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(54) ELECTRONIC ATOMIZATION DEVICE WITH INDIVIDUALLY REPLACEABLE LIQUID STORAGE ASSEMBLY

(57) The present invention provides an electronic atomization device with individually replaceable liquid storage assembly including: a liquid storage assembly including a liquid reservoir and a liquid storage element disposed within the liquid reservoir, wherein a middle portion of the liquid storage element defines a channel; an atomizing assembly including a hollow housing and an atomizer fixedly connected to the housing, wherein an end of the housing in an axial direction is provided with a first opening via which the liquid storage assembly is pluggably disposed within the housing, an end of the atomizer is inserted into the channel of the liquid storage assembly upon insertion of the liquid storage assembly within the housing; and a main body assembly electrically connected to the atomizer; wherein the liquid storage assembly is individually replaceable independently of the atomizing assembly. The present invention is directed to solving the technical problem of difficulties in individual replacement and material waste of liquid storage assembly in existing electronic atomization devices.

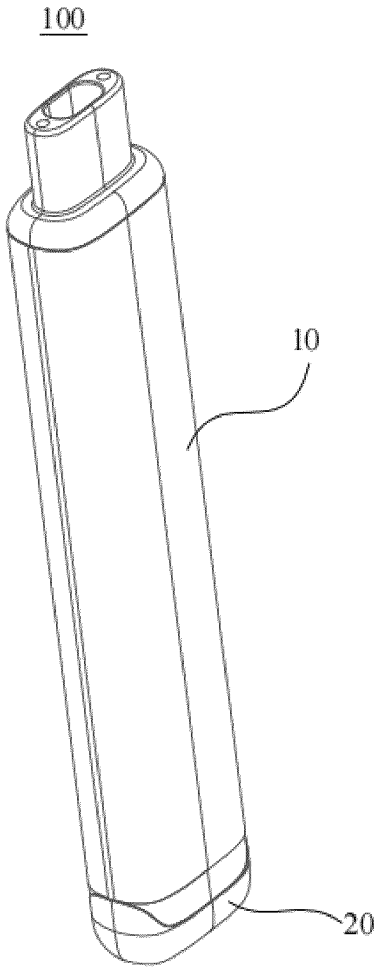

FIG. 1

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Description

TECHNICAL FIELD

[0001] The present invention relates to the technical field of atomization devices, and in particular to an electronic atomization device with individually replaceable liquid storage assembly.

DESCRIPTION OF THE PRIOR ART

[0002] Electronic cigarettes are a non-combustion product configured to replace cigarettes, and is essentially an electronic atomization device. The main working assemblies of an e-cigarette are a main body assembly for control and power supply, a liquid storage assembly containing liquid and an atomizing assembly that heats the liquid to vaporize into a high-temperature vapor to form a smoke resembling that of a conventional cigarette. Existing e-cigarettes, where the cartridge integrating the atomizing assembly and the liquid reservoir is a disposable consumable, the atomizing assembly tends to remain intact when the liquid is exhausted, but the user needs to replace the old cartridge with a new one. Therefore, this kind of product has the problem of material waste.

SUMMARY OF THE DISCLOSURE

[0003] The main object of the present invention is to provide an electronic atomization device with individually replaceable liquid storage assembly, and aim at ameliorating the problems presented in the prior art.

[0004] To address the above issues, the present invention proposes an electronic atomization device with individually replaceable liquid storage assembly, including: a liquid storage assembly including a liquid reservoir and a liquid storage element disposed within the liquid reservoir, wherein a middle portion of the liquid storage element defines a channel; an atomizing assembly including a hollow housing and an atomizer fixedly connected to the housing, wherein an end of the housing in an axial direction is provided with a first opening via which the liquid storage assembly is pluggably disposed within the housing, an end of the atomizer is inserted into the channel of the liquid storage assembly upon insertion of the liquid storage assembly within the housing; and a main body assembly electrically connected to the atomizer; wherein the liquid storage assembly is individually replaceable independently of the atomizing assembly.

[0005] In some embodiments, another end of the housing in the axial direction is provided with a second opening, an internal cavity of the housing defines a first cavity adjacent to the first opening and a second cavity adjacent to the second opening in the axial direction, the atomizer is fixedly disposed in a middle of the internal cavity of the housing, the liquid storage assembly is pluggably disposed within the first cavity, the main body assembly is pluggably disposed within the second cavity, each of the liquid storage assembly and the main body assembly is disposed on one side of the atomizer in the axial direction.

[0006] In some embodiments, the electronic atomization device further includes a mouthpiece integrally disposed at one end of the liquid reservoir and in communication with the channel, wherein the mouthpiece is disposed outside of the housing when the liquid storage assembly is disposed within the first cavity.

[0007] In some embodiments, the channel extends through the liquid storage element in the axial direction, the liquid storage element surrounds and rests on a periphery of an end of the atomizer inserted into the channel when the liquid storage assembly is disposed within the housing.

[0008] In some embodiments, the atomizer includes a liquid guide column and a fixing seat which are interconnected, the liquid guide column is internally provided with an atomizing wick, the fixing seat is connected to the housing, the liquid guide column is inserted into the channel when the liquid storage assembly is inserted into the housing.

[0009] In some embodiments, the liquid storage assembly further includes a first sealing gasket disposed at one end of the liquid reservoir.

[0010] In some embodiments, the liquid guide column and the fixing seat define a penetrating tunnel in the axial direction within which the atomizing wick is disposed, the liquid guide column is provided with a penetrating liquid inlet in the radical direction, the liquid inlet is in communication with the tunnel.

[0011] In some embodiments, an upper end of the liquid inlet is provided with a liquid guide port facilitating liquid conduction.

[0012] In some embodiments, a connecting strip is provided in an axial middle of the liquid inlet, the connecting strip extends from a side of the liquid inlet in a circumferential direction to an opposite side to prevent deformation of the liquid storage element.

[0013] In some embodiments, one end of the fixing seat is provided with a guide ring facilitating insertion into the channel, the guide ring has a radial dimension smaller than a radial dimension of the liquid guide column.

[0014] The electronic atomization device with individually replaceable liquid storage assembly of embodiments of the present invention includes the liquid storage assembly, the main body assembly, and the atomizing assembly, the middle portion of the liquid storage assembly defines the channel, the housing of the atomizing assembly is fixedly connected to the atomizer, and the liquid storage assembly is pluggably disposed within the housing via the first opening of the housing, once the liquid storage assembly is inserted into the housing, one end of the atomizer is inserted into the channel of the liquid storage assembly, which not only facilitates space saving, but also has simple and reasonable assembly, in addition, the liquid storage assembly can be replaced individually from the atomizing assembly, thereby effec-

tively reducing material waste.

BRIEF DESCRIPTION OF DRAWINGS

[0015] In order to illustrate the embodiments of the present invention or the technical solutions in the prior art more clearly, the drawings required for the description of the embodiments or of the prior art will now be briefly described, it will be apparent that the drawings in the following description are merely some embodiments of the present invention, and a person of ordinary skill in the art can derive other drawings from the structures shown in these drawings without creative effort.

FIG. 1 is a perspective structural view of an electronic atomization device in accordance with embodiment one of the present invention;
FIG. 2 is an exploded view of the electronic atomization device shown in FIG. 1;
FIG. 3 is another exploded view of the electronic atomization device shown in FIG. 1 with some parts omitted;
FIG. 4 is a perspective structural view of an atomizer of the electronic atomization device of FIG. 1;
FIG. 5 is a cross-sectional view of the electronic atomization device of FIG. 1;
FIG. 6 is an enlarged view of FIG. 5 at part A;
FIG. 7 is an enlarged view of FIG. 5 at part B;
FIG. 8 is a cross-sectional view from another angle of the electronic atomization device shown in FIG. 6 with some parts omitted;
FIG. 9 is an enlarged view of FIG. 8 at part C;
FIG. 10 is a schematic view of a holder of the electronic atomization device of FIG. 1.

[0016] Reference numerals: 10 atomizing assembly; 11 housing; 111 first cavity; 112 second cavity; 1111 first opening; 1121 second opening; 113 first groove; 114 second groove; 115 clamping opening; 116 second stop; 12 atomizer; 121 liquid guide column; 1211 liquid inlet; 1212 liquid guide port; 1213 connecting strip; 122 fixing seat; 1221 first stop; 1222 third cavity; 1223 hook; 125 tunnel; 123 pin; 124, atomizing wick; 13 second sealing gasket; 131 fourth cavity; 132 plug hole; 14 absorbent cotton; 20 main body assembly; 21 main casing; 211 charging port; 22 holder; 221 pneumatic sensor cavity; 222 battery cavity; 223 circuit board holder; 214 second bump; 215 pull-out portion; 2151 third stop; 23 electrode; 24 battery; 25 circuit board; 26 pneumatic sensor; 30 liquid storage assembly; 31. gasket; 32. liquid reservoir; 321, third opening; 33 liquid storage element; 331 channel; 322 first bump; 34 first sealing gasket; 341 first through hole; 40 mouthpiece.

DESCRIPTION OF EMBODIMENTS

[0017] The technical solutions in embodiments of the present invention will now be clearly and fully described in conjunction with the accompanying drawings in embodiments of the present invention, and it will be apparent that the described embodiments are only some, but not all, embodiments of the present invention. Based on the embodiments of the present invention, all other embodiments obtained by a person of ordinary skill in the art without creative effort are within the protection scope of the present invention.

[0018] It should be noted that if directional indicators such as up, down, etc. are referred to in embodiments of the present invention, the directional indicators are only used to explain the relative positional relationship, movement, etc. between components in a certain attitude (as shown in the drawings), and if the certain attitude changes, the directional indicators accordingly change.

[0019] In addition, if there is a description referring to "first", "second", etc. in an embodiment of the present invention, the description of the "first", the "second", etc. is used for descriptive purposes only and is not to be understood as indicating or implying relative importance thereof or implying an indication of the number of technical features indicated. Thus, a feature qualified as "first" and "second" may explicitly or implicitly include at least one such feature.

[0020] Referring now to FIGS. 1-3, an embodiment of the present invention provides an electronic atomization device 100 with individually replaceable liquid storage assembly, including: an atomizing assembly 10, a main body assembly 20, and a liquid storage assembly 30. The liquid storage assembly 30 is configured to store a liquid, the atomizing assembly 10 is configured to heat the liquid, and the main body assembly 20 is configured to control a heating of the atomizing assembly 10. The liquid storage assembly 30 is pluggably connected to the atomizing assembly 10, such that the liquid storage assembly 30 can be replaced individually from the atomizing assembly 10.

[0021] In particular, as shown in FIG. 2, the liquid storage assembly 30 includes a liquid reservoir 32 having a generally hollow cylindrical shape, the liquid is contained in the liquid reservoir 32. A penetrating channel 331 in the axial direction is also provided within the liquid reservoir 32 for the passage of ambient air as well as the generated smoke. Note that axial direction and radial direction herein refer to axial direction and radial direction of the electronic atomization device 100 respectively. The configuration of the liquid and channel 331 in this embodiment includes, but is not limited to, the following forms: a liquid storage element 33 is provided in the liquid reservoir 32, the liquid is adsorbed by the liquid storage element. The channel 331 is provided in the liquid storage element 33 and the channel 331 extends through the liquid storage element 33 in the axial direction. It is noted that the liquid storage element 33 can restrict a flow of the liquid when the channel 331 is not in communication with the outside (no suction). When the channel 331 is in communication with the outside, the liquid storage element 33 is able to make the liquid flow at an appropriate

flow rate to the atomizing assembly 10. Preferably, the dimensions of the liquid storage element 33 are adapted to an internal profile of the liquid reservoir 32, i.e., the liquid storage element 33 is substantially attached to an internal wall of the liquid reservoir 32. In this embodiment, the liquid storage element 33 is liquid storage cotton. It will be appreciated that in other embodiments, a liquid storage element made of one or more of ceramic, microporous ceramic, diatomaceous earth may also be provided to adsorb the liquid. The liquid storage element 33 is provided so that liquid can be adsorbed thereon, the fluidity of the liquid can be reduced and the risk of liquid leakage can be reduced. And during replacing the liquid storage element 33, the liquid storage element 33 can be placed in the liquid reservoir 32 without inverting the liquid reservoir 32, thereby eliminating burdensome operations of injecting the liquid and resulting in convenient operation.

[0022] To better seal the liquid reservoir 32, the electronic atomization device of this embodiment also includes a mouthpiece 40 for a user to smoke, ambient air may enter the electronic atomization device, and eventually generated smoke may also flow to the mouthpiece 40. Preferably, as shown in FIG. 2, the mouthpiece 40 is connected to and seals an upper end in the axial direction of the liquid reservoir 32 (except for the channel 331). The mouthpiece 40 is also substantially cylindrical and the channel 331 communicates with the mouthpiece 40. Preferably, the mouthpiece 40 is made of a silicone material, to effectively seal against the upper end in the axial direction of the liquid reservoir 32. More preferably, the liquid reservoir 32 and the mouthpiece 40 are integrated to facilitate processing. Both of the liquid reservoir 32 and the mouthpiece 40 can be manufactured as an integrated product to achieve universal production and also to facilitate replacement. It will be appreciated that, in other embodiments, the mouthpiece 40 may take any suitable configuration and may not be integrally formed with the liquid reservoir 32.

[0023] A lower end in the axial direction of the liquid reservoir 32 is provided with a third opening 321, the liquid storage assembly 30 further includes a first sealing gasket 34 for sealing the third opening 321. The first sealing gasket 34 rests on a lower end face in the axial direction of the liquid storage element 33. The first sealing gasket 34 is provided with a penetrating first through hole 341 in the axial direction communicating and coaxial with the channel 331 of the liquid storage element 33, such that the first sealing gasket 34 is allowed to seal the liquid within the liquid reservoir 32 without obstructing the passage of the gas in the channel 331. Preferably, a lower end face in the axial direction of the first sealing gasket 34 may also be provided with an annular gasket 31, to further enhance the sealing effect.

[0024] Both ends in the axial direction of the liquid reservoir 32 of the present embodiment provide effective sealing of the liquid within the liquid reservoir 32 by providing the mouthpiece 40 and the first sealing gasket 34. It should be note that, when the liquid reservoir 32 is provided integrally with the mouthpiece 40 as a finished product, when the liquid reservoir 32 is not in use, the mouthpiece 40 and the first through hole 341 of the first sealing gasket 34 may be plugged with a sealing plug (not shown) to prevent evaporation of the liquid therein and to facilitate transport and storage. Prior to fitting liquid reservoir into the housing 11, the sealing plug may be removed.

[0025] In this embodiment, the main body assembly 20 is electrically connected to the atomizing assembly 30, and the main body assembly 20 includes a main casing 21, a pneumatic sensor 26, an electrode 23, a battery 24, and a circuit board 25. The main casing 21 is generally in the shape of a long rod, and is hollow and encases the pneumatic sensor 26, the positive and negative electrodes 23, the battery 24 and the circuit board 25. Specific structures, connection relationships, and modes of operation of the main body assembly 20 will be described in more detail below.

[0026] The atomizing assembly 10 includes a housing 11 and an atomizer 12 which are interconnected, as shown in FIGS. 2 and 8. The housing 11 is long rod shaped and hollow, and the atomizer 12 is disposed within an internal cavity of the housing 11. An upper end in the axial direction of the housing 11 is provided with a first opening 1111. The liquid storage assembly 30 is pluggably disposed within the internal cavity of the housing 11 through the first opening 1111, such that the liquid storage assembly 30 is encased within the housing 11. When the liquid storage assembly 30 is inserted into the housing 11, one end of the atomizer 12 is inserted into the channel 331 of the liquid storage element 33 such that the atomizer 12 is in contact with the liquid storage assembly 30.

[0027] Since the liquid reservoir 32 is provided separately from the atomizer 12 in the electronic atomization device of the present embodiment, a middle of the liquid storage assembly 30 defines a channel 331, the housing 11 of the atomizing assembly 10 is fixedly connected to the atomizer 12, and the liquid storage assembly 30 is capable of being pluggably disposed within the housing 11 via the first opening 1111 of the housing 11, such that when the liquid is exhausted or the liquid storage cotton 33 is damaged, the liquid storage assembly 30 can be pulled out of the housing 11 and then the liquid storage cotton 33 therein is replaced via the third opening 321, without replacing the atomizing assembly 20. The liquid storage assembly 30 is enabled to be individually replaced independently of the atomizing assembly 20. Material waste is effectively reduced. Once the liquid storage assembly 30 is inserted into the housing 11, the liquid guide column 121 of the atomizer 12 can be inserted into the channel 331 from the bottom of the liquid storage assembly 30, such that the atomizing assembly 10 is in contact with the liquid storage assembly 30. It is not only advantageous to save space, but also easy and reasonable to assemble.

[0028] Specifically, as shown in FIG. 8, the housing 11 defines first cavity 111and a second cavity 112 which are oppositely arranged in the axial direction. The first cavity 111 provided with a first opening 1111 facing upwards in the axial direction and dimensions of the first cavity 111 are adapted to the dimensions of the liquid reservoir 32, such that the liquid storage assembly 30 can be inserted into or pulled out of the first cavity 111 through the first opening 1111. The second cavity 112 is provided with a second opening 1121 facing away from the first opening 1111, and the dimensions of the second cavity 112 are adapted to the dimensions of the main casing 21, such that the main body assembly 20 can be inserted into and pulled out of the second cavity 112 through the second opening 1121. Each of the liquid storage assembly 30 and the main body assembly 20 of the present embodiment is located on one side in the axial direction of the atomizer 12. The electronic atomization device 100 is assembled by a two-step operation of inserting the liquid storage assembly 30 into the first cavity 111 and inserting the main body assembly 20 into the second cavity 112. Preferably, the first cavity 111 and the second cavity 112 are formed integrally in this embodiment. It will be appreciated that in other embodiments, the first cavity 111 and the second cavity 112 may also be provided separately.

[0029] Preferably, when the liquid storage assembly 30 is inserted into the housing 11 from the first opening 1111, the liquid storage assembly 30 may be fully accommodated within the housing 11, or a portion of the liquid storage assembly 30 is accommodated within the housing 11 and another portion of the liquid storage assembly 30 is exposed outside the lower end of the housing 11. Once the lower end of the liquid storage assembly 30 is in contact with the upper end of the atomizing assembly 10, the liquid storage assembly 30 may be inserted into the lower end of the atomizing assembly 10 and secured within the housing 11, or attracted and fixed to the lower end of the atomizing assembly 10, or snapped onto the inner wall of the housing 11. Preferably, when the liquid storage assembly 30 is provided inside the housing 11, the mouthpiece 40 is located outside the housing 11. The user may pull the liquid storage assembly 30 out of the first cavity 111 by applying a force to the mouthpiece 40.

[0030] As shown in FIGS. 5 to 7, an outer side wall of the liquid reservoir 32 is provided with a first bump 322 and an inner side wall of the housing 11 is provided with a first groove 113 in a position corresponding to the first bump 322. The first groove 113 is configured to receive the first bump 322. When the liquid storage assembly 30 is accommodated in the first cavity 111, the first bump 322 is snap-fitted into the first groove 113. Such configuration is effective to prevent the liquid storage assembly 30 from falling out of the housing 11 during use. It will be appreciated that a snapping force between the first bump 322 and the first groove 113 is limited, when an outward force applied by a hand on the mouthpiece 40 is greater than this snapping force, the liquid storage assembly 30 can then be pulled out of the housing 11e. Preferably, an inner wall face of the first groove 113 is circular arc shaped, correspondingly an outer wall face of the first bump 322 is circular arc shaped. It is easier to pull out the liquid storage assembly 30 by the abutting fit between the circular arcs of the first bump 322 and the first groove 113.

[0031] As shown in FIGS. 2-3, the atomizer 12 includes a liquid guide column 121 and a fixing seat 122 that are interconnected. The liquid guide column 121 and the fixing seat 122 together define a penetrating tunnel 125 in the axial direction. The tunnel 125 is in communication with the channel 331. An atomizing wick 124 is provided within the tunnel 125. A wall of the liquid guide column 121 is provided with a penetrating liquid inlet 1211 in the radical direction, the atomizing wick 124 is positioned at the liquid inlet 1211. The liquid inlet 1211 is in communication with the channel 125, so that liquid within the liquid storage element 33 can flow from the liquid inlet 1211 of the liquid guide column 121 to the atomizing wick 124 and be heated by the atomizing wick 124 into a smoke which can then flow through the channel 331 to the mouthpiece 31 to be inhaled by a user. In this embodiment, when the atomizer 12 is inserted into the channel 331 of the liquid storage element 33, the liquid storage element 30 surrounds and rests on the periphery of one end of the atomizer 12 inserted into the channel 33.

[0032] In particular, the liquid guide column 121 is hollow cylinder shaped, and the fixing seat 122 is circular table shaped and is located below the liquid guide column 121 in the axial direction, such that the atomizer 12 has the overall shape of letter T upside down. The fixing seat 122 is for fixed connection with the housing 11. When the liquid storage assembly 30 is inserted into the housing 11 from the first opening 1111, the fixing seat 122 holds the liquid storage element 33 and the first sealing gasket 34 and the gasket 31 arranged on a lower end face in the axial direction of the liquid storage element 33 at the third opening 321, while the liquid guide column 121 of the atomizer 12 is inserted into the channel 331 of the liquid storage element 33. A radial dimension of the fixing seat 122 is adapted to that of the liquid storage element 33, and the radial dimension of the liquid guide column 121 is adapted to the radial dimension of the channel 331. When liquid guide column 121 is inserted into channel 331, the outer wall of liquid guide column 121 abuts against the inner wall of channel 331. This configuration, on the one hand, prevents leakage of the liquid from the gap between the liquid guide column 121 and the channel 331, and, on the other hand, allows the liquid guide column 121 to be securely encased by the liquid storage element 33 to enhance its robustness. Preferably, an inner diameter of a first through hole 341 of the first sealing gasket 34 is adapted to an outer diameter of the liquid guide column 121, such that when the liquid storage assembly 30 is inserted into the first cavity 111, the liquid guide column 121 abuts against the first through hole 341, to enhance the sealing and reduce leakage of the

liquid.

[0033] Preferably, the guide ring 126 is provided at an upper end in the axial direction of the liquid guide column 121, the radial dimension of the guide ring 126 is slightly smaller than the radial dimension of the liquid guide column 121, and preferably the radial dimension thereof tapers in a direction away from the liquid guide column 121. This arrangement allows smooth insertion of the liquid guide column 121 into the channel 331. Preferably, an upper edge of the liquid inlet 1211 is provided with a liquid guide port 1212, the liquid guide port 1212 is strip shaped, and extends away from the fixing seat 122 in the axial direction. The liquid guide port 1212 can increase the liquid guide velocity of the liquid and facilitate evacuation of air bubbles from the liquid. More preferably, the axial middle of the liquid inlet 1211 is provided with a connecting strip 1213 extending from one side of the liquid inlet 1211 to an opposite side in a circumferential direction, to prevent deformation of the liquid storage element 33 by the tension of the liquid guide column 121 from the heating expansion.

[0034] To avoid leakage of liquid downward from the fixing seat 122, as shown in FIG. 3, the fixing seat 122 is provided with a first stop 1221 convex toward the liquid storage assembly 30, the first stop 1221 has a smaller dimension than those of the other portions of the fixing seat 122. And the dimension of the first stop 1221 are adapted to the dimension of the fourth opening 321 of the liquid reservoir 32, such that when the liquid storage assembly 30 is inserted into the first cavity 111, an end face of the first stop 1221 in the axial direction closes the fourth opening 321 (except for the channel 331) and a peripheral wall of the first stop 1221 abuts against the inner wall of the liquid reservoir 32, thereby effectively reducing leakage of the liquid.

[0035] The atomizing assembly 10 may also be provided with a second sealing gasket 13. Referring to FIG. 2, the fixing seat 122 is with a third cavity 1222 recessed away from the main body assembly 20, the second sealing gasket 13 is disposed within the third cavity 1222. The second sealing gasket 13 is also provided with a second through hole 131 communicating with the tunnel 125 for conducting a gas flow. When the main body assembly 20 is inserted into the second cavity 112, the second sealing gasket 13 separates the main body assembly 20 from the atomizing assembly 10, to prevent the liquid in the liquid reservoir 32 from leaking through the gaps between the components and contaminating the other components. Preferably, as shown in FIG. 3, an end face of the second sealing gasket 13 facing the fixing seat is concavely provided with a fourth cavity 131, an absorbent cotton 14 is provided in the fourth cavity 131. The absorbent cotton 14 abuts against the fixing seat 122 and the second sealing gasket 13 respectively, for absorbing liquid or condensed water flowing from the tunnel 125 to the second sealing gasket 13.

[0036] To enhance the stability of the connection between the atomizer 12 to the housing 11, referring to FIGS. 2, 8 and 9, a peripheral wall of the fixing seat 122 is convexly provided with a hook 1223, and the housing 11 is provided with a penetrating clamping opening 115 in the radical direction at a position corresponding to the hook 1223. The clamping opening 115 is configured to receive the hook 1223, and the fixing seat 122 can be secured to the housing 11 by connection of the clamping opening 115 to the hook 1223. The hook 1223 is preferably made of a resilient material, the fixing seat 122 can be disengaged from the housing 11 when the hook 1223 is forced to disengage from the clamping opening 115. Preferably, the number of the hook 1223 is two, the two hooks 1223 are symmetrically disposed on the peripheral wall of the fixing seat 122 in the radial direction. Correspondingly, two clamping openings 115 are also provided, so that the fixing seat 122 is more evenly forced when disengaged and easily disengaged from the housing 11. Preferably, as shown in FIG. 9, the inner wall of the housing 11 can also be concavely provided with a second stop 116, the second stop 116 can hold a portion of a bottom end of the fixing seat 122, to prevent the fixing seat 122 from running downward in the axial direction.

[0037] In this embodiment, when the main body assembly 20 is inserted into the second cavity 112 through the second opening 1121, the main body assembly 20 establishes an electrical connection with the atomizing assembly 10. Specifically, as shown in FIGS. 2-4, the atomizer 12 includes two pins 123 extending downwardly in the axial direction, the pins 123 are connected with an atomizing wick 124. The second sealing gasket 13 is provided with two plug holes 132 extending in the axial direction. The pins 124 pass through the absorbent cotton 14 in the fourth cavity 131 and are bent into the plug holes 132 respectively. As shown in FIGS. 2 and 10, the main casing 21 is open at its upper end and receives a holder 22 defining a pneumatic sensor cavity 211, a battery cavity 222 and a circuit board holder 223 which are configured to receive the pneumatic sensor 26, the battery 24 and the circuit board 25 respectively. The main casing 21 encases the holder 22 and the components within the holder 22 for protection. The circuit board 25 is electrically connected with the pneumatic sensor 26 and the battery 24. The pneumatic sensor cavity 211 is located below the second through hole 131 in the axial direction and communicates with the tunnel 125, and the battery cavity 222 and the circuit board holder 223 are located below the pneumatic sensor cavity 211 in the axial direction. The positive and negative electrodes 23 protrude from the main casing 21. When the main body assembly 20 is inserted into the second cavity 112, the positive and negative electrodes 23 are inserted into the plug holes 132 of the second sealing gasket 13, to connect with the pins 123, thereby establishing an electrical connection with the atomizing wick 124 of the atomizer 12. When the mouthpiece 40 is sucked, ambient air flows through the pneumatic sensor cavity 211 and triggers the pneumatic sensor 26, the pneumatic sensor 26 sends a trigger signal to the circuit board 25, thereby driving the atom-

izing wick 124 to heat the liquid to generate smoke.

[0038] Once the main body assembly 20 is inserted into the second cavity 112 of the housing 11 from the second opening 1113, the main body assembly 20 may be fully received within the housing 11 or partially received within the housing 11, or partially received within the housing 11 and partially exposed from the lower end of the housing 11. Once the upper end of the main body assembly 20 is in contact with the lower end of the atomizing assembly 10, the main body assembly 20 may be plugged onto the lower end of the atomizing assembly 10 and secured within the second chamber 112, or attracted and fixed to the lower end of the atomizing assembly 10, or clamped onto the inner wall of the housing 11. Since the main casing 21 of the main body assembly 20 is clamped internally in this embodiment, no other components inside are visible when the main body assembly 20 is inserted into the second cavity 112, which makes the overall look more aesthetically pleasing. At the same time, since main body assembly 20 is pluggable, it is easier to clean the condensate from the main body assembly 20 after the main body assembly 20 is pulled out. The main body assembly 20 in the prior art is complex to assemble and disassemble, inconvenient to clean, and costly to maintain.

[0039] As one embodiment, the main body assembly 20 of the present embodiment is received in the second cavity 112 and is partially exposed from the lower end of the second opening 1121 of the housing 11, and the exposed portion of the main body assembly 20 forms a pull-out portion 215. The pull-out portion 215 is exposed from the lower end of the housing 11, so that when the entire main body assembly 20 needs to be replaced, the main body assembly 20 is pulled out as a whole by applying a force to the pull-out portion 215 in a direction away from the second opening 1121. The circuit board holder 223 is located in an area where the pull-out 215 is located. And a lower end of the pull-out portion 215 in the axial direction may be provided with a charging port 211 configured to charge the battery 24 while also configured for intake.

[0040] Preferably, the upper end of the pull-out portion 215 is provided with a third stop 2151 configured to contact with the lower end of the housing 11, and an outer edge of the third stop 2151 is flush with the outer edge of the lower end of the housing 11 after contact. The third stop may prevent over insertion of the main body assembly 20 into the housing 11 and damage to the atomizing assembly 10. At the same time, the outer edge of the third stop is flush with the outer edge of the lower end of the housing 11, so that the housing 11 and the pull-out portion 215 appear integral from outside, which makes the entire atomization device more aesthetically pleasing.

[0041] As shown in FIGS. 5 to 7, the outer side wall of the main casing 21 is convexly provided with a second bump 214. The inner side wall of the housing 1 1 is provided with a second groove 114 in a position corresponding to the second bump 214. The second bump 214 is snap-fitted into the second groove 114 when the main body assembly 20 is received within the second cavity 112. Such configuration is effective to prevent the main body assembly 20 from falling out of the housing 11 during use. As it will be appreciated, the main body assembly 20 may then be pulled out of the housing 11 when an outward force applied on the pull-out portion 213 by a hand is greater than this snapping force. Preferably, the inner wall face of the second groove 114 are circular arc shaped, correspondingly the outer wall face of the second bump 214 are circular arc shaped. It is easier to pull out the liquid storage assembly 30 by the abutting fit between the circular arcs of the second bump 214 and the second groove 114.

[0042] The housing 11 of the electronic atomization device 100 of the present embodiment may also be provided with a decorative sticker. The users can change the decorative sticker according to their own preferences, to achieve a refreshing new visual experience.

[0043] The electronic atomization device 100 of the present embodiment operates as follows: the liquid storage assembly 30 is inserted into the first cavity 111 and the atomizer 12 is inserted into the channel 331; the main body assembly 20 is inserted into the second cavity 112 and then the mouthpiece 40 may be sucked to allow the atomizer 12 to operate.

[0044] When the liquid is exhausted or the liquid storage element 33 is damaged, the liquid storage element 33 can be replaced by simply pulling the liquid storage assembly 30 out of the first opening 1111 and removing the first sealing gasket 34; when there is a failure in the atomizer 12, the atomizer 12 can be removed and replaced individually by simply removing the liquid storage assembly 30 from the first opening 1111 and then applying force to the hook 1223 to disengage the fixing seat 122 from the housing 11; when there is a failure in the main body assembly 20, the main body assembly 20 may simply be pulled out of the second opening 1121 to be replaced or serviced.

[0045] This embodiment not only facilitates space saving but also is aesthetically pleasing by providing the electronic atomization device 100 as three separate assemblies of the liquid storage assembly 30, the main body assembly 20, and the atomizer 12, and pluggably connecting the liquid storage assembly 30, the main body assembly 20, and the atomizer 12 to the housing 11. Also, the assembly is simple and reasonable, the assembly of the entire electronic atomization device 100 can be completed by simple two-step insertion (insertion of the liquid storage assembly 30 into the first cavity 111 and insertion of the main body assembly 20 into the second cavity 112). In addition, each of the three assemblies can be individually replaced and reused multiple times, which effectively reduces material waste. And the three assemblies are structurally complete and can be prepared in alternative inner container formats to achieve universal production.

[0046] The foregoing is merely an example to clearly illustrate the present invention, without thus limiting the scope of the present invention, all embodiments are not intended to be exhaustive, equivalent structural modifications made by utilizing the contents in the present subject matter of the present invention under the concept of the present invention and directly/indirectly used in other relevant technical fields, are within the scope of the present invention.

Claims

1. An electronic atomization device with individually replaceable liquid storage assembly, **characterized by** comprising:

   a liquid storage assembly comprising a liquid reservoir and a liquid storage element disposed within the liquid reservoir, wherein a middle portion of the liquid storage element defines a channel;
   an atomizing assembly comprising a hollow housing and an atomizer fixedly connected to the housing, wherein an end of the housing in an axial direction is provided with a first opening via which the liquid storage assembly is pluggably disposed within the housing, an end of the atomizer is inserted into the channel of the liquid storage assembly upon insertion of the liquid storage assembly within the housing; and
   a main body assembly electrically connected to the atomizer;
   wherein the liquid storage assembly is individually replaceable independently of the atomizing assembly.

2. The electronic atomization device of claim 1, **characterized in that**,
   another end of the housing in the axial direction is provided with a second opening, an internal cavity of the housing defines a first cavity adjacent to the first opening and a second cavity adjacent to the second opening in the axial direction, the atomizer is fixedly disposed in a middle of the internal cavity of the housing, the liquid storage assembly is pluggably disposed within the first cavity, the main body assembly is pluggably disposed within the second cavity, each of the liquid storage assembly and the main body assembly is disposed on one side of the atomizer .

3. The electronic atomization device of claim 1, **characterized by**,
   further comprising a mouthpiece integrally disposed at one end of the liquid reservoir and in communication with the channel, wherein the mouthpiece is disposed outside of the housing when the liquid storage assembly is disposed within the first cavity.

4. The electronic atomization device of claim 1, **characterized in that**,
   the liquid storage assembly further comprises a first sealing gasket disposed at one end of the liquid reservoir.

5. The electronic atomization device of claim 1, **characterized in that**,
   the channel extends through the liquid storage element in the axial direction, the liquid storage element surrounds and rests on a periphery of an end of the atomizer inserted into the channel when the liquid storage assembly is disposed within the housing.

6. The electronic atomizing device of claim 5, **characterized in that**,
   the atomizer comprises a liquid guide column and a fixing seat which are interconnected, the liquid guide column is internally provided with an atomizing wick, the fixing seat is connected to the housing, the liquid guide column is inserted into the channel when the liquid storage assembly is inserted into the housing.

7. The electronic atomization device of claim 6, **characterized in that**,
   the liquid guide column and the fixing seat define a penetrating tunnel in the axial direction within which the atomizing wick is disposed, the liquid guide column is provided with a penetrating liquid inlet in the radical direction, the liquid inlet is in communication with the tunnel.

8. The electronic atomizing device of claim 6, **characterized in that**,
   one end of the fixing seat is provided with a guide ring facilitating insertion into the channel, the guide ring has a radial dimension smaller than a radial dimension of the liquid guide column.

9. The electronic atomization device of claim 7, **characterized in that**,
   a connecting strip is provided in an axial middle of the liquid inlet to prevent deformation of the liquid storage element, the connecting strip extends from a side of the liquid inlet in a circumferential direction to an opposite side.

10. The electronic atomization device of claim 7, **characterized in that**,
    an upper end of the liquid inlet is provided with a liquid guide port facilitating liquid conduction.

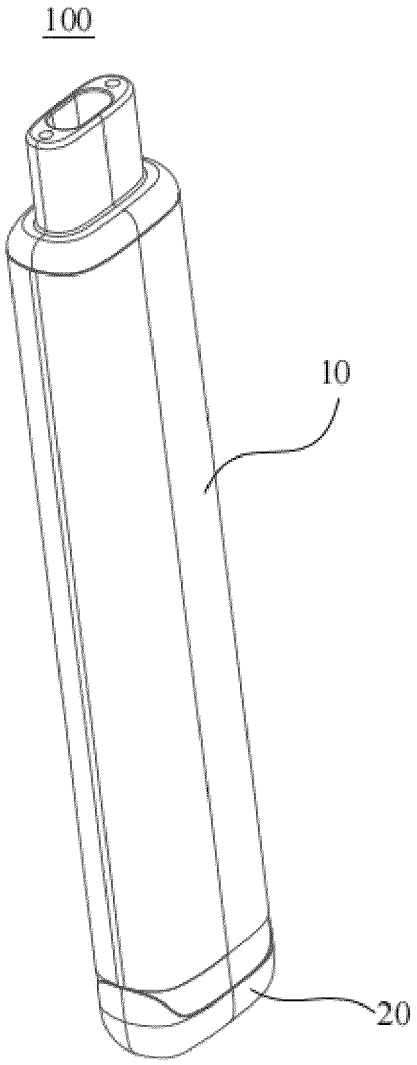

FIG. 1

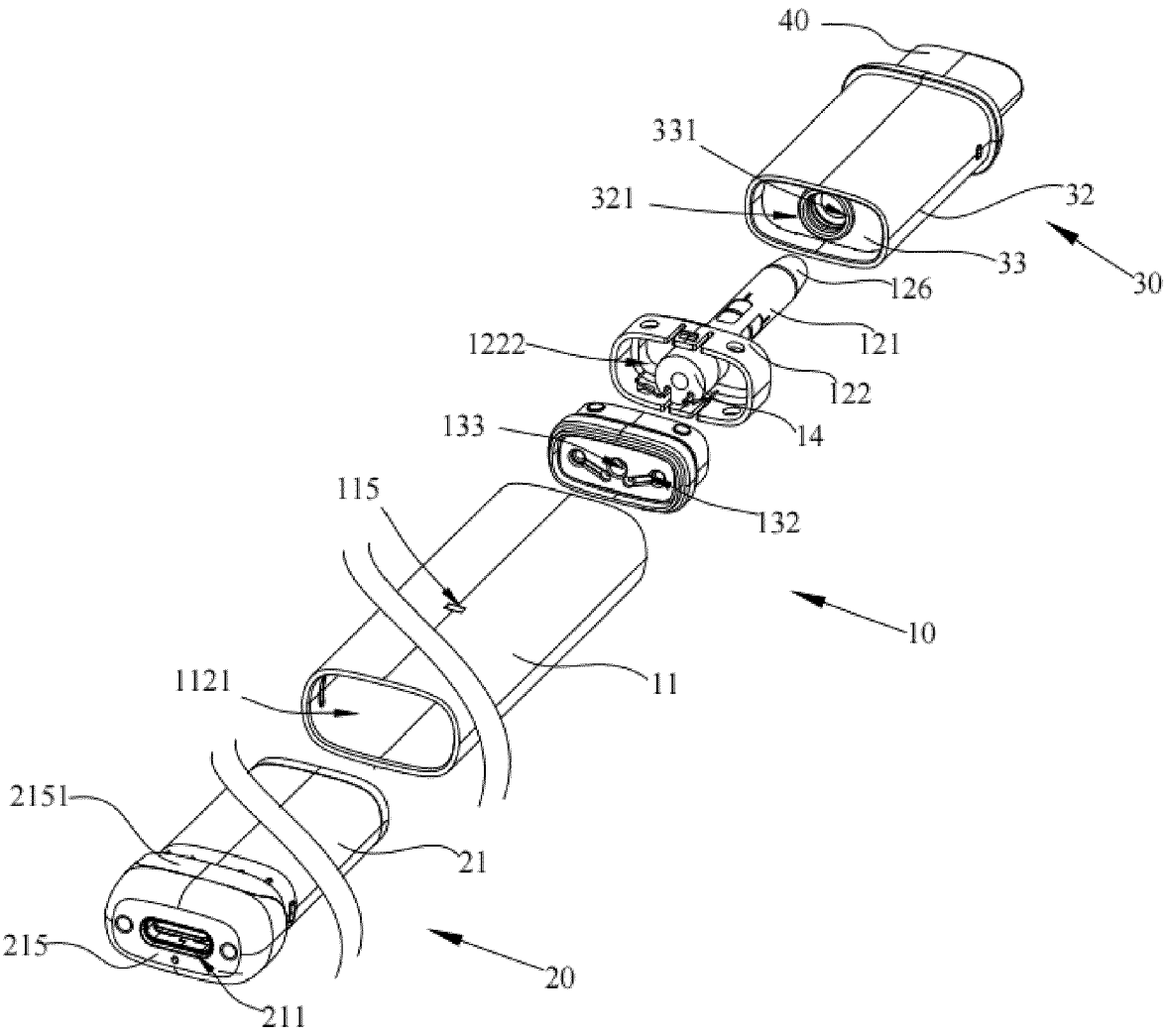
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FIG. 2

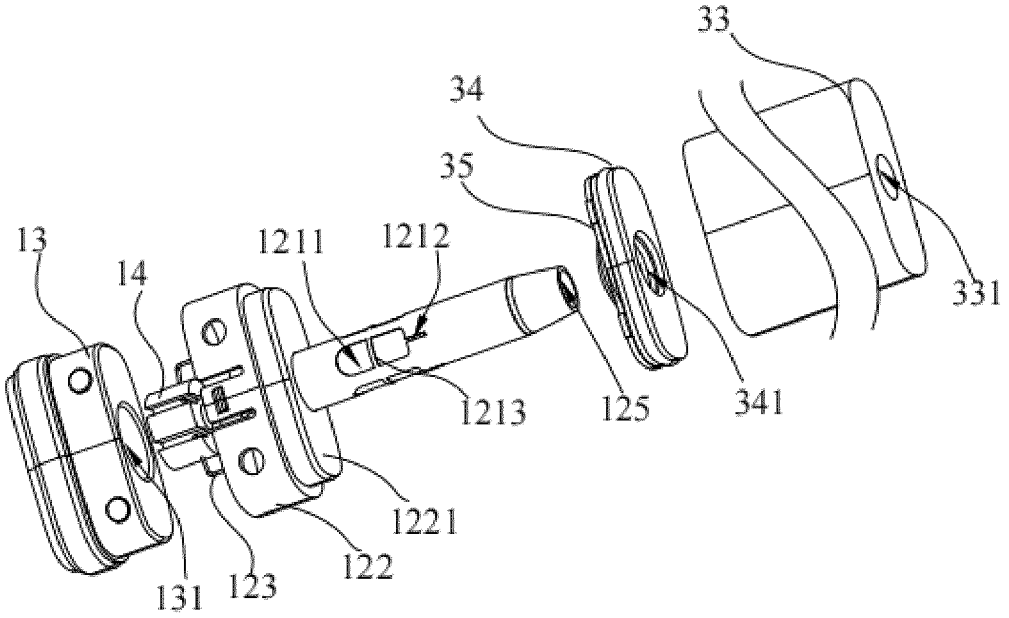
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FIG. 3

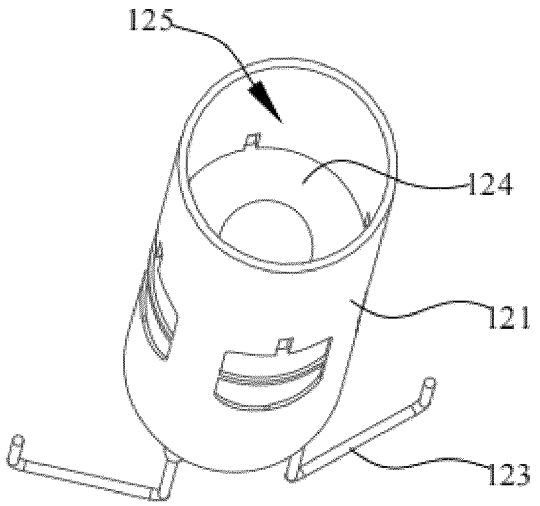
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FIG. 4

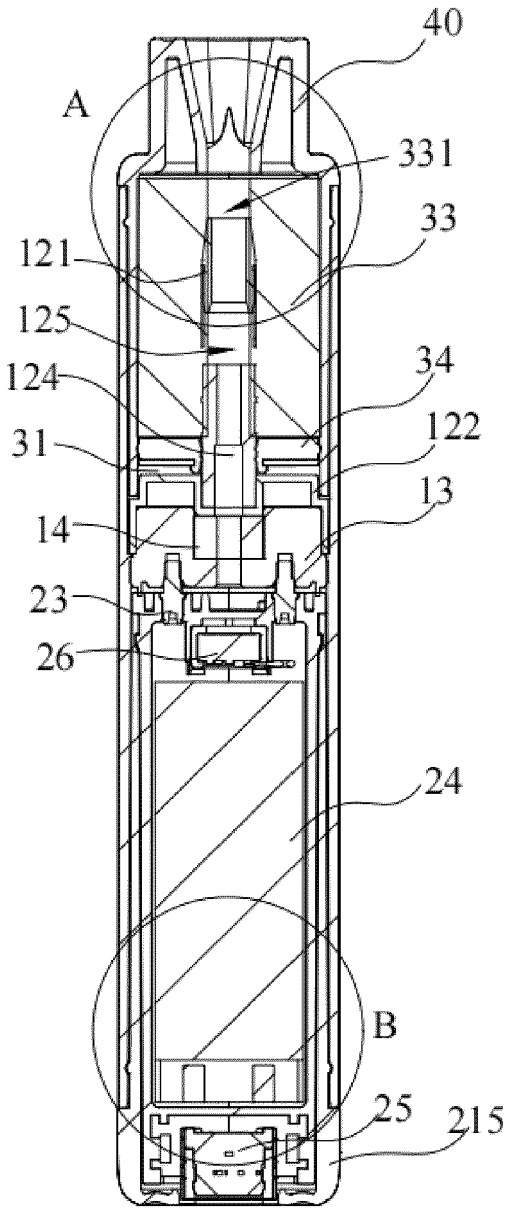

FIG. 5

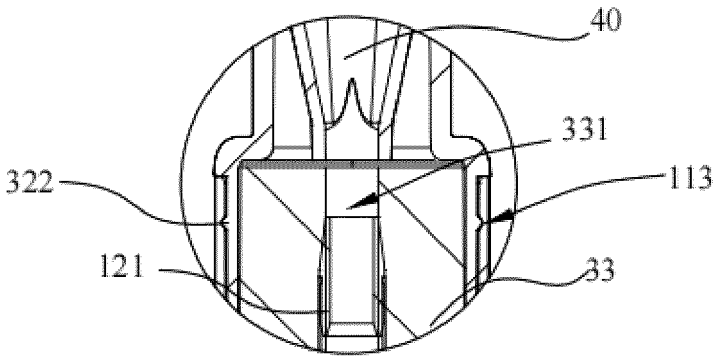

FIG. 6

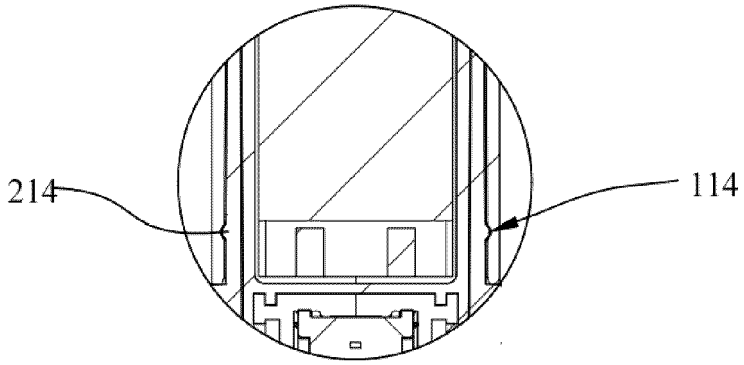

FIG. 7

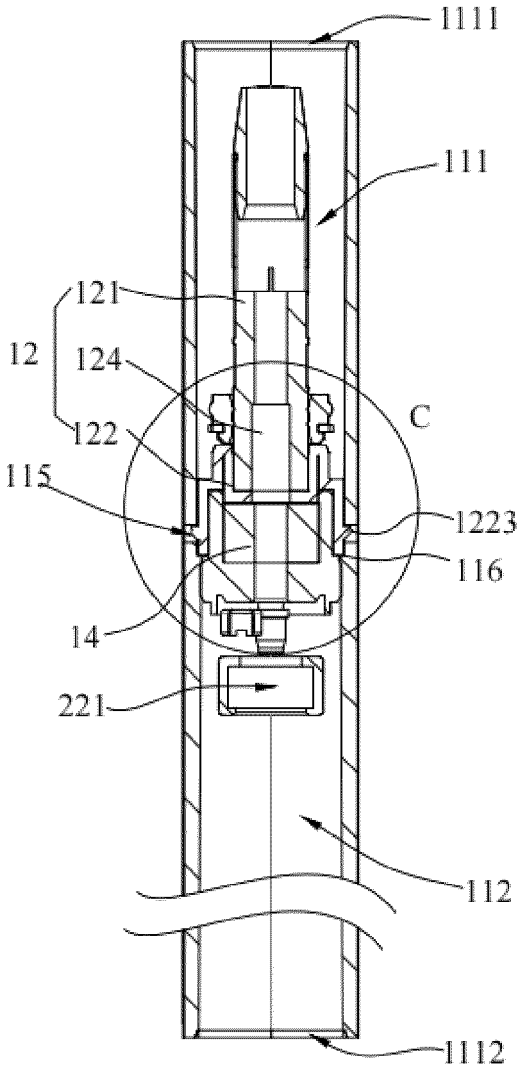
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FIG. 8

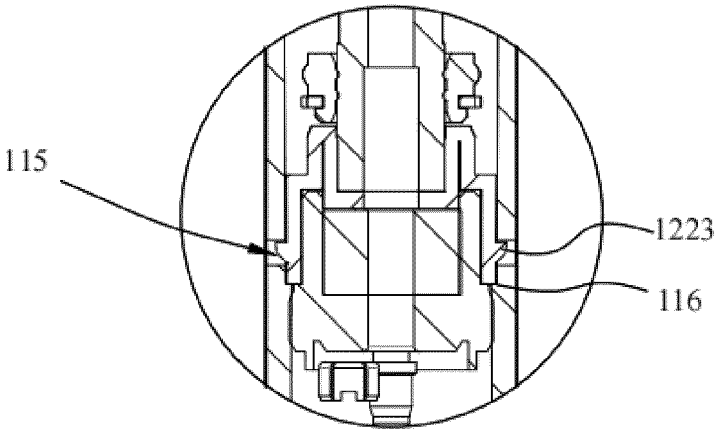
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FIG. 9

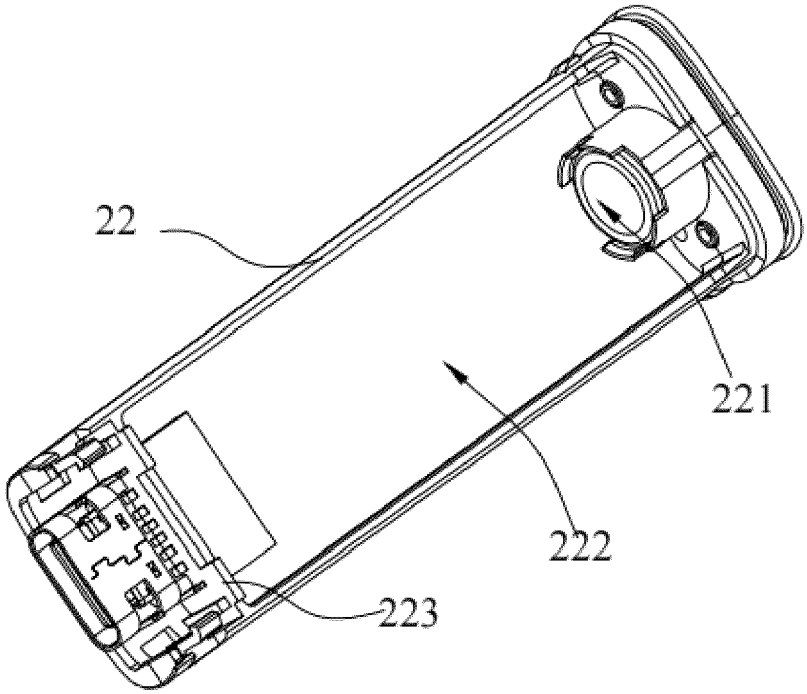

FIG. 10

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EUROPEAN SEARCH REPORT

Application Number
EP 23 18 0736

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	CN 215 958 321 U (SHENZHEN KUNA SCIENCE AND TECH CO LTD) 8 March 2022 (2022-03-08) * see also inofficial translation; figures 1-3 *	1-10	INV. A24F40/10 A24F40/40
X	CN 206 275 175 U (ZHOU CHENGLONG) 27 June 2017 (2017-06-27) * see also inofficial translation; figure 1 *	1-3,5	
X	CN 113 812 689 A (SHENZHEN UWELL TECH CO LTD) 21 December 2021 (2021-12-21) * see also inofficial translation; figures 1-4, 8 *	1-10	

TECHNICAL FIELDS SEARCHED (IPC)

A24F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	6 May 2024	Kramer, Ellen

CATEGORY OF CITED DOCUMENTS

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06-05-2024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CN 215958321 U	08-03-2022	NONE	
CN 206275175 U	27-06-2017	NONE	
CN 113812689 A	21-12-2021	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82