the user to smoke.

[0104] The electronic atomization device 100 is connected to the main unit 200 in an inverted manner, that is, the electronic atomization device 100 is connected to the main unit 200 by using an air suction end where the air suction port 110 of the electronic atomization device 100 is located. When the electronic atomization device 100 is used by smoking, the air suction port 110 of the electronic atomization device 100 faces upward, a liquid substrate of the liquid guide element 121 located at an upper part flows to the liquid guide element 122 and finally to the liquid guide element 141 under the action of gravity and capillary force, and the liquid substrate of the liquid guide element 121 is consumed first. However, when the electronic atomization device 100 is connected to the main unit 200 in an inverted manner for injecting liquid, the air suction port 110 faces downward, and the liquid guide element 121 faces downward. During liquid guiding, the liquid guide element 121 needs a relatively small force to overcome the gravity, so as to be replenished with liquid first.

[0105] The liquid storage housing 11 is in a tubular shape. A first end of the liquid storage housing 11 has an end wall 111 provided with the air suction port 110, and the liquid guide element 121 may abut to the end wall 111. A second end of the liquid storage housing 11 is open, so as to be connected to the atomization core module 102.

[0106] In some embodiments, a mounting cavity 112 is formed at a second end of the liquid storage housing 11, and the atomization core module 102 is at least partially loaded into the mounting cavity 112.

[0107] The atomization core module 102 may be connected to the liquid storage housing 11 by using an undercut, so as to form a non-detachable connection structure, which can reduce user operations and does not need to be repeatedly assembled and disassembled. Specifically, the atomization core module 102 includes an atomization cylinder 13, and an atomization core 14 is disposed in the atomization cylinder 13. The outer wall surface of the atomization cylinder 13 protrudes to form at least two undercuts 1311, and the inner wall surface of the liquid storage housing 11 depresses to form at least two clamping slots 113. After the atomization core module 102 is loaded into the mounting cavity 112, the at least two undercuts 1311 are respectively clamped into the at least two clamping slots 113, so that the atomization cylinder 13 and the liquid storage housing 11 are connected by using the undercuts, so as to be detachably connected together.

[0108] Certainly, in another embodiment, the inner wall surface of the liquid storage housing 11 may protrude to form the undercuts, and the outer wall surface of the atomization cylinder 13 depresses to form the clamping slots. In some other embodiments, the atomization core module 102 and the liquid storage housing 11 may alternatively be connected to each other in a detachable manner such as a detachable snap-fit, a threaded connection, and a magnetic attraction connection.

[0109] Certainly, in some other embodiments, the atomization cylinder 13 may be at least partially sleeved outside the liquid storage housing 11. Correspondingly, the inner wall surface of the atomization cylinder 13 and the outer wall surface of the liquid storage housing 11 may be provided with snap-fit structures that match each other, so that the atomization cylinder 13 is in snap-fit with the liquid storage housing 11.

[0110] In some embodiments, the atomization core module 102 further includes a first electrode post 151 disposed in the atomization cylinder 13. A pole of the atomization element 142 is electrically connected to the first electrode post 151, and is electrically connected to the battery cell 17 through the first electrode post 151.

[0111] In some embodiments, the atomization cylinder 13 may be a conductive material such as metal, and the other pole of the atomization element 142 may be electrically connected to the atomization cylinder 13. The atomization core module 102 further includes an insulating separator 153 disposed in the atomization cylinder 13 to insulate and isolate the atomization cylinder 13 from the first electrode post 151.

[0112] In some embodiments, the atomization cylinder 13 may include a cylindrical sleeve portion 131 configured to be connected to the liquid storage module 101 and a cylindrical connection portion 132 configured to be connected to the power module 103. The sleeve portion 131 and the connection portion 132 are sequentially connected in an axial direction and may be disposed coaxially.

[0113] The outer diameter of the sleeve portion 131 may be greater than that of the connection portion 132, and the inner diameter of the sleeve portion 131 may be greater than that of the connection portion 132. The outer diameter of the sleeve portion 131 is adapted to the inner diameter of the liquid storage housing 11. At least two undercuts 1311 are disposed on the outer wall surface of the sleeve portion 131 and may be evenly distributed in a circumferential direction of the sleeve portion 131 at an interval. The liquid guide element 141 is closely disposed in the sleeve portion 131, and may abut to the bottom cavity surface in the sleeve portion 131.

[0114] The first electrode post 151 is at least partially disposed in the connection portion 132 in a penetrating manner, and the insulating separator 153 is at least partially disposed between the outer wall surface of the first electrode post 151 and the inner wall surface of the connection portion 132. The first electrode post 151 is at least partially located outside the atomization cylinder 13, so as to be abutted to a second electrode post 152 of the power module 103 to be conductive.

[0115] The atomization core module 102 and the power module 103 may be detachably connected in a manner of threaded connection. Specifically, the outer wall surface of the connection portion 132 is provided with an external thread, and the inner wall surface of the battery housing component 18 is correspondingly provided with an internal thread.

[0116] The battery housing component 18 may include a first conductive housing 181, an insulating housing 182, and a second conductive housing 183. The first conductive housing 181 and the second conductive housing 183 may be made of a conductive material such as metal. The first conductive housing 181 and the second conductive housing 183 are respectively electrically connected to the battery cell 17. That is, there are two conductive electrodes 180, which are respectively the first conductive housing 181 and the second conductive housing 183. The insulating housing 182 is disposed between the first conductive housing 181 and the second conductive housing 183, and is configured to insulate and isolate the first conductive housing 181 from the second conductive housing 183.

[0117] In some embodiments, the first conductive housing 181, the insulating housing 182, and the second conductive housing 183 may be sequentially and coaxially disposed in an axial direction. The second conductive housing 183 is in the shape of a cylinder with an opening at one end, and the battery cell 17 is accommodated in the second conductive housing 183. The insulating housing 182 is partially embedded in the second conductive housing 183 to be fixed, and partially located outside the second conductive housing 183 to separate the second conductive housing 183 from the first conductive housing 181. The air flow sensor 16 may be embedded in one side of the insulating housing 182 close to the

battery cell 17. The first conductive housing 181 is partially embedded in the insulating housing 182 to be fixed, and partially located outside the first conductive housing 181 to abut to the charging electrode 23 to be conductive.

[0118] In some embodiments, the power module 103 further includes a second electrode post 152 electrically connected to the battery cell 17. The second electrode post 152 may be partially embedded in the insulating housing 182 to be fixed, and partially located outside the insulating housing 182, so as to be abutted to the first electrode post 151 to be conductive.

[0119] The first conductive housing 181 is in a tubular shape. The inner wall surface of the first conductive housing 181 is provided with an internal thread. The first conductive housing 181 is in threaded connection with the connection portion 132 to be conductive. The threaded connection manner can enable the first conductive housing 181 to be in reliable contact with the connection portion 132 to implement a reliable electrical connection.

[0120] In this way, one pole of the atomization element 142 is electrically connected to the battery cell 17 through the connection portion 132 and the first conductive housing 181, and the other pole of the atomization element 142 is electrically connected to the battery cell 17 through the first electrode post 151 and the second electrode post 152. That is, the first conductive housing 181 serves as both a charging electrode of the battery cell 17 and an electrode of the atomization element 142, so as to reduce a quantity of required electrodes.

[0121] The end face of the first conductive housing 181 may abut to the end face of the liquid storage housing 11. The first conductive housing 181, the insulating housing 182, the second conductive housing 183, and the liquid storage housing 11 jointly constitute a housing of the electronic atomization device 100. The first conductive housing 181, the insulating housing 182, the second conductive housing 183, and the liquid storage housing 11 may have the same outer diameter. In this way, the electronic atomization device 100 can have good attractiveness.

[0122] In some embodiments, the liquid storage amount in the electronic atomization device 100 is greater than or equal to (preferably, greater than) the electricity of the battery cell 17. In this way, when the electricity of the battery cell 17 is consumed, the liquid substrate in the electronic atomization device 100 is not consumed or is just consumed, thereby avoiding dry heating. The liquid storage amount in the electronic atomization device 100 is a sum of the liquid storage amount of the liquid guide component 12 and the liquid storage amount of the liquid guide element 141.

[0123] The liquid storage amount in the electronic atomization device 100 may be compared with the electricity of the battery cell 17 by using the quantity of puffs as an evaluation parameter.

[0124] The quantity of puffs that the liquid substrate in the electronic atomization device 100 can provide is greater than or equal to the quantity of puffs that the electricity of the battery cell can provide. For example, it is set that each puff is performed for 2 seconds and stopped for 8 seconds, about 8.5 mg of the liquid substrate is consumed, the battery cell 17 has a nominal capacity of 190 mAh and a power of 10 W, and 125 puffs can be performed. However, the electronic atomization device 100 is filled with about 2 g of liquid, and can provide about 250 puffs. Therefore, when the electronic atomization device 100 is smoked full of liquid, the electricity of the battery cell 17 is consumed earlier than the liquid substrate in the electronic atomization device 100. However, when the electricity of the battery cell 17 is used up, the electronic atomization device 100 consumes about 1.1 g of the liquid substrate by smoking 125 puffs. After the electronic atomization device 100 is replenished with about 1.1 g of the liquid substrate by using the main unit 200, the liquid guide component 12 is saturated, thereby automatically stopping liquid supply.

[0125] In addition, a liquid replenishment speed of the electronic atomization device 100 is higher than or equal to a charging speed of the battery cell 17. Otherwise, when a user pulls out the electronic atomization device 100, the liquid storage amount in the electronic atomization device 100 may be less than the electricity of the battery cell, thereby causing scorched taste. Comparison between the liquid replenishment speed and the charging speed may alternatively be evaluated by using the quantity of puffs that the replenished liquid amount and electricity can provide. In other words, within each charging time, the mass of the liquid substrate replenished by the main unit 200 to the electronic atomization device 100 is greater than or equal to the mass of the liquid substrate that can be consumed by a charging amount.

[0126] When the electronic atomization system 1 is placed vertically, the liquid substrate sequentially flows downward to the atomization core 14 through the liquid guide element 262, the liquid guide element 261, the liquid guide element 121, and the liquid guide element 122, and the gravity needs to be overcome in a flow process. Therefore, a liquid replenishment speed is relatively low. In some embodiments, the liquid replenishment speed is 18% to 40% higher than a charging speed when the electronic atomization system 1 is placed vertically, and the liquid replenishment speed is 136% to 180% higher than the charging speed when the electronic atomization system 1 is placed horizontally.

[0127] Table 1 and Table 2 respectively show results of comparison between a liquid replenishment speed and a charging speed when the electronic atomization system 1 uses two liquid substrates having different viscosity (lemon lime having a viscosity of about 120 to 140 mPa.s and blackberry sour raspberry having a viscosity of about 200 mPa.s). The electronic atomization system 1 is in a vertical placement state, the battery cell 17 has a nominal capacity of 190 mAh, and a power of 10W.

Table 1: Comparison between an oil replenishment speed and a charging speed of lemon lime (having a viscosity of about 120 to 140 mPa.s)

Time/min	10	20	30	40
Charging speed/puff	50	90	110	125
Oil replenishment speed/puff	70	112	130	130
Oil replenishment amount/g	0.6	0.95	1.1	1.1

Table 2: Comparison between an oil replenishment speed and a charging speed of blackberry sour raspberry (having a viscosity of about 200 mPa.s)

Time/min	10	20	30	40
Charging speed/puff	50	90	110	125
Oil replenishment speed/puff	65	106	130	130
Oil replenishment amount/g	0.55	0.9	1.1	1.1

[0128] It can be learned with reference to Table 1 to Table 2 that when the electronic atomization system 1 uses two liquid substrates having different viscosity, in the entire process of liquid replenishment and charging, the quantity of puffs that the liquid amount replenished by the main unit 200 to the electronic atomization device 100 can provide is greater than the quantity of puffs that the replenished electricity can provide, that is, the liquid replenishment speed is higher than the charging speed.

[0129] Table 3 and Table 4 respectively show a comparison between the amount of liquid consumed by a full battery cell of an electronic atomization device 100 and the amount of liquid replenished when the battery cell is fully charged when two liquid substrates (lemon lime and blueberry sour raspberry) having different viscosity are used. The liquid amount consumed by the battery cell 17 is measured when an atomization power of the electronic atomization device 100 is 10 W.

Table 3: Lemon lime (having a viscosity of about 120 to 140 mPa.s)

Battery cell capacity	Amount of liquid consumed by full battery cell/g	Amount of liquid replenished when battery cell is fully charged
Battery cell of 100 mAh	0.45	0.6
Battery cell of 140 mAh	0.63	0.95
Battery cell of 180 mAh	0.81	1.1

Table 4: Blueberry sour raspberry (viscosity about 200 mPa.s)

Battery cell capacity	Amount of liquid consumed by full battery cell/g	Amount of liquid replenished when battery cell is fully charged
Battery cell of 100 mAh	0.45	0.55
Battery cell of 140 mAh	0.63	0.9
Battery cell of 180 mAh	0.81	1.1

[0130] It can be learned from Table 3 and Table 4 that, when the electronic atomization system 1 uses two liquid substrates having different viscosity, the amount of liquid consumed by a full battery cell of the electronic atomization device 100 is less than the amount of liquid replenished when the battery cell is fully charged.

[0131] FIG. 6 and FIG. 7 show an electronic atomization system 1 in a second embodiment of the present disclosure. A main difference between the second embodiment and the foregoing first embodiment is that an atomization core module 102 and a power module 103 are assembled together when the electronic atomization device 100 in this embodiment is delivered.

[0132] Compared with the foregoing first embodiment, the atomization core module 102 in this embodiment further includes a casing pipe 19, and the atomization cylinder 13 is at least partially embedded in the casing pipe 19.

[0133] The end face of the casing pipe 19 and the end face of the first conductive housing 181 may abut to each other. The first conductive housing 181, the insulating housing 182, the second conductive housing 183, and the casing pipe 19

jointly constitute a housing of the electronic atomization device 100. The first conductive housing 181, the insulating housing 182, the second conductive housing 183, and the casing pipe 19 may have the same outer diameter. The liquid storage housing 11 may be partially or completely accommodated in the casing pipe 19.

[0134] Specifically, the casing pipe 19 may be in a tubular shape with two through ends. The sleeve portion 131 of the atomization cylinder 13 is embedded in one end of the casing pipe 19 to be fixed. The connection portion 132 extends out of the casing pipe 19 to be in a threaded connection with the first conductive housing 181.

[0135] The other end of the casing pipe 19 is provided with a cavity 190, and the liquid storage housing 11 can be at least partially accommodated in the cavity 190. In some embodiments, the casing pipe 19 may be connected to the liquid storage housing 11 in a manner of undercutting, so as to form a non-detachable connection structure. Specifically, the outer wall surface of the liquid storage housing 11 protrudes to form at least two undercuts 114, and the inner wall surface of the casing pipe 19 depresses to form at least two clamping slots 191. After the liquid storage housing 11 is loaded into the casing pipe sleeved 19, the at least two undercuts 114 are respectively clamped into the at least two clamping slots 191, so that the casing pipe 19 and the liquid storage housing 11 are connected by using the undercuts, so as to be non-detachably connected together.

[0136] Certainly, in another embodiment, the outer wall surface of the liquid storage housing 11 may depress to form the clamping slots, and the inner wall surface of the casing pipe 19 protrude to form the undercuts. In some other embodiments, the casing pipe 19 and the liquid storage housing 11 may alternatively be connected to each other in a detachable manner such as a detachable snap-fit, a threaded connection, and a magnetic attraction connection.

[0137] The other end face of the casing pipe 19 may abut to the end wall 111 of the liquid storage housing 11, that is, the end wall 111 of the liquid storage housing 11 constitutes part housing of the electronic atomization device 100. The undercut 114 may be disposed close to the end wall 111 in an axial direction. In this way, resistance when the liquid storage housing 11 is loaded into the casing pipe 19 can be reduced.

[0138] Certainly, in another embodiment, the other end of the casing pipe 19 may alternatively be provided with a casing pipe end wall. The casing pipe end wall can cover the end wall 111 of the liquid storage housing 11 in the casing pipe 19, thereby completely covering the liquid storage housing 11 in the casing pipe 19.

[0139] As shown in FIG. 6, during delivery, the liquid storage module 101 may be attached to the liquid supply module 202 to be in one package, the power supply module 201 is separately packaged, and the atomization core module 102 and the power module 103 are assembled together. After getting a product, as shown in FIG. 7, a user takes the liquid storage module 101 out from the liquid supply module 202, assembles the liquid supply module 202 and the power supply module 201 together to form the main unit 200, and inserts the liquid storage module 101 into the cavity 190 to form the electronic atomization device 100. The assembly is more convenient.

[0140] It may be understood that the foregoing technical features may be used in any combination without any limitation.

[0141] The foregoing embodiments only express exemplary implementations of the present disclosure, and the descriptions are specific and detailed, but cannot be understood as limiting the patent scope of the present disclosure.

It is to be noted that, a person of ordinary skill in the art may freely combine the foregoing technical features and make several variations and improvements without departing from the idea of the present disclosure, and the variations and improvements all fall within the protection scope of the present disclosure. Therefore, all equivalent transformations and modifications made within the scope of the claims of the present disclosure fall within the scope of the claims of the present disclosure.

Claims

1. An electronic atomization system, comprising a main unit (200) and an electronic atomization device (100),

the main unit (200) comprising a liquid supply module (202), the liquid supply module (202) comprising a liquid storage tank (250) and a first accommodating cavity (251) in fluid communication with the liquid storage tank (250),

the electronic atomization device (100) comprising a liquid storage module (101), an atomization core module (102), and a power module (103),

the power module (103) comprising a battery housing component (18) and a battery cell (17) disposed in the battery housing component (18), the atomization core module (102) comprising an atomization cylinder (13) and an atomization core (14) disposed in the atomization cylinder (13), the liquid storage module (101) comprising a liquid storage housing (11) and a first liquid guide component (12) disposed in the liquid storage housing (11), the first liquid guide component (12) being in fluid communication with the atomization core (14) after the liquid storage module (101) is assembled with the atomization core module (102), and

the liquid storage module (101) being capable of being at least partially accommodated in the first accommodating cavity (251), to enable the liquid storage module (101) to be in fluid communication with the liquid storage tank

(250).

2. The electronic atomization system of claim 1, wherein the atomization cylinder (13) is at least partially nested the liquid storage housing (11), and is connected to the liquid storage housing (11) by means of a non-detachable snap-fit.
3. The electronic atomization system of claim 1, wherein the atomization core module (102) comprises a casing pipe (19) sleeved outside at least part of the atomization cylinder (13), and the liquid storage housing (11) is at least partially embedded into the casing pipe (19) and is connected to the casing pipe (19) by means of a non-detachable snap-fit.
4. The electronic atomization system of claim 1, wherein the atomization cylinder (13) comprises a cylindrical connection portion (132), the outer wall surface of the cylindrical connection portion (132) is provided with an external thread, and the inner wall surface of the battery housing component (18) is provided with an internal thread matching the external thread.
5. The electronic atomization system of claim 1, wherein the atomization cylinder (13) is conductive, the atomization core module (102) further comprises a first electrode post (151) disposed in the atomization cylinder (13) in an insulated manner, and the first electrode post (151) and the atomization cylinder (13) are respectively electrically connected to the atomization core (14).
6. The electronic atomization system of claim 5, wherein the power module (103) comprises a second electrode post (152) disposed in the battery housing component (18), and the first electrode post (151) is capable of abutting to the second electrode post (152) to be conductive.
7. The electronic atomization system of claim 1, wherein the main unit (200) comprises a power supply module (201), and the power supply module (201) comprises a housing (21), a power supply (22) disposed in the housing (21), and at least two charging electrodes (23) electrically connected to the power supply (22), wherein
the housing (21) is provided with a second accommodating cavity (212) configured to accommodate at least part of the power module (103), the power module (103) comprises at least two conductive electrodes (180), and the at least two conductive electrodes (180) are capable of abutting to the at least two charging electrodes (23) to be conductive.
8. The electronic atomization system of claim 7, wherein the housing (21) is provided with an accommodating cavity (211) configured to accommodate at least part of the liquid supply module (202).
9. The electronic atomization system of claim 7, wherein the battery housing component (18) comprises a first conductive housing (181), a second conductive housing (183), and an insulating housing (182) at least partially disposed between the first conductive housing (181) and the second conductive housing (183), and the at least two conductive electrodes (180) comprise the first conductive housing (181) and the second conductive housing (183).
10. The electronic atomization system of any one of claims 1 to 9, wherein the liquid supply module (202) comprises a second liquid guide component (26) in fluid communication with the liquid storage tank (250), the second liquid guide component (26) at least partially extends into the first accommodating cavity (251), and the second liquid guide component (26) is in fluid communication with the first liquid guide component (12) when the liquid storage module (101) is at least partially accommodated in the first accommodating cavity (251).
11. The electronic atomization system claim 10, wherein the second liquid guide component (26) includes at least one liquid guide element (264), and the first liquid guide component (12) includes at least one liquid guide element (124), preferably, the capillary force of the at least one liquid guide element (124) of the first liquid guide component (12) is greater than the capillary force of the at least one liquid guide element (264) of the second liquid guide component (26).
12. The electronic atomization system of any one of claims 1 to 11, wherein the first liquid guide component (12) includes a liquid guide element (121) and a liquid guide element (122), and both the liquid guide element (121) and the liquid guide element (122) are in tubular shapes, and air flow through holes (120) are formed therein in a penetrating manner.
13. The electronic atomization system of any one of claims 1 to 12, wherein the electronic atomization device (100) is connected to the main unit (200) by using an air suction end where an air suction port (110) of the electronic

atomization device (100) is located.

14. The electronic atomization system of any one of claims 1 to 13, wherein the atomization core module (102) and the liquid storage module (101) are separately packaged.

15. The electronic atomization system of any one of claims 1 to 14, wherein the liquid storage module (101) and the liquid supply module (202) are in one package.

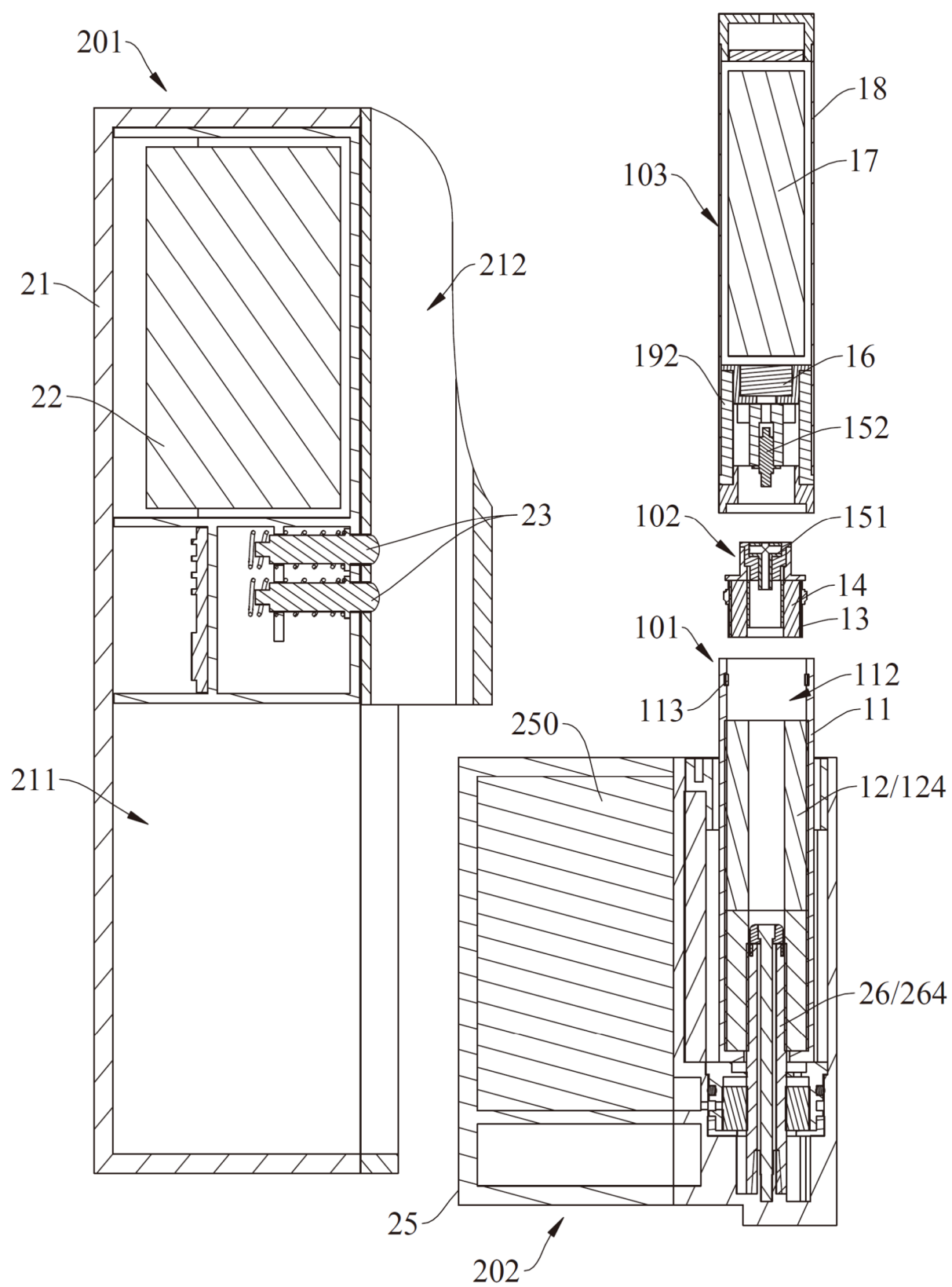


FIG. 1

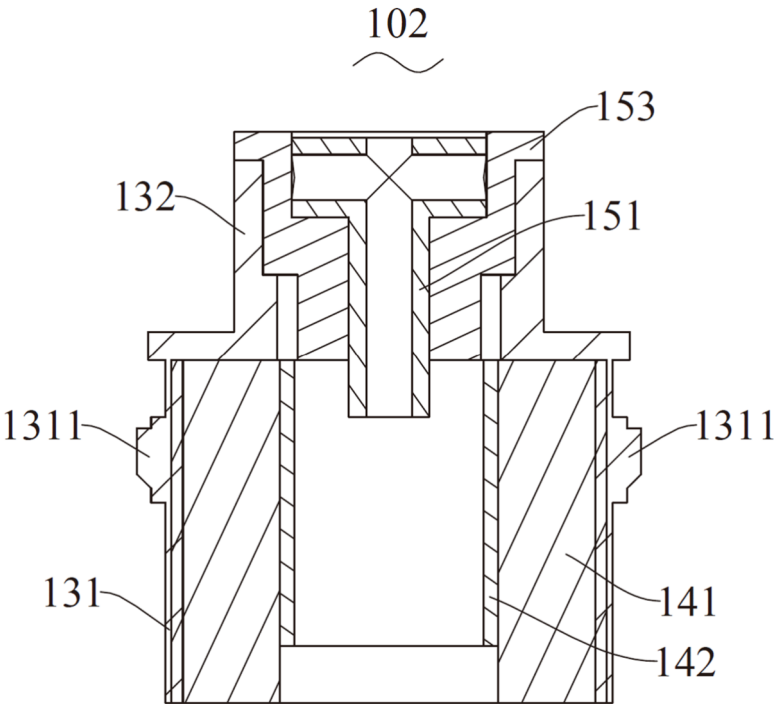


FIG. 2

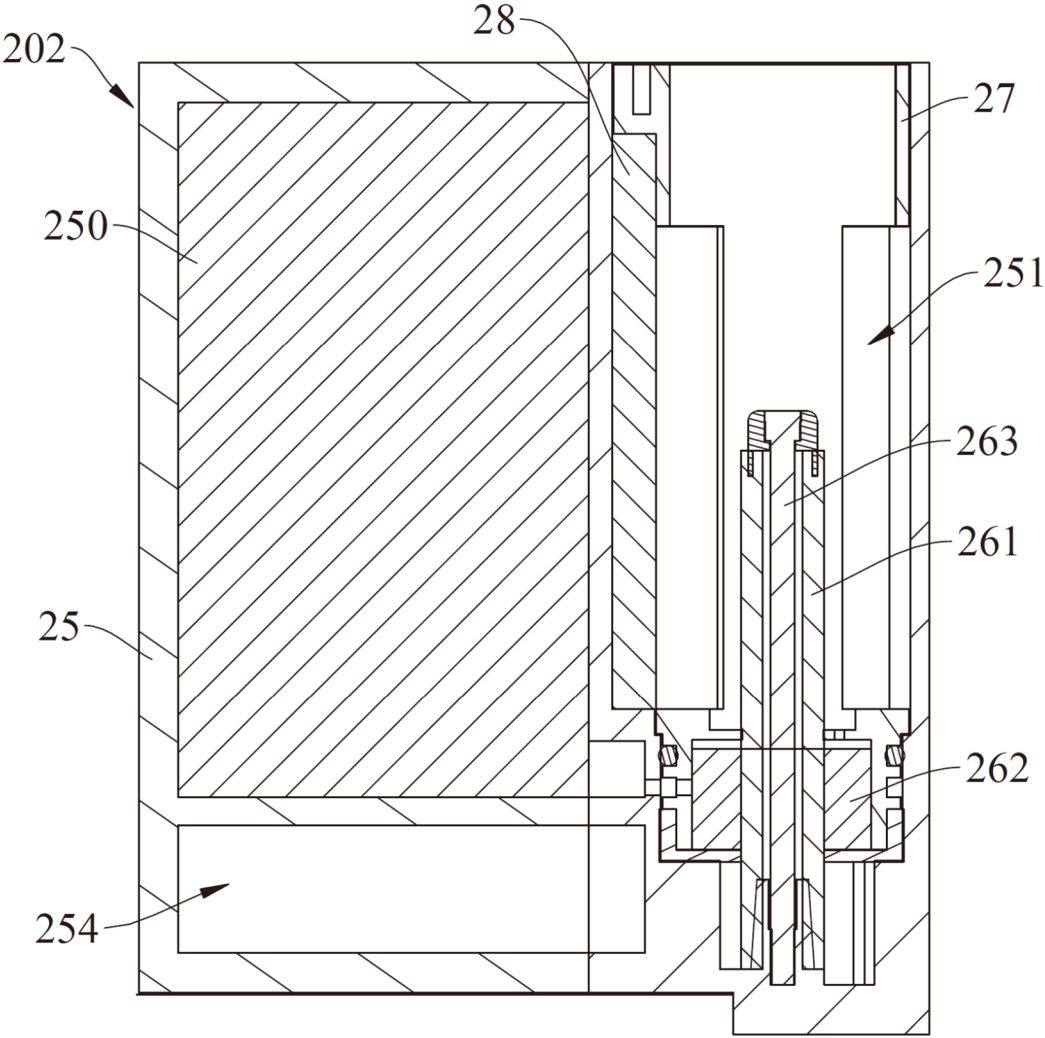


FIG. 3

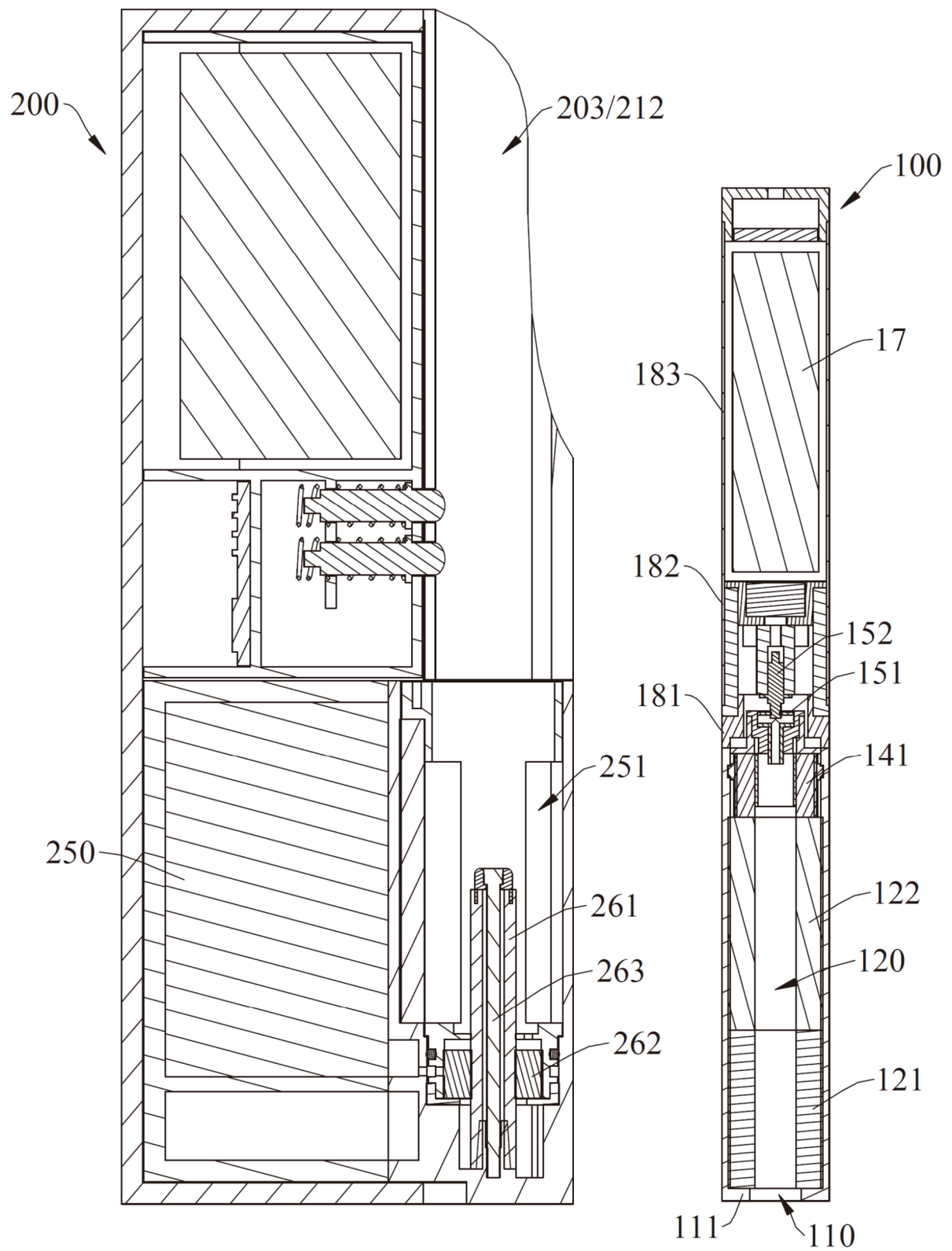


FIG. 4

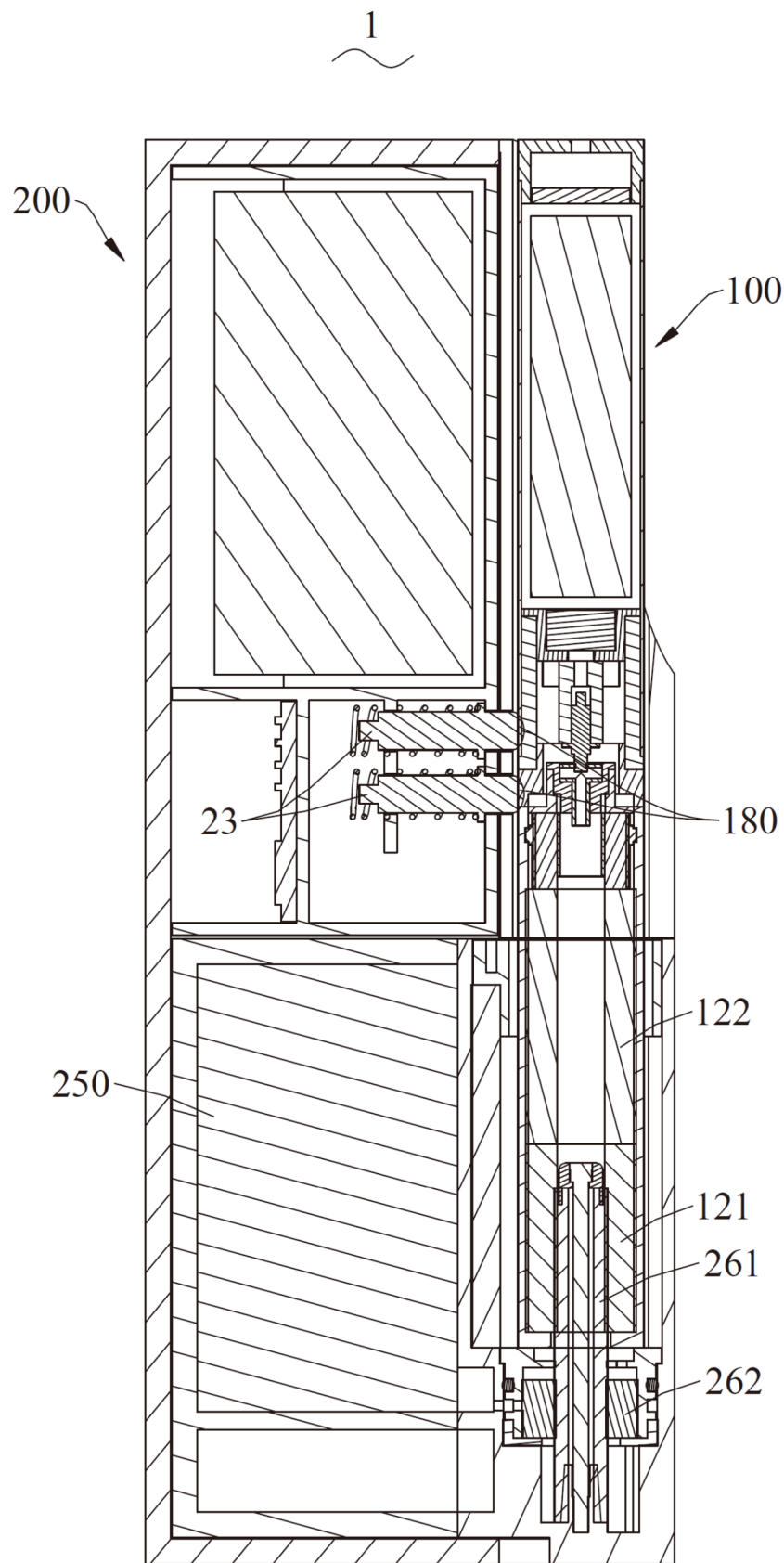


FIG. 5

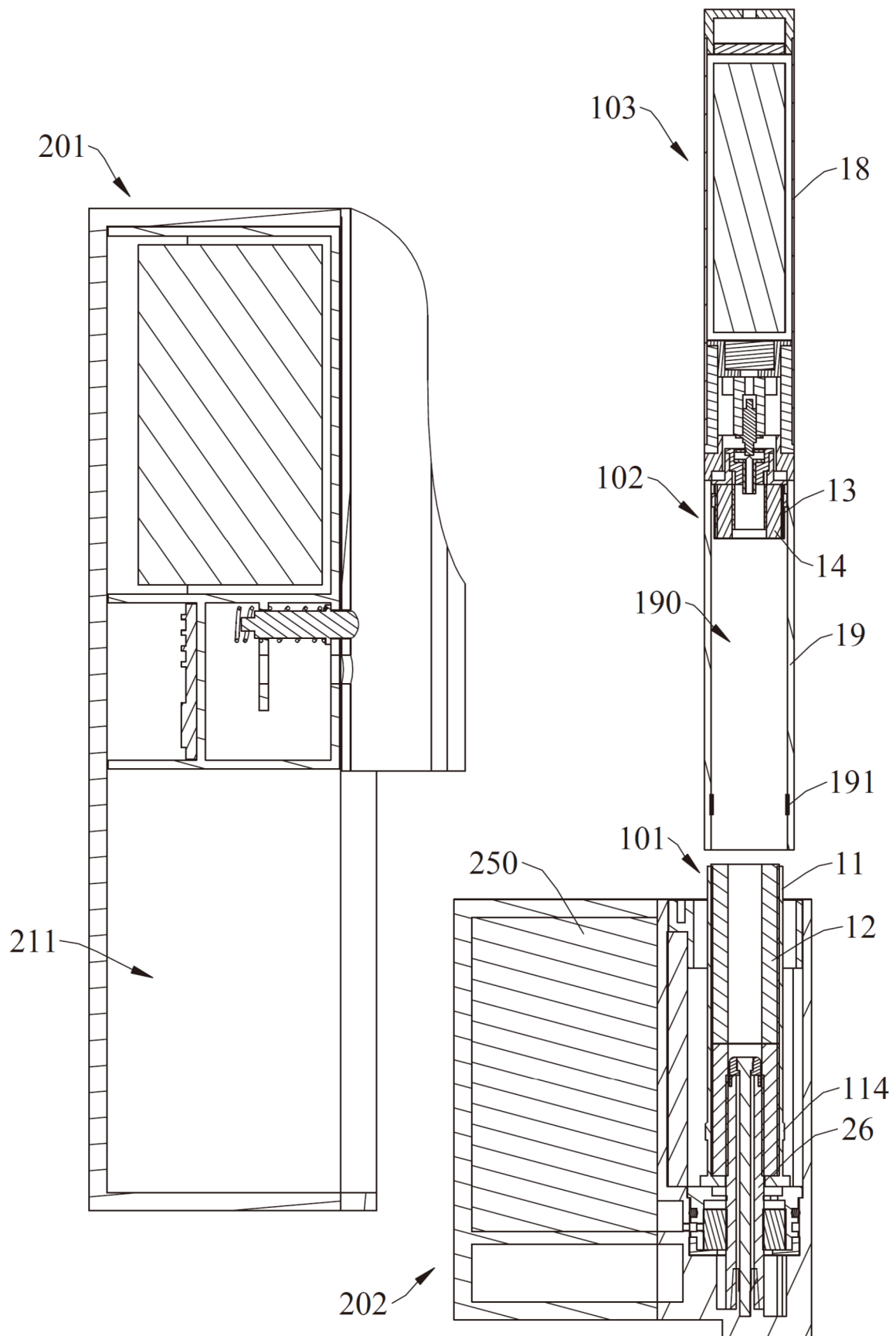


FIG. 6

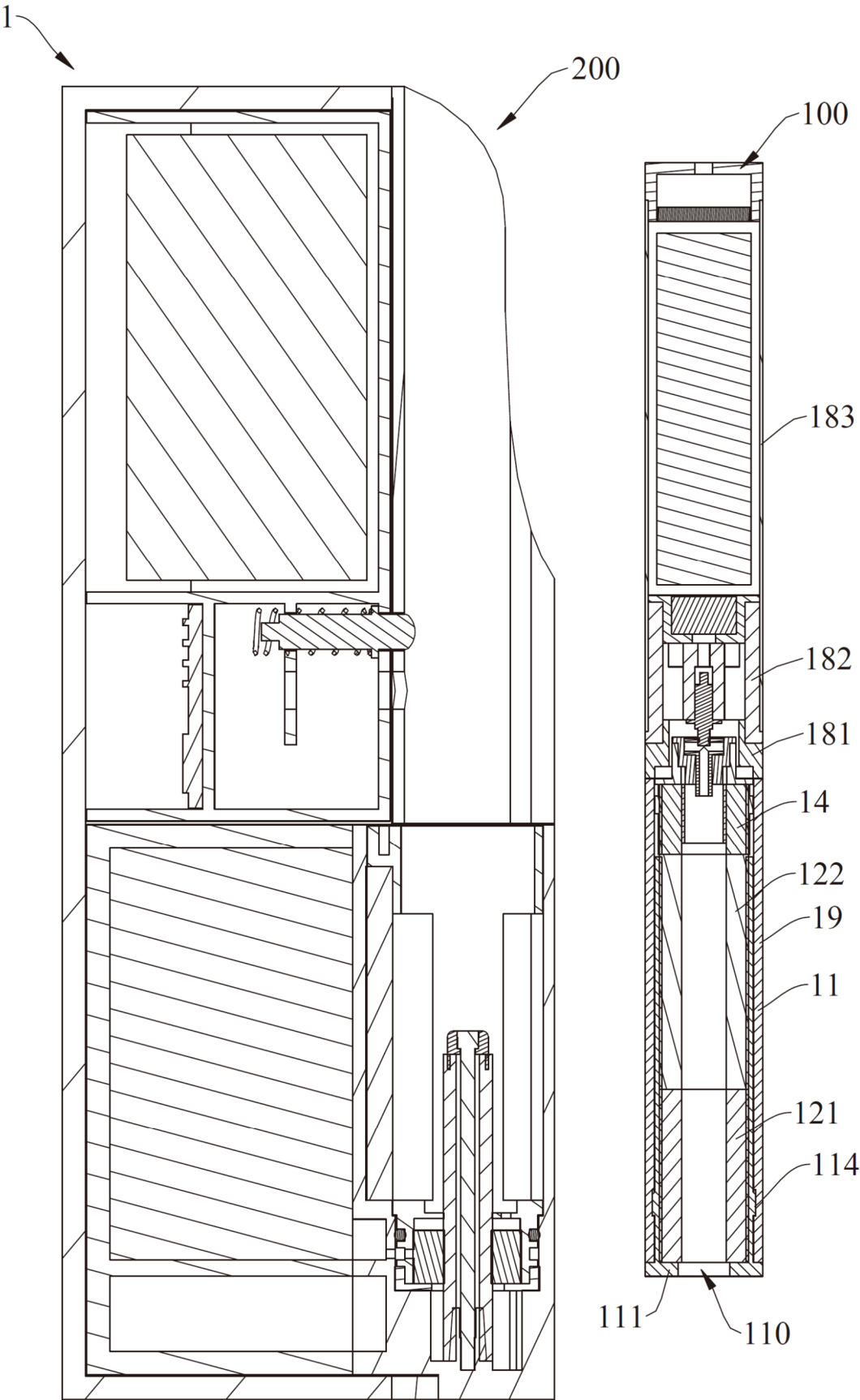


FIG. 7



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Application Number

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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
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