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(54) **ATOMIZING CORE AND ATOMIZER OF ULTRASONIC ELECTRONIC CIGARETTE**

(57) Disclosed are an ultrasonic electronic cigarette atomization core and an ultrasonic electronic cigarette atomizer. The atomization core comprises a housing (1), a front cover (2), an ultrasonic atomization sheet (3), a liquid storage cotton (4), and a liquid guide cotton (5), the housing (1) and the front cover (2) are fastened together to form a receiving cavity (6), the atomization sheet (3) is fixed in the receiving cavity (6), a liquid storage ring (7) is disposed in the receiving cavity (6), the liquid storage cotton (4) is disposed in the liquid storage ring (7) and connected to the atomization sheet (3) through the liquid guide cotton (5), and the outer lateral surface of the liquid storage cotton (4) is communicated with a liquid bin (42); and the atomization core further

comprises a position-limit mechanism for preventing the liquid storage cotton (4) from falling off the liquid storage ring (7). The liquid storage cotton (4) is unlikely to fall off and reliably conducts electricity; the housing (1) and the front cover (2) are fixed securely, so the operation is stable, the amount of smoke is stable, and the assembly is convenient; tobacco tar leakage can be prevented after the atomization core is pulled out; the opening and closing of a liquid passing hole (421), the opening and closing of an air outlet passage, and the unlocking and locking of the atomization core can be controlled by means of the opening and closing of the liquid injection holes (422, 391, 361) in a linked manner; when tobacco tar is injected into the liquid bin (42), the liquid passing hole (421) is

closed and the air outlet passage is cut off, so that the leakage of tobacco tar or immersion in tobacco tar is avoided, the atomizer is clean and sanitary, waste is avoided, and the cost is saved; the operation is simple,

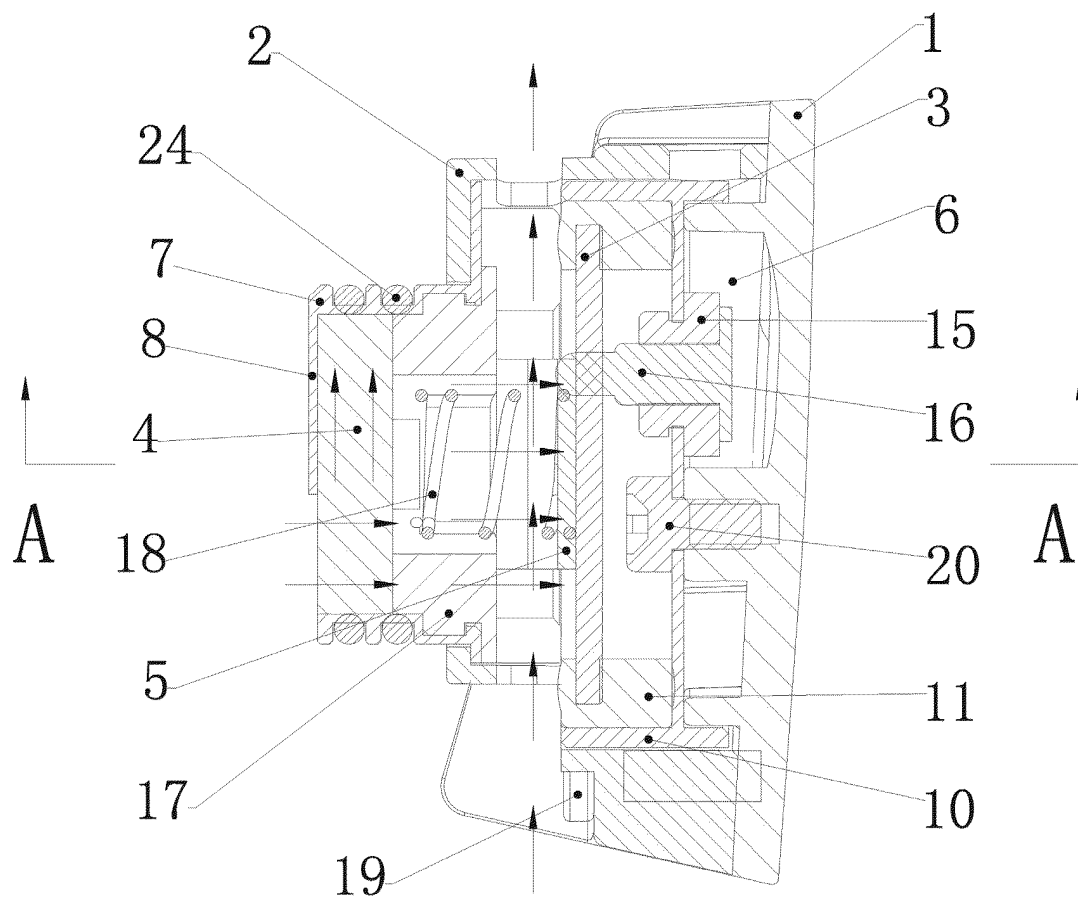


Fig.1

Description

Field of the Invention

[0001] The present invention belongs to the technical field of electronic cigarettes, and particularly relates to an ultrasonic electronic cigarette atomization core and an ultrasonic electronic cigarette atomizer.

Background of the Invention

[0002] The existing ultrasonic electronic cigarette atomizer includes an atomizer shell, an atomization core and a suction nozzle, wherein a liquid bin is disposed in the atomizer shell, and the atomization core includes an ultrasonic atomization sheet and a liquid guide mechanism connecting an atomization surface of the ultrasonic atomization sheet with the liquid bin. During operation, the tobacco tar in the liquid bin is guided to the atomization surface of the ultrasonic atomization sheet by the liquid guide mechanism for atomization, and the generated smoke is taken out by the airflow from the suction nozzle for the user to smoke.

[0003] In order to facilitate reuse and save cost, an atomization core detachably connected to the atomizer shell is designed in the prior art, and includes a housing, a front cover, an ultrasonic atomization sheet, a liquid storage cotton, and a liquid guide cotton, wherein the housing and the front cover are fastened together to form a receiving cavity, an atomization seat is disposed in the receiving cavity, and the ultrasonic atomization sheet is fixed on the atomization seat through a silica gel seat. A liquid storage ring whose one end penetrates through the front cover is disposed in the receiving cavity, the liquid storage cotton is disposed in the liquid storage ring, the liquid storage cotton is connected to the atomization surface of the ultrasonic atomization sheet through the liquid guide cotton, and the outer lateral surface of the liquid storage cotton is communicated with the liquid bin of an electronic cigarette.

[0004] Such an ultrasonic electronic cigarette atomization core has the following disadvantages:

First, the liquid storage cotton is directly placed in the liquid storage ring without a fixing structure, so when the atomization core is pulled out of the atomizer, the liquid storage cotton easily falls off, which causes inconvenience to use and easily contaminates the liquid storage cotton; and at the same time, the tobacco tar on the liquid storage cotton leaks out to cause pollution.

Second, the ultrasonic atomization sheet is compressed by an elastic conductive sheet to conduct electricity or electrode layers on the ultrasonic atomization sheet are connected to a power supply electrode by welding.

When the ultrasonic atomization sheet is compressed by the elastic conductive sheet to conduct

electricity, the atomization core includes positive and negative elastic conductive sheets, one ends of the positive and negative elastic conductive sheets are fixed to the inner wall of the housing by screws, and the other ends of the positive and negative elastic conductive sheets abut against the ultrasonic atomization sheet. In order not to affect the amplitude of oscillation of the ultrasonic atomization sheet, the compression effect of the elastic conductive sheets on the ultrasonic atomization sheet must be weakened, thus resulting in poor contact of the elastic conductive sheets and unreliable electrical conductivity. Since a high temperature is generated in the operation of the ultrasonic atomization sheet, the elastic conductive sheets are prone to failure at the high temperature, that is, permanently deformed and have no elasticity, which easily results in poor conductive contact.

When the electrode layers on the ultrasonic atomization sheet are connected to the power supply electrode by welding, the first electrode layer and the second electrode layer of the ultrasonic atomization sheet are both connected to the power supply electrode by welding, the high temperature generated during welding will affect the performance of the ultrasonic atomization sheet, and the ultrasonic atomization sheet will be depolarized at the high temperature and lose the high-frequency oscillation performance, so that the service life is short.

Third, for an ultrasonic electronic cigarette atomizer whose ultrasonic atomization sheet is parallel to the length of an electronic cigarette, when the atomization core is pulled out, a small amount of tobacco tar will be taken out of the liquid bin, which is prone to tobacco tar leakage and stains user's hands to affect the user experience.

Summary of the Invention

[0005] The present invention is directed to provide an improved ultrasonic electronic cigarette atomization core and an ultrasonic electronic cigarette atomizer in view of the disadvantages of the prior art, where a liquid storage cotton is fixed firmly, and is unlikely to fall off when the atomization core is pulled out of the atomizer; the electrical conductivity is reliable, the housing and the front cover are fixed securely, the ultrasonic atomization sheet operates stably, the amount of smoke is stable, the service life is long, the assembly is convenient, no tobacco tar leakage occurs after the atomization core is pulled out, and the atomizer is clean and sanitary.

[0006] In order to solve the problem that the liquid storage cotton is likely to fall off, the technical solution adopted by the present invention is:

An ultrasonic electronic cigarette atomization core, including a housing, a front cover, an ultrasonic atomization sheet, a liquid storage cotton, and a liquid guide cotton, wherein the housing and the front cover are fastened

together to form a receiving cavity, the ultrasonic atomization sheet is fixed in the receiving cavity, a liquid storage ring whose one end penetrates through the front cover is disposed in the receiving cavity, the liquid storage cotton is disposed in the liquid storage ring, the liquid storage cotton is connected to an atomization surface of the ultrasonic atomization sheet through the liquid guide cotton, and the outer lateral surface of the liquid storage cotton is communicated with a liquid bin of an electronic cigarette; and the structure characteristic of the atomization core is that the atomization core further includes a position-limit mechanism for preventing the liquid storage cotton from falling off the liquid storage ring.

[0007] With the above structure, the position-limit mechanism can limit the liquid storage cotton within the liquid storage ring. When the atomization core is pulled out of the atomizer, the liquid storage cotton will not fall off, which is convenient to use, clean and sanitary.

[0008] As a preferred manner, the position-limit mechanism includes a baffle disposed on the outer end face of the liquid storage ring and in contact with the outer lateral surface of the liquid storage cotton.

[0009] As a preferred manner, the baffle is integrally formed with the liquid storage ring.

[0010] The baffle is disposed on the outer end face of the liquid storage ring, and the baffle can limit the liquid storage cotton within the liquid storage ring, so that the liquid storage cotton will not fall off when the atomization core is pulled out of the atomizer. The baffle is integrally formed with the existing liquid storage ring, which does not require additional parts and assembly, thereby saving the cost.

[0011] As another preferred manner, the position-limit mechanism includes a metal mesh stuck in a groove at the outer end of the liquid storage ring and in contact with the outer lateral surface of the liquid storage cotton.

[0012] The metal mesh stuck in the groove at the outer end of the liquid storage ring is used to limit the liquid storage cotton, so that the overall area of a liquid inlet passage is larger, at the same time, liquid inlet holes are distributed uniformly, and the tobacco tar is guided more uniformly.

[0013] Further, an atomization seat and a silica gel seat are also disposed in the receiving cavity, the silica gel seat is fixed in the receiving cavity through the atomization seat, and the ultrasonic atomization sheet is fixed on the silica gel seat.

[0014] In order to solve the problem of unreasonable design of a conductive structure, the technical solution adopted by the present invention is:

Further, a first copper nut, an insulating ring, and an elastic electrode are also disposed in the receiving cavity, the first copper nut is hot-melted on the inner side wall of the housing, the elastic electrode is fixed on the atomization seat through the insulating ring, one end of the elastic electrode is connected to the first copper nut through a first wire, and the other end of the elastic electrode abuts against a first conductive layer of the ultra-

sonic atomization sheet.

[0015] With the above structure, the first conductive layer of the ultrasonic atomization sheet realizes a stable electrical connection by means of abutting or clamping of the elastic electrode, which prevents a high temperature generated during welding from affecting the performance or service life of the ultrasonic atomization sheet.

[0016] Further, a second copper nut and a second wire are also disposed in the receiving cavity, the second copper nut is hot-melted on the inner side wall of the housing, a lead on a second conductive layer of the ultrasonic atomization sheet is in compressive contact with the atomization seat through the silica gel seat, one end of the second wire is welded and fixed to the atomization seat, and the other end of the second wire penetrates through the side wall of the atomization seat and is electrically connected to the second copper nut.

[0017] With the above structure, the second wire is in compressive contact with the second conductive layer of the ultrasonic atomization sheet by using the silica gel seat, so the contact is good, the electrical conductivity is reliable, and the oscillation effect of the ultrasonic atomization sheet is not affected and is good. Only the lead on the second conductive layer needs to be welded to conduct electricity, so the entire ultrasonic atomization sheet is convenient to assemble, and the high-frequency oscillation performance of the ultrasonic atomization sheet can be prevented from being lost due to depolarization of the ultrasonic atomization sheet caused by too high welding temperatures at several places.

[0018] Further, a conductive sheet, a second copper nut, and a second wire are also disposed in the receiving cavity, the second copper nut is hot-melted to the inner side wall of the housing, the ultrasonic atomization sheet and the conductive sheet are both disposed in the silica gel seat, the ultrasonic atomization sheet abuts against the conductive sheet, and the conductive sheet has a pin that stretches out from the silica gel seat and is in compressive contact with the atomization seat; one end of the second wire is welded and fixed to the atomization seat, and the other end of the second wire passes through the side wall of the atomization seat and is electrically connected to the second copper nut.

[0019] With the above structure, the second conductive layer on the ultrasonic atomization sheet is in contact with and electrically connected to the conductive sheet, the contact between the pin of the conductive sheet and the atomization seat enables an electrical connection between the second conductive layer of the ultrasonic atomization sheet and the atomization seat, and electronic wires do not need to be welded during these connections, thereby preventing the ultrasonic atomization sheet from being depolarized at a too high welding temperature to affect the function and life thereof, and improving the practicality and electrical connection reliability of the electronic cigarette.

[0020] As a preferred manner, the conductive sheet is stuck in the silica gel seat, or the conductive sheet is

integrally formed with the silica gel seat.

[0021] Further, the housing and the front cover are detachably connected by first screws.

[0022] The housing and the front cover are locked by screws to fix and compress the ultrasonic atomization sheet, so that the locking member is uneasy to deform and fail, the entire atomization core is assembled firmly, the ultrasonic atomization sheet has good compression consistency and operates stably, and the amount of smoke is stable. Based on the same inventive concept, the present invention also provides an ultrasonic electronic cigarette atomizer, including an atomizer shell and a suction nozzle, a liquid bin being disposed in the atomizer shell, and the structure characteristic of the atomizer is that the atomizer further includes the ultrasonic electronic cigarette atomization core according to any one of claims 1 to 9, and the atomization core is detachably connected to the atomizer shell; the liquid bin, the liquid storage cotton, the liquid guide cotton, and the atomization surface of the ultrasonic atomization sheet are communicated in sequence; and an air inlet of an electronic cigarette, the atomization surface of the ultrasonic atomization sheet, and the suction nozzle are communicated in sequence. In order to solve the problem that tobacco tar easily leaks after the atomization core is pulled out, the technical solution adopted by the present invention is: Further, a liquid passing hole connecting the liquid storage cotton with the liquid bin is formed in the side wall of the liquid bin, and the atomizer further includes a liquid absorber sandwiched between a liquid outlet end of the liquid passing hole and the liquid storage cotton, so that when the atomization core is assembled in the atomizer, the liquid absorber is compressed; and when the atomization core is disassembled from the atomizer, the liquid absorber returns to a normal state.

[0023] With the above structure, the liquid absorber is disposed at the liquid outlet end of the liquid passing hole of the liquid bin, and can absorb the tobacco tar accumulated at the liquid outlet end of the liquid passing hole when the liquid passage is closed or the atomization core is pulled out, thereby preventing the tobacco tar from immediately flowing out or being brought out by the atomization core due to the instantaneous reduction in pressure when the atomization core is pulled out to contaminate the housing of the electronic cigarette or the user's hand.

[0024] Further, a slot for fixing the liquid absorber is provided in the side wall of the liquid bin. The liquid absorber is fixedly connected through the slot to prevent the liquid absorber from being taken out after the atomization core is pulled out to affect the tobacco tar absorbing effect thereof.

[0025] After the atomization core is assembled, the liquid absorber is compressed to reduce the space, and the tobacco tar in the liquid absorber is squeezed out and absorbed by the atomization core. When the atomization core is disassembled, the liquid absorber returns to a fluffy state and absorbs tobacco tar to prevent the tobacco

tar from leaking. Further, a first liquid injection hole is formed in the side wall of the liquid bin, the atomizer further includes a liquid injection control structure for controlling the opening and closing of the first liquid injection hole and a liquid passing control structure for controlling the opening and closing of the liquid passing hole, and the liquid injection control structure is linked with the liquid passing control structure; when the liquid injection control structure controls the first liquid injection hole to be opened, the liquid passing control structure controls the liquid passing hole to be closed; and when the liquid injection control structure controls the first liquid injection hole to be closed, the liquid passing control structure controls the liquid passing hole to be opened.

[0026] With the above structure, the opening and closing of the liquid passing hole are linked with the opening and closing of the first liquid injection hole, so the operation is simple and the user experience is good. When tobacco tar is injected, the liquid passing hole is closed to prevent the tobacco tar in the liquid bin from being squeezed out of the liquid passing hole due to the pressurization of the liquid bin, thereby avoiding the leakage of tobacco tar or immersion in tobacco tar.

[0027] Further, the atomizer further includes an air outlet control structure for controlling the opening and closing of an air outlet passage of the atomizer, wherein the air outlet control structure is linked with the liquid passing control structure; when the liquid injection control structure controls the first liquid injection hole to be opened, the air outlet control structure controls the air outlet passage to be cut off; and when the liquid injection control structure controls the first liquid injection hole to be closed, the air outlet control structure controls the air outlet passage to be opened.

[0028] With the above structure, the opening and closing of the air outlet passage are linked with the opening and closing of the first liquid injection hole, so the operation is simple and the user experience is good. When tobacco tar is injected, the air outlet passage is closed to prevent the user from sucking the electronic cigarette without closing the first liquid injection hole, thereby reducing the risk of tobacco tar leakage.

[0029] As a preferred manner, the liquid injection control structure includes a fixed plate fixed on the liquid bin in the atomizer shell, and a slider translatable along the length of the fixed plate; the fixed plate is provided with a second liquid injection hole opposite to the first liquid injection hole, and the slider is provided with a third liquid injection hole; and when the slider slides along the fixed plate, the third liquid injection hole can be aligned or staggered with the first liquid injection hole.

[0030] With the above structure, the liquid injection method is a flat-push operation, so the operation is convenient.

[0031] As a preferred manner, the liquid passing control structure includes a fixed plate fixed on the liquid bin in the atomizer shell, a slider translatable along the length of the fixed plate, and a rotating shaft; a receiving groove

whose axis is perpendicular to the axis of the liquid passing hole is provided in the liquid bin, and the receiving groove is communicated with the liquid passing hole; the rotating shaft is in the receiving groove, and a liquid baffle is disposed at a position of the rotating shaft corresponding to the liquid passing hole; and the slider is in transmission connection with the rotating shaft, the slider can drive the rotating shaft to rotate until the liquid baffle is perpendicular to the axis of the liquid passing hole and closes the liquid passing hole, and the slider can also drive the rotating shaft to rotate until the liquid baffle is parallel to the axis of the liquid passing hole and opens the liquid passing hole.

[0032] With the above structure, the liquid passing hole can be opened and closed by means of the rotation of the rotating shaft.

[0033] Compared with the prior art, the present invention has the advantages that the liquid storage cotton is fixed firmly, is unlikely to fall off when the atomization core is pulled out of the atomizer, and therefore is convenient to use and reliable in electrical conduction; the housing and the front cover are fixed securely, so that the ultrasonic atomization sheet operates stably, the amount of smoke is stable, and the assembly is convenient; the tobacco tar leakage can be prevented after the atomization core is pulled out, so the atomizer is clean and sanitary; the opening and closing of the liquid passing hole, the opening and closing of the air outlet passage, and the unlocking and locking of the atomization core can be controlled by means of the opening and closing of the liquid injection holes in a linked manner to form a four-linkage mechanism; when tobacco tar is injected into the liquid bin, the liquid passing hole is closed and the air outlet passage is cut off, so that the leakage of tobacco tar or immersion in tobacco tar is avoided, the atomizer is clean and sanitary, waste is avoided, and the cost is saved; the entire operation is very simple, the atomization core is convenient to replace, the injection of the tobacco tar is convenient, multiple operations can be completed by only one action, and the use experience of customers is greatly improved.

Brief description of the Drawings

[0034]

FIG. 1 is a front cross-sectional view of Embodiment 1 of an atomization core.

FIG. 2 is an A-A sectional view of FIG. 1.

FIG. 3 is a schematic external view of FIG. 1.

FIG. 4 is an exploded view of FIG. 1.

FIG. 5 is a conductive principle diagram of the atomization core in FIG. 1.

FIG. 6 is an exploded view of a conductive structure of the atomization core in FIG. 1.

FIG. 7 is an exploded view of components of FIG. 1.

FIG. 8 is a front cross-sectional view of Embodiment 2 of the atomization core.

FIG. 9 is a schematic external view of FIG. 8.

FIG. 10 is a front cross-sectional view of Embodiment 3 of the atomization core.

FIG. 11 is an exploded view of components of FIG. 10.

FIG. 12 is an exploded view of FIG. 10.

FIG. 13 is a front cross-sectional view of Embodiment 4 of the atomization core.

FIG. 14 is a schematic structural diagram of Embodiment 1 of an atomizer.

FIG. 15 is a schematic structural diagram of Embodiment 2 of the atomizer.

FIG. 16 is a schematic diagram when the atomization core in FIG. 15 is removed.

FIG. 17 is a schematic diagram when the liquid absorber and the atomization core in FIG. 15 are removed.

[0035] In which: 1 housing, 101 hand-held portion, 2 front cover, 3 ultrasonic atomization sheet, 301 lead, 4 liquid storage cotton, 5 liquid guide cotton, 6 receiving cavity, 7 liquid storage ring, 71 groove, 8 baffle, 9 metal mesh, 10 atomization seat, 11 silica gel seat, 12 second copper nut, 13 second wire, 13' first wire, 14 first copper nut, 15 insulating ring, 16 elastic electrode, 17 silica gel plug, 18 cotton compression spring, 19 first screw, 20 second screw, 21 atomizer shell, 22 suction nozzle, 23 atomization core, 24 seal ring, 25 conductive sheet, 26 cotton core assembly, 27 atomization sheet assembly, 28 housing assembly, 30 lower shell, 3001 air inlet hole, 33 nozzle holder, 34 key board, 36 slider, 361 third liquid injection hole, 363 air passing hole, 364 bevel, 37 pin, 38 reset spring, 39 fixed plate, 391 second liquid injection hole, 40 rotating shaft, 401 liquid baffle, 41 upper support, 42 liquid bin, 421 liquid passing hole, 422 first liquid injection hole, 425 slot, 43 main support, 44 lithium core, 50 sliding shaft, 52 liquid absorber, 60 locking hole, 61 positive electrode elastic sheet, 62 positive electrode screw, 63 key, 64 key spring, 65 upper shell, 66 silica gel pad, 67 silica gel ring, 68 main board.

Detailed Description of Embodiments

Embodiment 1 of atomization core

[0036] As shown in FIG. 1 to FIG. 7, an ultrasonic electronic cigarette atomization core includes a housing 1, a front cover 2, an ultrasonic atomization sheet 3, a liquid storage cotton 4, and a liquid guide cotton 5, wherein the housing 1 and the front cover 2 are fastened together to form a receiving cavity 6, the ultrasonic atomization sheet 3 is fixed in the receiving cavity 6, a liquid storage ring 7 whose one end penetrates through the front cover 2 is disposed in the receiving cavity 6, the liquid storage cotton 4 is disposed in the liquid storage ring 7, the liquid storage cotton 4 is connected to an atomization surface of the ultrasonic atomization sheet 3 through the liquid guide cotton 5, and the outer lateral surface of the liquid

storage cotton 4 is communicated with a liquid bin of an electronic cigarette; and the atomization core further includes a position-limit mechanism for preventing the liquid storage cotton 4 from falling off the liquid storage ring 7.

[0037] The position-limit mechanism includes a baffle 8 disposed on the outer end face of the liquid storage ring 7 and in contact with the outer lateral surface of the liquid storage cotton 4.

[0038] The baffle 8 is integrally formed with the liquid storage ring 7.

[0039] An atomization seat 10 and a silica gel seat 11 are also disposed in the receiving cavity 6, the silica gel seat 11 is fixed in the receiving cavity 6 through the atomization seat 10, and the ultrasonic atomization sheet 3 is fixed on the silica gel seat 11.

[0040] A first copper nut 14, an insulating ring 15, and an elastic electrode 16 are disposed in the receiving cavity 6, the first copper nut 14 is hot-melted on the inner side wall of the housing 1, the elastic electrode 16 is fixed on the atomization seat 10 through the insulating ring 15, one end of the elastic electrode 16 is connected to the first copper nut through a first wire 13', and the other end of the elastic electrode 16 abuts against a first conductive layer of the ultrasonic atomization sheet 3.

[0041] A second copper nut 12 and a second wire 13 are disposed in the receiving cavity 6, the second copper nut 12 is hot-melted on the inner side wall of the housing 1, a lead on a second conductive layer of the ultrasonic atomization sheet 3 is in compressive contact with the atomization seat 10 through the silica gel seat 11, one end of the second wire 13 is welded and fixed to the atomization seat 10, and the other end of the second wire 13 penetrates through the side wall of the atomization seat 10 and is electrically connected to the second copper nut 12.

[0042] A silica gel plug 17 in contact with the inner lateral surface of the liquid storage cotton 4 is also disposed in the liquid storage ring 7, the liquid guide cotton 5 is a U-shaped cotton sheet, two opposite lateral surfaces of the liquid guide cotton 5 penetrate through the silica gel plug 17 and are in contact with the liquid storage cotton 4, and the outside of the third lateral surface of the liquid guide cotton 5 abuts against the atomization surface of the ultrasonic atomization sheet 3; and an air inlet of the electronic cigarette, the inside of the third lateral surface of the liquid guide cotton 5, and the suction nozzle 22 of the electronic cigarette are communicated in sequence. Air flows directly through the surface of the U-shaped liquid guide cotton 5 to take smoke away thoroughly. Solid arrows in FIG. 1 show the direction of tobacco tar, and dotted arrows in FIG. 1 show the direction of air.

[0043] A seal ring 24 is sleeved outside the liquid storage ring 7. The electronic cigarette atomization core further includes a cotton compression spring 18, one end of the cotton compression spring 18 abuts against the silica gel plug 17, and the other end of the cotton compression spring 18 abuts against the inside of the third

lateral surface of the liquid guide cotton 5.

[0044] The housing 1 and the front cover 2 are detachably connected by first screws 19. The atomization seat 10 is connected to the housing 1 by a second screw 20.

5 The housing 1 and the front cover 2 are locked by screws to fix and compress the ultrasonic atomization sheet 3, so that the locking member is uneasy to deform and fail, the entire atomization core 23 is assembled firmly, the ultrasonic atomization sheet 3 has good compression consistency and operates stably, and the amount of smoke is stable.

10 **[0045]** As shown in FIG. 7, the entire ultrasonic electronic cigarette atomization core is composed of a front cover 2, a cotton core assembly 26 and an atomization sheet assembly 27, which are then fixedly connected by first screws 19, thereby facilitating the disassembly and replacement of the cotton core assembly 26 or the atomization sheet assembly 27, saving the cost and the replacement time, and improving the practicality of the electronic cigarette. The cotton core assembly 26 is formed by the liquid storage cotton 4, the liquid guide cotton 5, the liquid storage ring 7, the baffle 8, the silica gel plug 17, the cotton compression spring 18, the seal ring 24, etc. The atomization sheet assembly 27 is formed by the housing 1, the ultrasonic atomization sheet 3 and the lead 301 thereof, the atomization seat 10, the silica gel seat 11, the first copper nut 14, the second copper nut 12, the insulating ring 15, the elastic electrode 16, the second screw 20, etc.

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Embodiment 2 of atomization core

35 **[0046]** FIG. 8 and FIG. 9 show a structure of the second embodiment of the atomization core, which is similar to that of the first embodiment, except that the position-limit mechanism includes a metal mesh 9 stuck in a groove 71 at the outer end of the liquid storage ring 7 and in contact with the outer lateral surface of the liquid storage cotton 4. The metal mesh 9 is a steel mesh. The same structure of the atomization core in the second embodiment as that in the first embodiment is not described herein, which does not affect the understanding and implementation of the present invention by those skilled in the art.

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Embodiment 3 of atomization core

50 **[0047]** FIG. 10 to FIG. 12 show a structure of the third embodiment of the atomization core, which is similar to that of the first embodiment, except that a conductive sheet 25, a second copper nut 12, and a second wire 13 are also disposed in the receiving cavity 6, the second copper nut 12 is hot-melted to the inner side wall of the housing 1, the ultrasonic atomization sheet 3 and the conductive sheet 25 are both disposed in the silica gel seat 11, the ultrasonic atomization sheet 3 abuts against the conductive sheet 25, and the conductive sheet 25 has a pin that stretches out from the silica gel seat 11

and is in compressive contact with the atomization seat 10; one end of the second wire 13 is welded and fixed to the atomization seat 10, and the other end of the second wire 13 passes through the side wall of the atomization seat 10 and is electrically connected to the second copper nut 12. The conductive sheet 25 is stuck in the silica gel seat 11, or the conductive sheet 25 is integrally formed with the silica gel seat 11.

[0048] As shown in FIG. 11, the entire ultrasonic electronic cigarette atomization core is composed of a front cover 2, a cotton core assembly 26, an atomization sheet assembly 27, and a housing assembly 28, which are then fixedly connected by first screws 19 to facilitate the disassembly and replacement of the components. The cotton core assembly 26 is formed by the liquid storage cotton 4, the liquid guide cotton 5, the liquid storage ring 7, the baffle 8, the silica gel plug 17, the cotton compression spring 18, the seal ring 24, etc. The atomization sheet assembly 27 is formed by the ultrasonic atomization sheet 3, the silica gel seat 11, the conductive sheet 25, etc. The housing assembly 28 is formed by the housing 1, the atomization seat 10, the first copper nut 14, the second copper nut 12, the insulating ring 15, the elastic electrode 16, the second screw 20, etc. The same structure of the atomization core in the second embodiment as that in the first embodiment is not described herein, which does not affect the understanding and implementation of the present invention by those skilled in the art.

Embodiment 4 of atomization core

[0049] The structure of the fourth embodiment of the atomization core shown in FIG. 13 includes a housing 1, a front cover 2, an ultrasonic atomization sheet 3, a liquid storage cotton 4, and a liquid guide cotton 5, wherein the housing 1 and the front cover 2 are fastened together to form a receiving cavity 6, the ultrasonic atomization sheet 3 is fixed in the receiving cavity 6, a liquid storage ring 7 whose one end penetrates through the front cover 2 is disposed in the receiving cavity 6, the liquid storage cotton 4 is disposed in the liquid storage ring 7, the liquid storage cotton 4 is connected to an atomization surface of the ultrasonic atomization sheet 3 through the liquid guide cotton 5, and the outer lateral surface of the liquid storage cotton 4 is communicated with a liquid bin of an electronic cigarette; and the atomization core further includes a position-limit mechanism for preventing the liquid storage cotton 4 from falling off the liquid storage ring 7.

[0050] The position-limit mechanism includes an annular baffle 8 disposed on the outer end face of the liquid storage ring 7 and in contact with the outer lateral surface of the liquid storage cotton 4. The baffle 8 is integrally formed with the liquid storage ring 7.

[0051] The atomization core 23 includes an atomization seat 10. The ultrasonic atomization sheet 3 is fixed in the atomization seat 10, and the atomization seat 10 is disposed in the front cover 2.

[0052] The liquid storage cotton 4 is fixed in the front cover 2, and the liquid guide cotton 5 is a U-shaped liquid guide cotton sheet. Two opposite lateral surfaces of the U-shaped liquid guide cotton sheet 5 penetrate through the atomization seat 10 and are in contact with the liquid storage cotton 4, and the outside of the third lateral surface of the U-shaped liquid guide cotton sheet 5 abuts against the ultrasonic atomization sheet 3; the liquid storage cotton 4 is communicated with the liquid bin 42 through a liquid passing hole 421; and the front cover 2 is provided with an air passing groove connecting the inside of the third lateral surface of the U-shaped liquid guide cotton sheet 5 with an air inlet hole 3001 in the atomizer and a suction nozzle 22 on the atomizer.

[0053] The atomization core 23 further includes a cotton compression spring 18, one end of the cotton compression spring 18 abuts against the inside of the third lateral surface of the U-shaped liquid guide cotton sheet 5, and the other end of the cotton compression spring 18 abuts against the inner wall of the atomization seat 10. The deformation of the U-shaped liquid guide cotton sheet 5 can be prevented. At the same time, since the top end of the cotton compression spring 18 does not directly abut against the liquid storage cotton 4, the liquid storage cotton 4 can be prevented from falling off.

[0054] The inside of the third lateral surface of the U-shaped liquid guide cotton sheet 5 is communicated with the liquid storage cotton 4 through a tobacco tar recovery hole in the atomization seat 10. The atomization region of the ultrasonic atomization sheet 3 is communicated with the liquid storage cotton 4 through the tobacco tar recovery hole, so that the large granular tobacco tar generated by the atomization of the ultrasonic atomization sheet 3 can be directly sprayed onto the liquid storage cotton 4 through the tobacco tar recovery hole, and then guided to the ultrasonic atomization sheet 3 through the U-shaped liquid guide cotton sheet 5 for secondary recycling.

[0055] A positive electrode ring and a negative electrode ring are embedded into the front cover 2; one side of the ultrasonic atomization sheet 3 fits one end of a positive electrode elastic sheet 61, and the other end of the positive electrode elastic sheet 61 is locked with the positive electrode ring by a positive electrode screw 62; the other side of the ultrasonic atomization sheet 3 fits one end of a negative electrode elastic sheet, and the other end of the negative electrode elastic sheet is locked with the negative electrode ring by a negative electrode screw; a positive elastic electrode fitting the positive electrode ring and a negative elastic electrode fitting the negative electrode ring are disposed in the atomizer shell 21. Positive and negative electrode silver layers of the ultrasonic atomization sheet 3 fit each other by means of the positive electrode elastic sheet and the negative electrode elastic sheet to conduct electricity, and the positive and negative electrode elastic sheets are respectively locked to the positive and negative electrode rings by means of the positive and negative electrode screws

for fixing and electrical conduction. The entire ultrasonic atomization sheet 3, which does not need to be welded for electrical conduction, is convenient to assemble, and the depolarization of the ultrasonic atomization sheet 3 due to too high welding temperature can be avoided; and the ultrasonic atomization sheet 3 is not plated with tin, which avoids pollution to the tobacco tar and is more environment-friendly and sanitary. After the atomization core 23 is assembled into the atomizer, electricity is conducted directly by contact between the elastic electrodes and the electrode rings, so the disassembly and assembly are convenient, and the operation is reliable.

Embodiment 1 of atomizer

[0056] As shown in FIG. 14, the electronic cigarette atomizer includes an atomizer shell 21 and a suction nozzle 22, a liquid bin is disposed in the atomizer shell 21, the electronic cigarette atomizer further includes the electronic cigarette atomization core 23 in the first embodiment, and the atomization core 23 is detachably connected to the atomizer shell 21; the liquid bin, the liquid storage cotton 4, the liquid guide cotton 5, and the atomization surface of the ultrasonic atomization sheet 3 are communicated in sequence; and an air inlet of an electronic cigarette, the atomization surface of the ultrasonic atomization sheet 3, and the suction nozzle 22 are communicated in sequence.

Embodiment 2 of atomizer

[0057] As shown in FIGS. 15 to 17, the electronic cigarette atomizer includes an atomizer shell 21 and a suction nozzle 22, a liquid bin 42 is disposed in the atomizer shell 21, the electronic cigarette atomizer further includes the electronic cigarette atomization core 23 in the fourth embodiment, and the atomization core 23 is detachably connected to the atomizer shell 21; the liquid bin, the liquid storage cotton 4, the liquid guide cotton 5, and the atomization surface of the ultrasonic atomization sheet 3 are communicated in sequence; and an air inlet of an electronic cigarette, the atomization surface of the ultrasonic atomization sheet 3, and the suction nozzle 22 are communicated in sequence.

[0058] A liquid passing hole 421 connecting the liquid storage cotton 4 with the liquid bin 42 is formed in the side wall of the liquid bin 42, and the atomizer further includes a liquid absorber 52 sandwiched between a liquid outlet end of the liquid passing hole 421 and the liquid storage cotton 4. The ultrasonic atomization sheet 3 is parallel to the length direction of the electronic cigarette. The atomizer shell 21 includes an upper shell 65 and a lower shell 30.

[0059] The liquid absorber 52 is liquid absorbing cotton or sponge.

[0060] When the atomization core 23 is assembled in the atomizer, the liquid absorber 52 is compressed; and when the atomization core 23 is disassembled from the

atomizer, the liquid absorber 52 returns to a normal state.

[0061] The liquid bin 42 is provided with a first liquid injection hole 422, the atomizer further includes a liquid injection control structure for controlling the opening and closing of the first liquid injection hole 422 and a liquid passing control structure for controlling the opening and closing of the liquid passing hole 421, and the liquid injection control structure is linked with the liquid passing control structure; when the liquid injection control structure controls the first liquid injection hole 422 to be opened, the liquid passing control structure controls the liquid passing hole 421 to be closed; and when the liquid injection control structure controls the first liquid injection hole 422 to be closed, the liquid passing control structure controls the liquid passing hole 421 to be opened. The electronic cigarette atomizer further includes an air outlet control structure for controlling the opening and closing of an air outlet passage of the atomizer, and the air outlet control structure is linked with the liquid passing control structure; when the liquid injection control structure controls the first liquid injection hole 422 to be opened, the air outlet control structure controls the air outlet passage to be cut off; and when the liquid injection control structure controls the first liquid injection hole 422 to be closed, the air outlet control structure controls the air outlet passage to be opened.

[0062] The atomization core 23 extends into the atomizer shell 21 from a lateral surface of the atomizer shell 21, and the housing 1 is exposed. Since the housing 1 of the atomization core 23 is exposed, when the atomization core 23 is replaced, hands of an operator are not stained with tobacco tar, and are clean and sanitary.

[0063] The electronic cigarette atomizer further includes a locking structure capable of locking and fixing the atomization core 23; when the liquid injection control structure controls the first liquid injection hole 422 to be opened, the locking structure controls the atomization core 23 to be unlocked; and when the liquid injection control structure controls the first liquid injection hole 422 to be closed, the locking structure controls the atomization core 23 to be locked and fixed. The locking or unlocking of the atomization core 23 is linked with the opening and closing of the first liquid injection hole 422, and the user can complete the linkage of locking or unlocking of the atomization core 23 by only one action, so the operation is simple, the practicability is strong, and the user experience is good. The atomization core 23 is locked by the locking structure, so that the atomization core 23 is unlikely to fall off. The atomization core 23 can be replaced by unlocking the locking structure, so the operation is convenient. In use, the atomization core 23 can be locked to prevent the atomization core 23 from falling off due to various reasons (unintentional pull or vibration) during the use of the electronic cigarette to cause the leakage of tobacco tar.

[0064] The liquid injection control structure includes a fixed plate 39 fixed on the liquid bin 42 in the atomizer shell 21, and a slider 36 translatable along the length of

the fixed plate 39; the fixed plate 39 is provided with a second liquid injection hole 391 opposite to the first liquid injection hole 422, and the slider 36 is provided with a third liquid injection hole 361; and when the slider 36 slides along the fixed plate 39, the third liquid injection hole 361 can be aligned or staggered with the first liquid injection hole 422. The liquid passing control structure includes a fixed plate 39 fixed on the liquid bin 42 in the atomizer shell 21, a slider 36 translatable along the length of the fixed plate 39, and a rotating shaft 40; a receiving groove whose axis is perpendicular to the axis of the liquid passing hole 421 is provided in the liquid bin 42, and the receiving groove is communicated with the liquid passing hole 421; the rotating shaft 40 is in the receiving groove, and a liquid baffle 401 is disposed at a position of the rotating shaft 40 corresponding to the liquid passing hole 421; and the slider 36 is in transmission connection with the rotating shaft 40, the slider 36 can drive the rotating shaft 40 to rotate until the liquid baffle 401 is perpendicular to the axis of the liquid passing hole 421 and closes the liquid passing hole 421, and the slider 36 can also drive the rotating shaft 40 to rotate until the liquid baffle 401 is parallel to the axis of the liquid passing hole 421 and opens the liquid passing hole 421.

[0065] A rack along the length direction is disposed on the slider 36, and a gear meshing with the rack is disposed on the rotating shaft 40. By using the principle of gear-rack transmission, when the first liquid injection hole 422 is opened (for example, the slider 36 moves to the left), the slider 36 drives the rotating shaft 40 to rotate 90°, so that the liquid baffle 401 is perpendicular to the axis of the liquid passing hole 421, and the liquid baffle 401 closes the liquid passing hole 421; when the first liquid injection hole 422 is closed (for example, the slider 36 moves to the right), the slider 36 drives the rotating shaft 40 to rotate 90° in the opposite direction, so that the liquid baffle 401 is parallel to the axis of the liquid passing hole 421, the liquid baffle 401 does not block the liquid passing hole 421, and the opening and closing of the liquid passing hole 421 are linked accordingly.

[0066] The air outlet control structure includes a fixed plate 39 fixed on the liquid bin 42 in the atomizer shell 21, and a slider 36 translatable along the length of the fixed plate 39. The slider 36 is provided with an air passing hole 363. When the slider 36 slides along the fixed plate 39, the slider 36 drives the air passing hole 363 to open or close the air outlet passage. The slider 36 is provided with an air passing hole 363, and the air passing hole 363 can be aligned or staggered with the air outlet passage by reciprocating motion of the slider 36, so that the air outlet passage is closed and opened. In use, the air outlet passage is opened through the air passing hole 363, the entire air passage is opened, and normal smoking can be achieved; when tobacco tar is injected, the air outlet passage is cut off through the air passing hole 363, the entire air passage is cut off, and smoking cannot be achieved.

[0067] The locking structure includes a fixed plate 39

fixed on the liquid bin 42 in the atomizer shell 21, a slider 36 translatable along the length of the fixed plate 39, and a ball-head pin 37 movable up and down along a through hole of the fixed plate 39, wherein the ball-head pin 37 is sleeved with a reset spring 38, and the bottom of the reset spring 38 is supported on the inner side wall of the through hole; the bottom of the slider 36 is provided with a bevel 364 corresponding to the head of the ball-head pin 37, and the atomization core is provided with a locking hole 60 corresponding to the pin 37. When the slider 36 is pushed away to open the first liquid injection hole 422, the slider 36 is linked with the rotating shaft 40 to rotate so that the liquid baffle 401 seals the liquid passing hole 421, the slider 36 is also linked with the atomization core 23 for unlocking, and the atomization core 23 can be pulled out for replacing to prevent tobacco tar leakage. The portion of the bottom surface of the slider 36 in contact with the pin 37 is of a bevel structure. When the slider 36 reciprocates, the ball-head pin 37 can be driven to move up and down to unlock or lock the atomization core 23. In use, the slider 36 bears against the head of the pin 37, and the pin 37 is inserted into the locking hole 60 of the atomization core 23 to lock the atomization core 23; when the first liquid injection hole 422 is opened, the slider 36 leaves the top of the pin 37, and the pin 37 moves up under the action of the reset spring 38 and exits the locking hole 60 of the atomization core 23 to unlock the atomization core 23.

[0068] The housing 1 is provided with a hand-held portion 101. With the hand-held portion 101, the atomization core 23 is more convenient to replace.

[0069] A silica gel pad 66 is disposed in the second liquid injection hole 391, the silica gel pad 66 is provided with raised ribs on the side facing the slider 36, and a fourth liquid injection hole opposite to the second liquid injection hole 391 is formed in the center of the silica gel pad 66. When tobacco tar is not injected, the slider 36 presses the raised ribs of the silica gel pad 66 to seal the tobacco tar, and excessive resistance caused by large-area squeeze sealing when the slider 36 is opened can be avoided.

[0070] An elastic sheet is disposed in the fourth liquid injection hole 251, and one side of the elastic sheet is connected to the silica gel pad 66. One side of the elastic sheet is connected to the silica gel pad 66, a liquid injection nozzle is pressed down to push the elastic sheet away to inject tobacco tar, and the elastic sheet is restored to the initial position after the tobacco tar is injected, so that the tobacco tar can be prevented from being thrown out caused by shake of the cigarette when the first liquid injection hole 422 is not closed.

[0071] A silica gel ring 67 is disposed between the liquid bin 42 and the fixed plate 39. The silica gel ring 67 is used to seal the tobacco tar.

[0072] The atomizer further mainly includes a key 63, a key spring 64, a main board 68, an LED holder, a first PC chip, a first fastening screw, a nozzle holder 33, a key board 34, a second fastening screw, an upper sup-

port 41, a main support 43, a lithium core 44, a second PC chip, and a plurality of seal rings for sealing the tobacco tar.

[0073] The embodiments of the present invention are described above with reference to the drawings, but the present invention is not limited to the specific embodiments. The specific embodiments described above are merely illustrative but not restrictive. Many forms may also be made by those of ordinary skill in the art under the enlightenment of the present invention without departing from the purpose of the present invention and the scope of the claims, and these forms fall into the scope of the present invention.

Claims

1. An ultrasonic electronic cigarette atomization core, comprising a housing (1), a front cover (2), an ultrasonic atomization sheet (3), a liquid storage cotton (4), and a liquid guide cotton (5); the housing (1) and the front cover (2) are fastened together to form a receiving cavity (6), the ultrasonic atomization sheet (3) is fixed in the receiving cavity (6), a liquid storage ring (7) whose one end penetrates through the front cover (2) is disposed in the receiving cavity (6), the liquid storage cotton (4) is disposed in the liquid storage ring (7), the liquid storage cotton (4) is connected to an atomization surface of the ultrasonic atomization sheet (3) through the liquid guide cotton (5), and the outer lateral surface of the liquid storage cotton (4) is communicated with a liquid bin of an electronic cigarette; wherein the atomization core further comprises a position-limit mechanism for preventing the liquid storage cotton (4) from falling off the liquid storage ring (7).
2. The ultrasonic electronic cigarette atomization core according to claim 1, wherein the position-limit mechanism comprises a baffle (8) disposed on the outer end face of the liquid storage ring (7) and in contact with the outer lateral surface of the liquid storage cotton (4).
3. The ultrasonic electronic cigarette atomization core according to claim 2, wherein the baffle (8) is integrally formed with the liquid storage ring (7).
4. The ultrasonic electronic cigarette atomization core according to claim 1, wherein the position-limit mechanism comprises a metal mesh (9) stuck in a groove (71) at the outer end of the liquid storage ring (7) and in contact with the outer lateral surface of the liquid storage cotton (4).
5. The ultrasonic electronic cigarette atomization core according to any one of claims 1 to 4, wherein an atomization seat (10) and a silica gel seat (11) are

also disposed in the receiving cavity (6), the silica gel seat (11) is fixed in the receiving cavity (6) through the atomization seat (10), and the ultrasonic atomization sheet (3) is fixed on the silica gel seat (11).

6. The ultrasonic electronic cigarette atomization core according to claim 5, wherein a first copper nut (14), an insulating ring (15), and an elastic electrode (16) are also disposed in the receiving cavity (6), the first copper nut (14) is hot-melted on the inner side wall of the housing (1), the elastic electrode (16) is fixed on the atomization seat (10) through the insulating ring (15), one end of the elastic electrode (16) is connected to the first copper nut (14) through a first wire (13'), and the other end of the elastic electrode (16) abuts against a first conductive layer of the ultrasonic atomization sheet (3).
7. The ultrasonic electronic cigarette atomization core according to claim 5, wherein a second copper nut (12) and a second wire (13) are also disposed in the receiving cavity (6), the second copper nut (12) is hot-melted on the inner side wall of the housing (1), a lead on a second conductive layer of the ultrasonic atomization sheet (3) is in compressive contact with the atomization seat (10) through the silica gel seat (11), one end of the second wire (13) is welded and fixed to the atomization seat (10), and the other end of the second wire (13) penetrates through the side wall of the atomization seat (10) and is electrically connected to the second copper nut (12).
8. The ultrasonic electronic cigarette atomization core according to claim 5, wherein a conductive sheet (25), a second copper nut (12), and a second wire (13) are also disposed in the receiving cavity (6), the second copper nut (12) is hot-melted to the inner side wall of the housing (1), the ultrasonic atomization sheet (3) and the conductive sheet (25) are both disposed in the silica gel seat (11), the ultrasonic atomization sheet (3) abuts against the conductive sheet (25), and the conductive sheet (25) has a pin that stretches out from the silica gel seat (11) and is in compressive contact with the atomization seat (10); one end of the second wire (13) is welded and fixed to the atomization seat (10), and the other end of the second wire (13) passes through the side wall of the atomization seat (10) and is electrically connected to the second copper nut (12).
9. The ultrasonic electronic cigarette atomization core according to claim 8, wherein the conductive sheet (25) is stuck in the silica gel seat (11), or the conductive sheet (25) is integrally formed with the silica gel seat (11).
10. An ultrasonic electronic cigarette atomizer, compris-

ing an atomizer shell (21) and a suction nozzle (22), a liquid bin is disposed in the atomizer shell (21), wherein the atomizer further comprises the ultrasonic electronic cigarette atomization core (23) according to any one of claims 1 to 9, and the atomization core (23) is detachably connected to the atomizer shell (21); the liquid bin, the liquid storage cotton (4), the liquid guide cotton (5), and the atomization surface of the ultrasonic atomization sheet (3) are communicated in sequence; and an air inlet of an electronic cigarette, the atomization surface of the ultrasonic atomization sheet (3), and the suction nozzle (22) are communicated in sequence.

11. The ultrasonic electronic cigarette atomizer according to claim 10, wherein a liquid passing hole (421) connecting the liquid storage cotton (4) with the liquid bin (42) is formed in the side wall of the liquid bin (42), and the atomizer further comprises a liquid absorber (52) sandwiched between a liquid outlet end of the liquid passing hole (421) and the liquid storage cotton (4), so that when the atomization core (23) is assembled in the atomizer, the liquid absorber (52) is compressed; and when the atomization core (23) is disassembled from the atomizer, the liquid absorber (52) returns to a normal state.
12. The ultrasonic electronic cigarette atomizer according to claim 11, wherein a slot (425) for fixing the liquid absorber (52) is provided in the side wall of the liquid bin (42).
13. The ultrasonic electronic cigarette atomizer according to claim 11, wherein a first liquid injection hole (422) is formed in the side wall of the liquid bin (42), the atomizer further comprises a liquid injection control structure for controlling the opening and closing of the first liquid injection hole (422) and a liquid passing control structure for controlling the opening and closing of the liquid passing hole (421), and the liquid injection control structure is linked with the liquid passing control structure; when the liquid injection control structure controls the first liquid injection hole (422) to be opened, the liquid passing control structure controls the liquid passing hole (421) to be closed; and when the liquid injection control structure controls the first liquid injection hole (422) to be closed, the liquid passing control structure controls the liquid passing hole (421) to be opened.
14. The ultrasonic electronic cigarette atomizer according to claim 13, wherein the atomizer further comprises an air outlet control structure for controlling the opening and closing of an air outlet passage of the atomizer, wherein the air outlet control structure is linked with the liquid passing control structure; when the liquid injection control structure controls the first liquid injection hole (422) to be opened, the

air outlet control structure controls the air outlet passage to be cut off; and when the liquid injection control structure controls the first liquid injection hole (422) to be closed, the air outlet control structure controls the air outlet passage to be opened.

15. The ultrasonic electronic cigarette atomizer according to claim 13, wherein the liquid injection control structure comprises a fixed plate (39) fixed on the liquid bin (42) in the atomizer shell (21), and a slider (36) translatable along the length of the fixed plate (39); the fixed plate (39) is provided with a second liquid injection hole (391) opposite to the first liquid injection hole (422), and the slider (36) is provided with a third liquid injection hole (361); and when the slider (36) slides along the fixed plate (39), the third liquid injection hole (361) can be aligned or staggered with the first liquid injection hole (422).
16. The ultrasonic electronic cigarette atomizer according to claim 13, wherein the liquid passing control structure comprises a fixed plate (39) fixed on the liquid bin (42) in the atomizer shell (21), a slider (36) translatable along the length of the fixed plate (39), and a rotating shaft (40); a receiving groove whose axis is perpendicular to the axis of the liquid passing hole (421) is provided in the liquid bin (42), and the receiving groove is communicated with the liquid passing hole (421); the rotating shaft (40) is in the receiving groove, and a liquid baffle (401) is disposed at a position of the rotating shaft (40) corresponding to the liquid passing hole (421); and the slider (36) is in transmission connection with the rotating shaft (40), the slider (36) can drive the rotating shaft (40) to rotate until the liquid baffle (401) is perpendicular to the axis of the liquid passing hole (421) and closes the liquid passing hole (421), and the slider (36) can also drive the rotating shaft (40) to rotate until the liquid baffle (401) is parallel to the axis of the liquid passing hole (421) and opens the liquid passing hole (421).

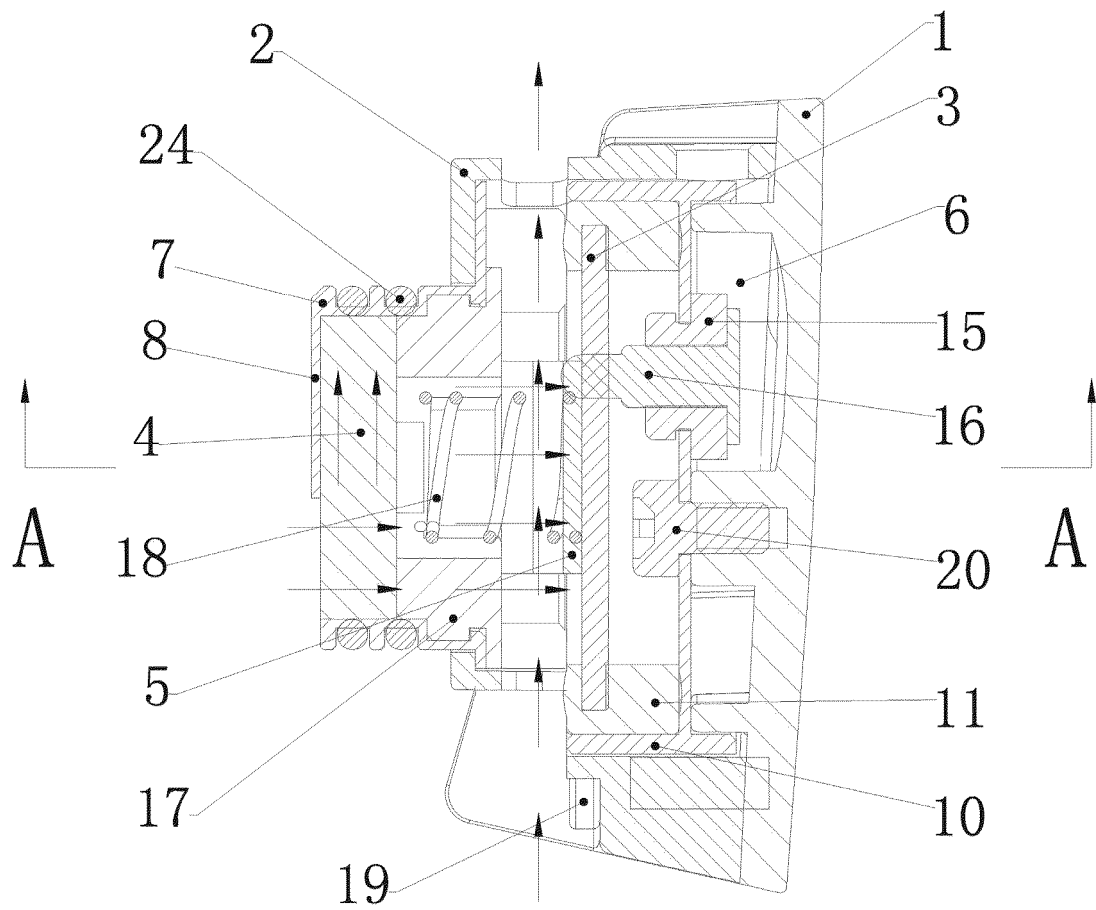


Fig.1

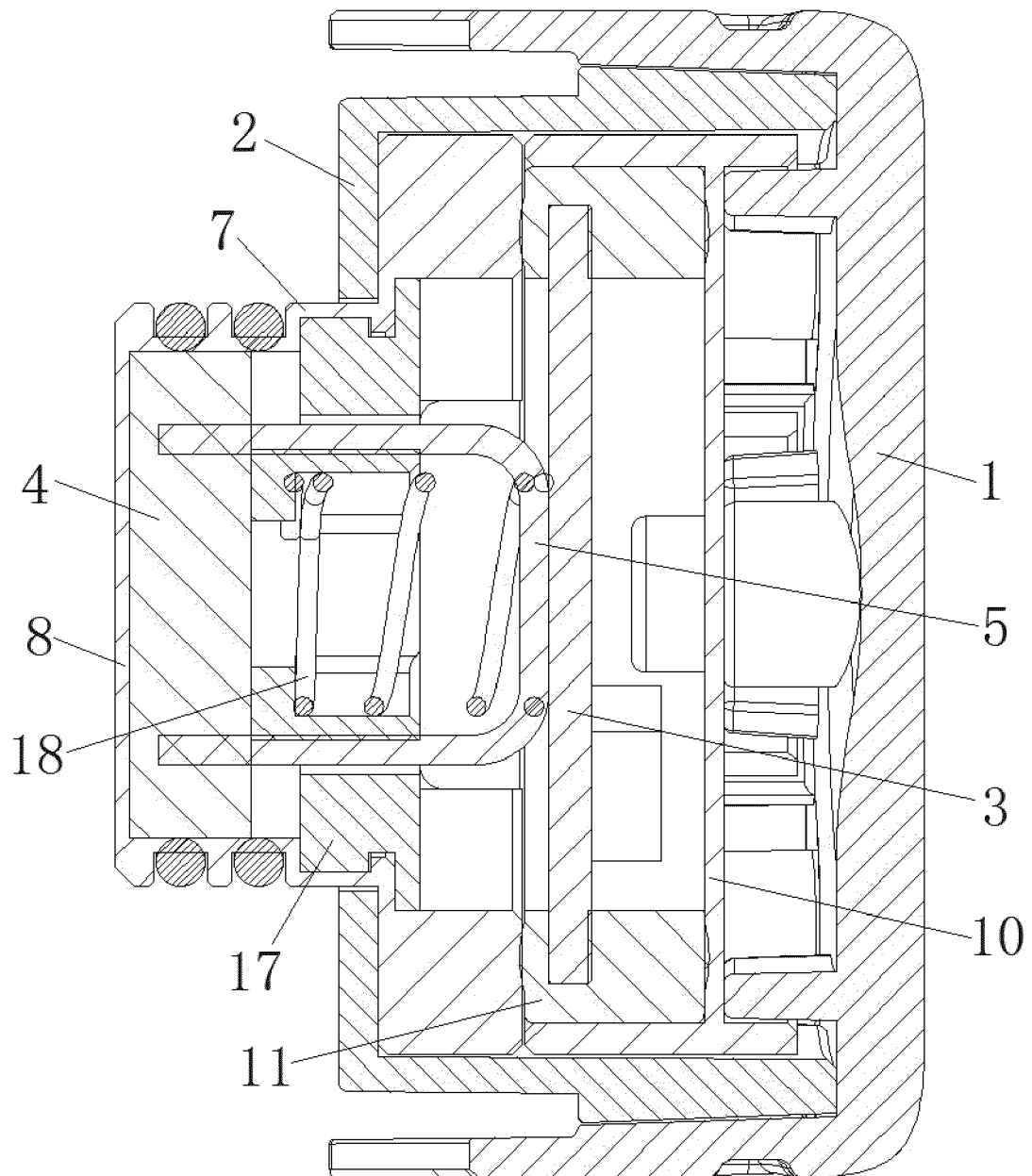


Fig.2

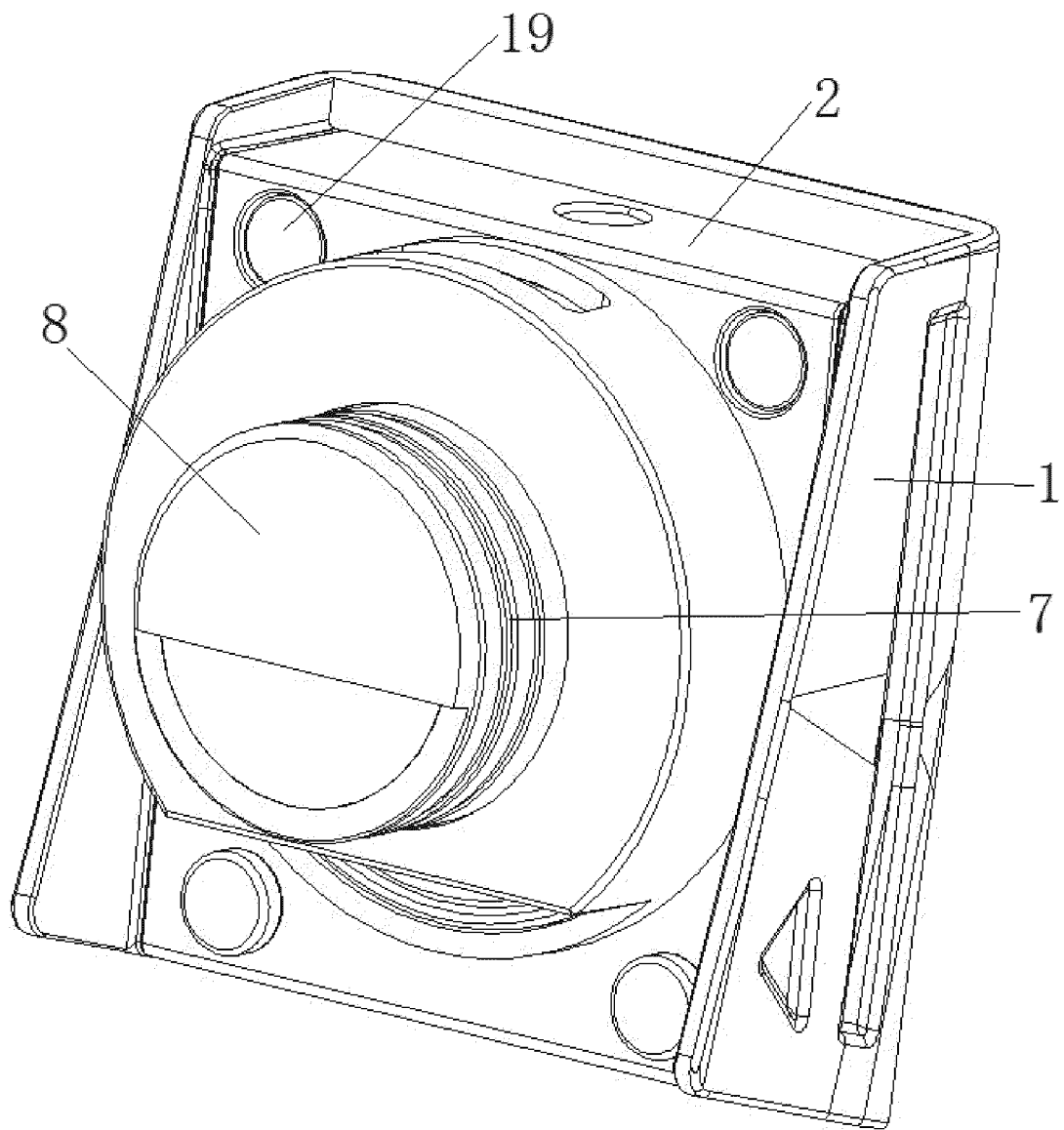


Fig.3

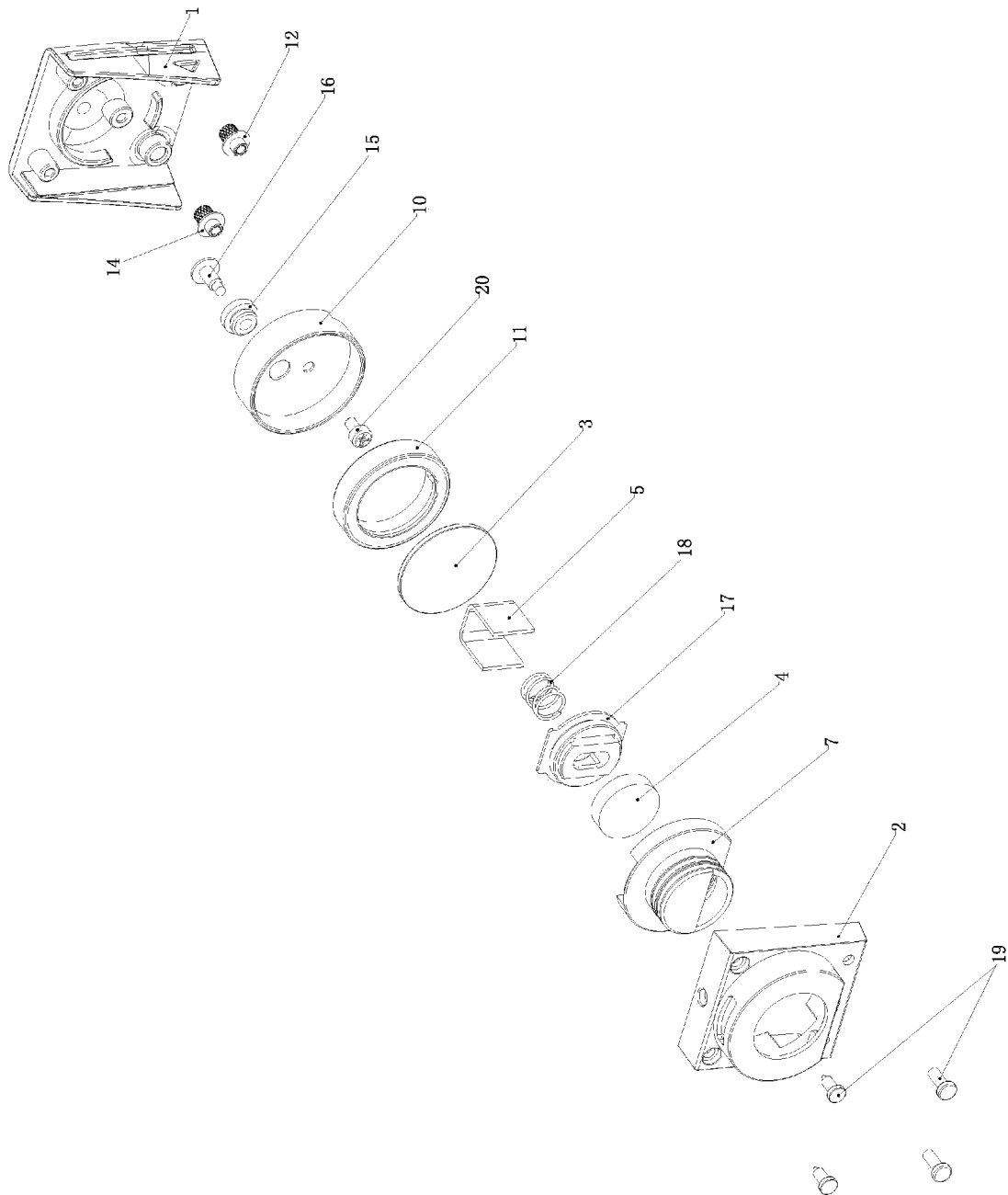


Fig.4

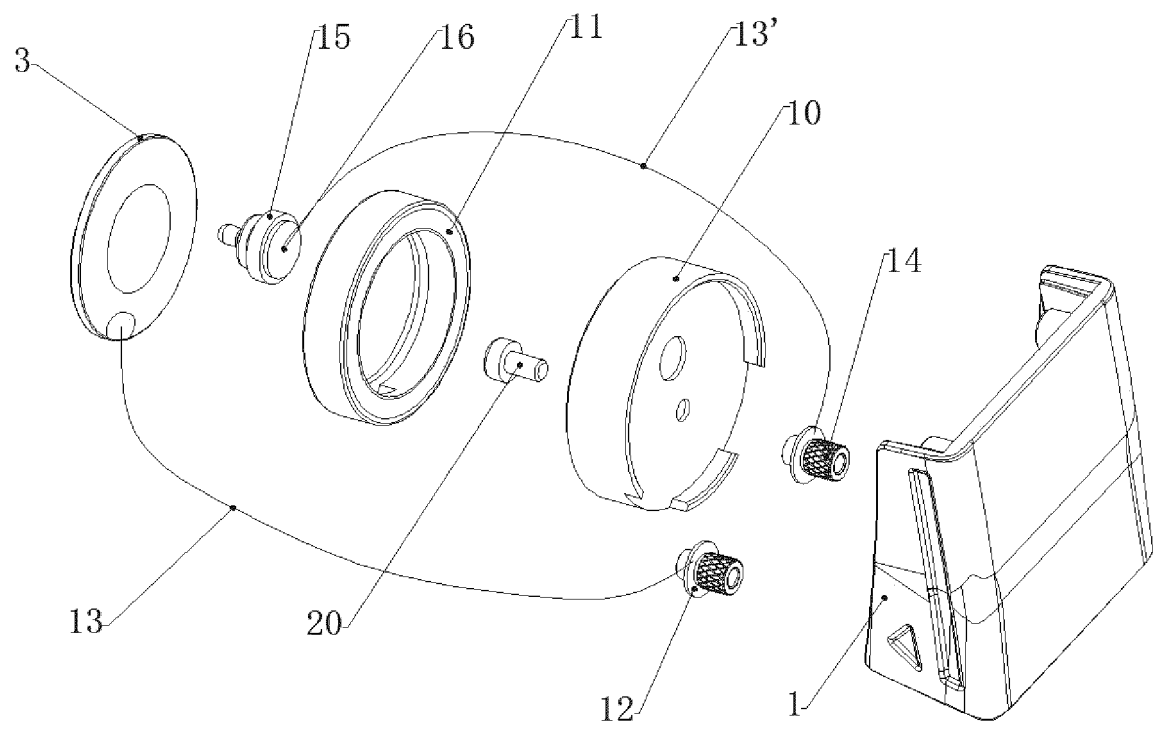


Fig.5

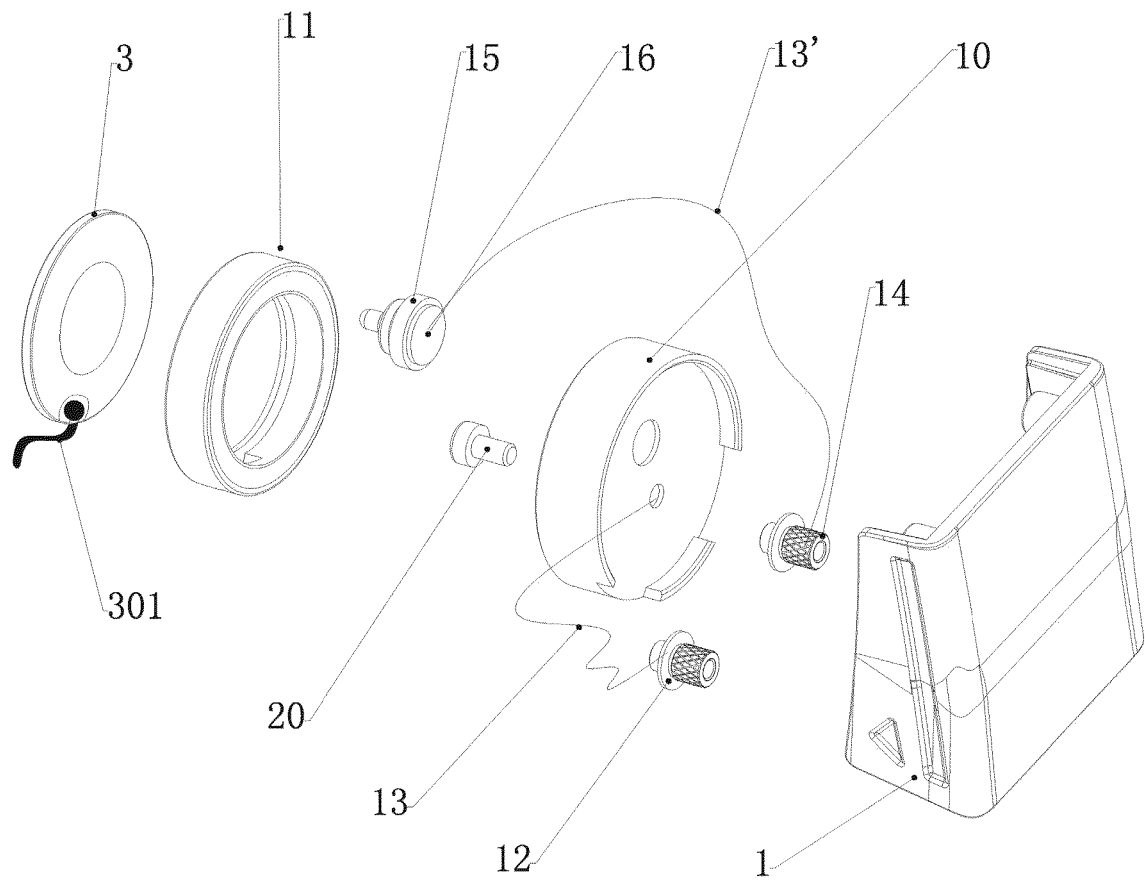


Fig.6

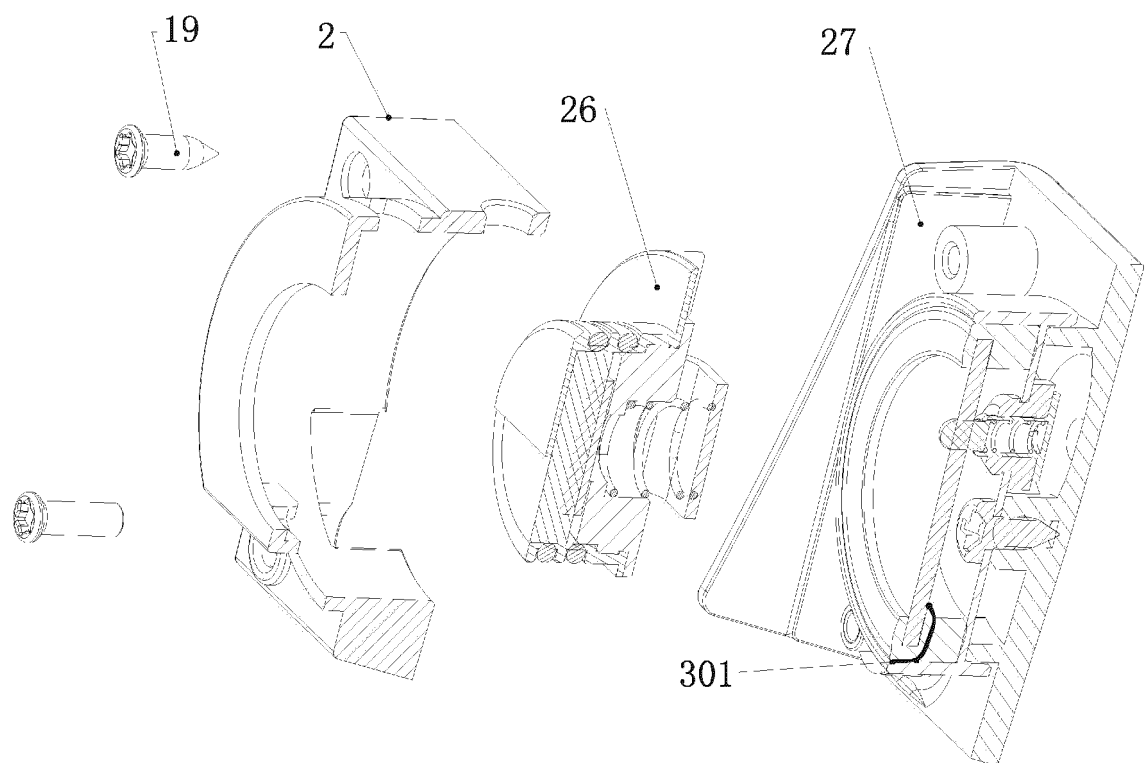


Fig.7

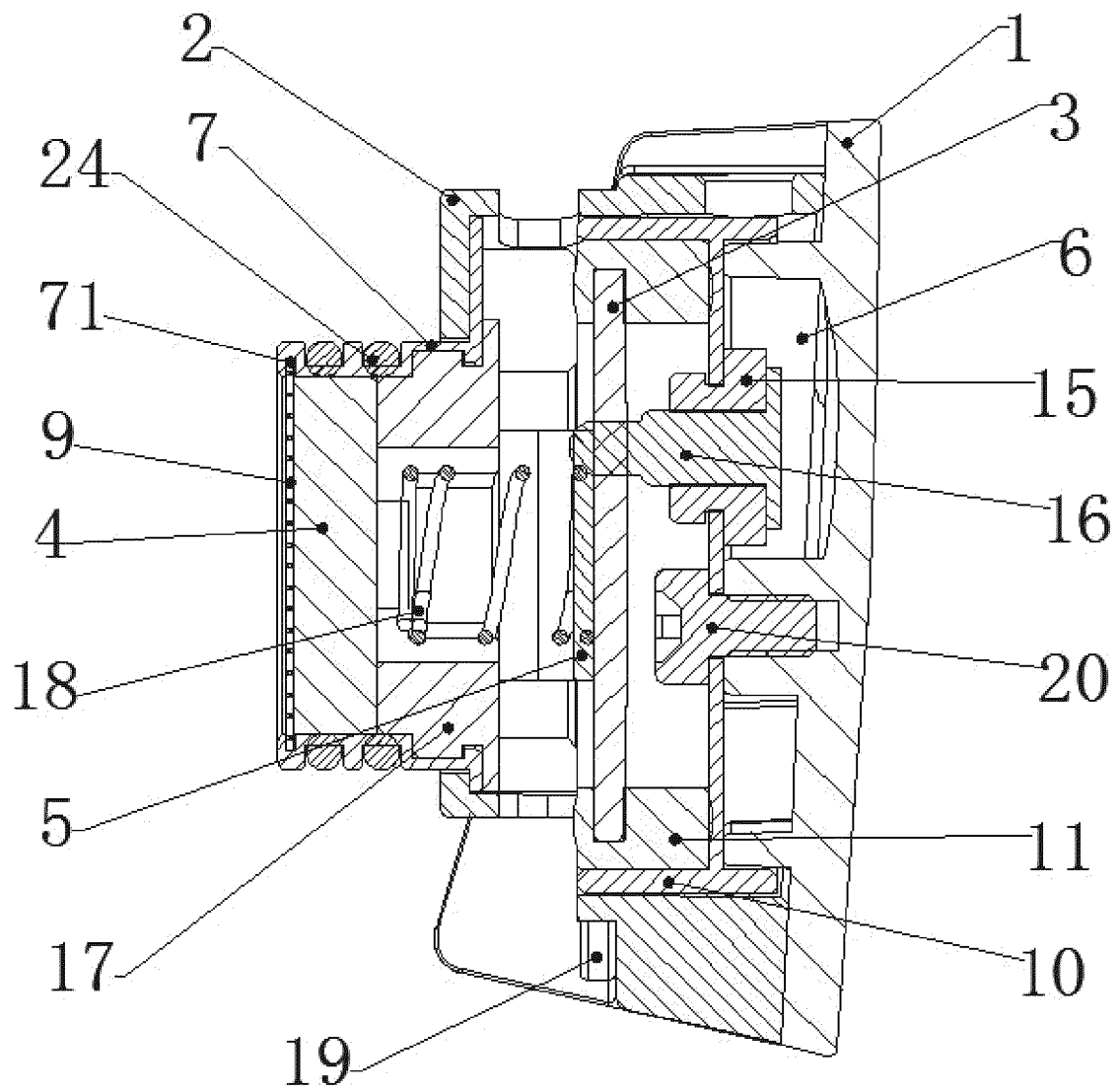


Fig 8

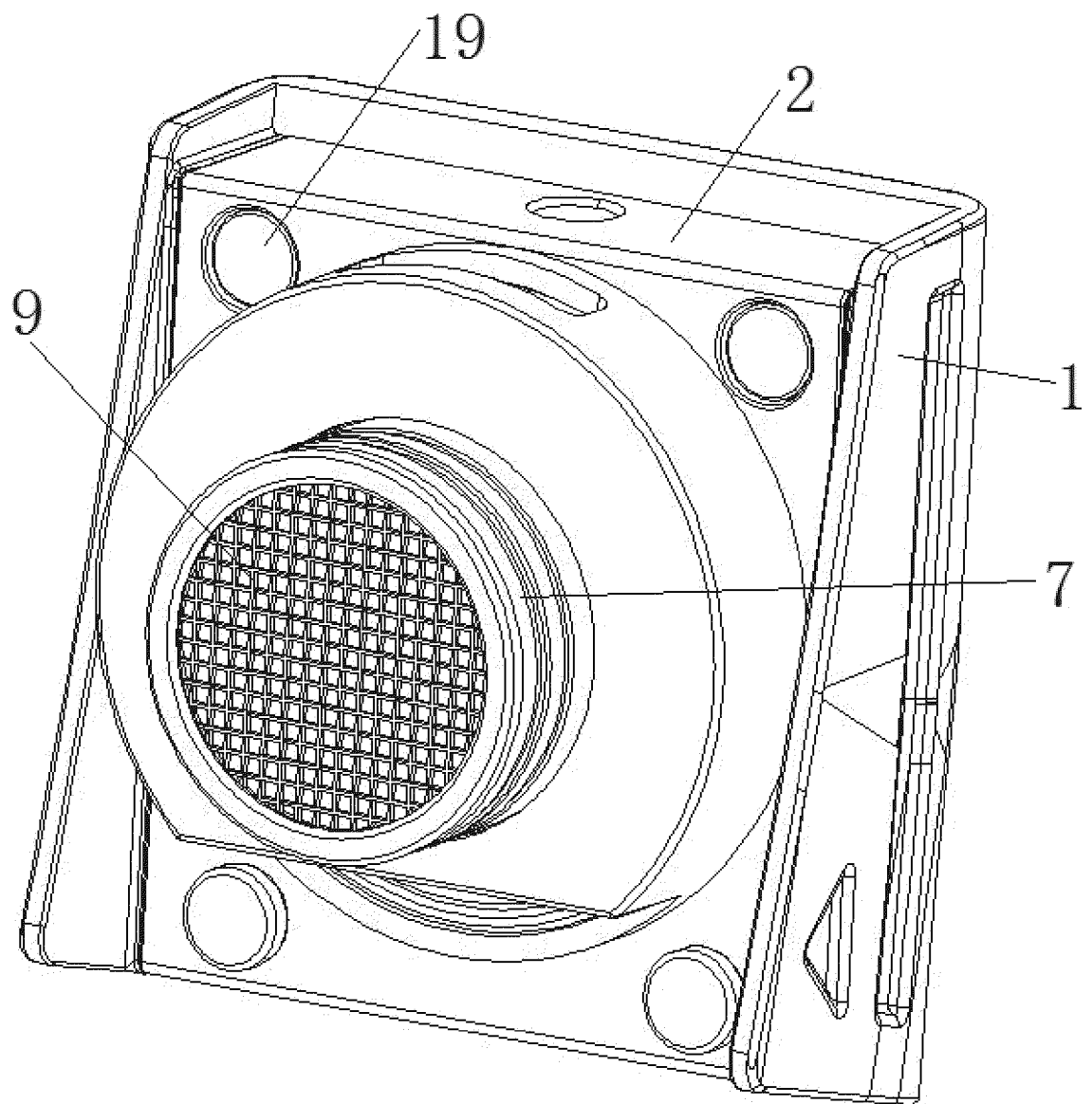


Fig.9

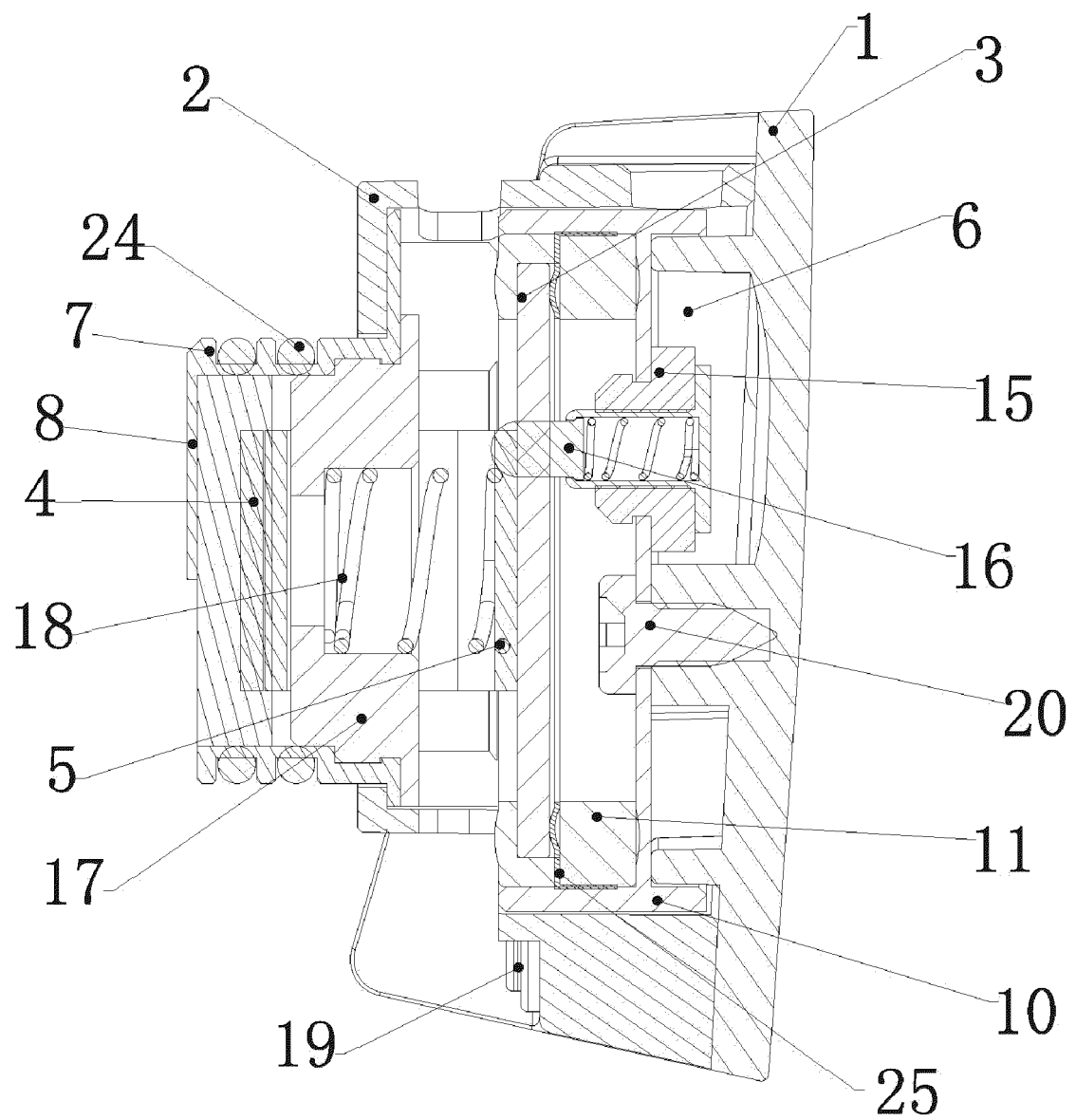


Fig.10

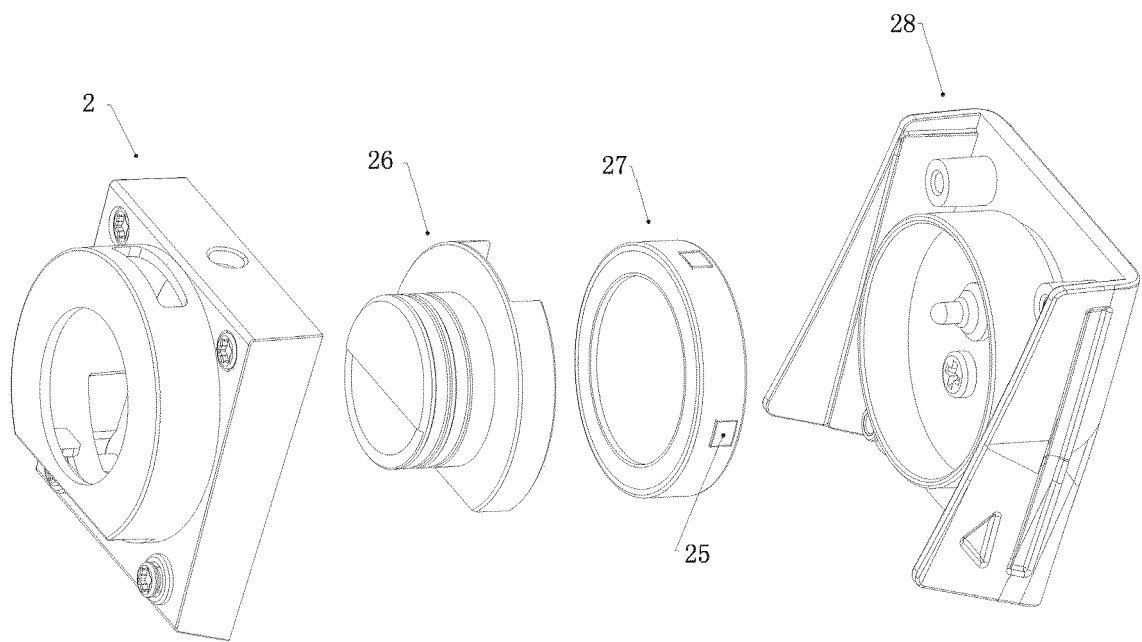


Fig.11

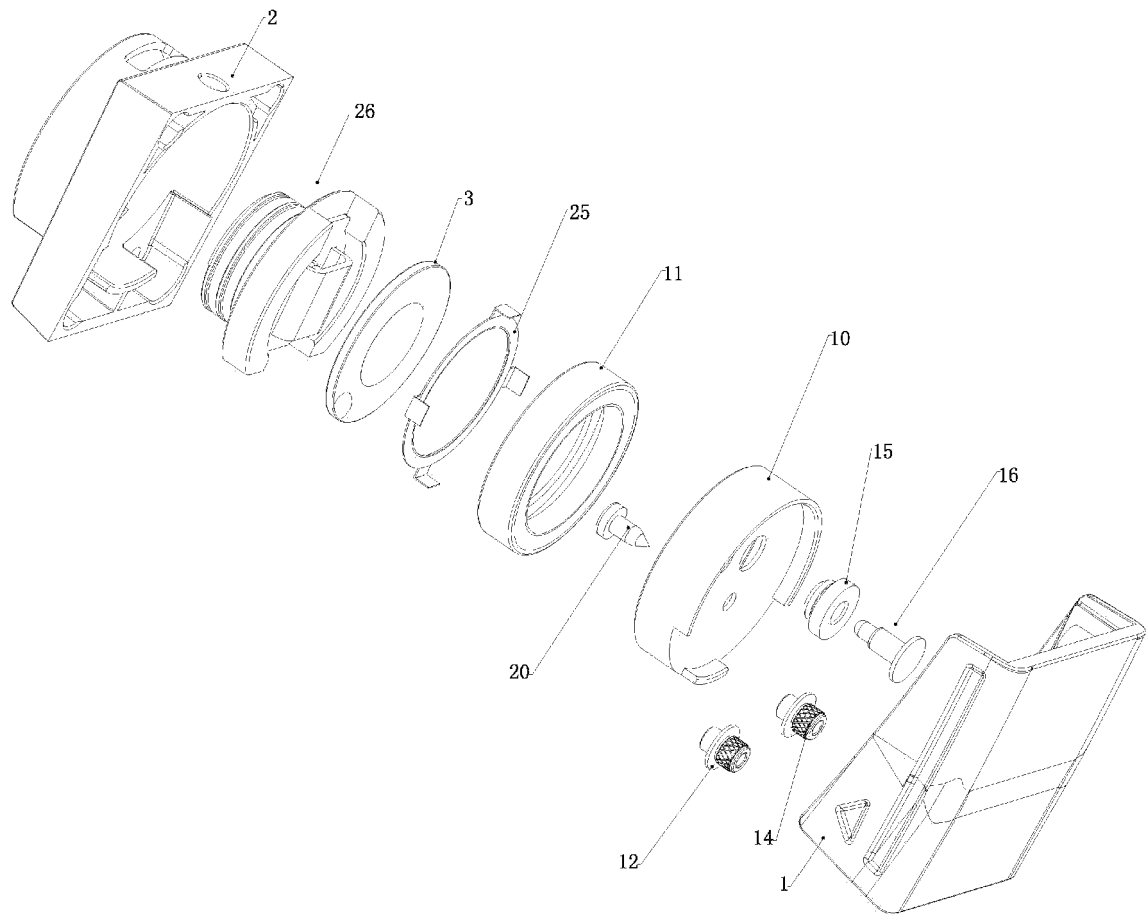


Fig.12

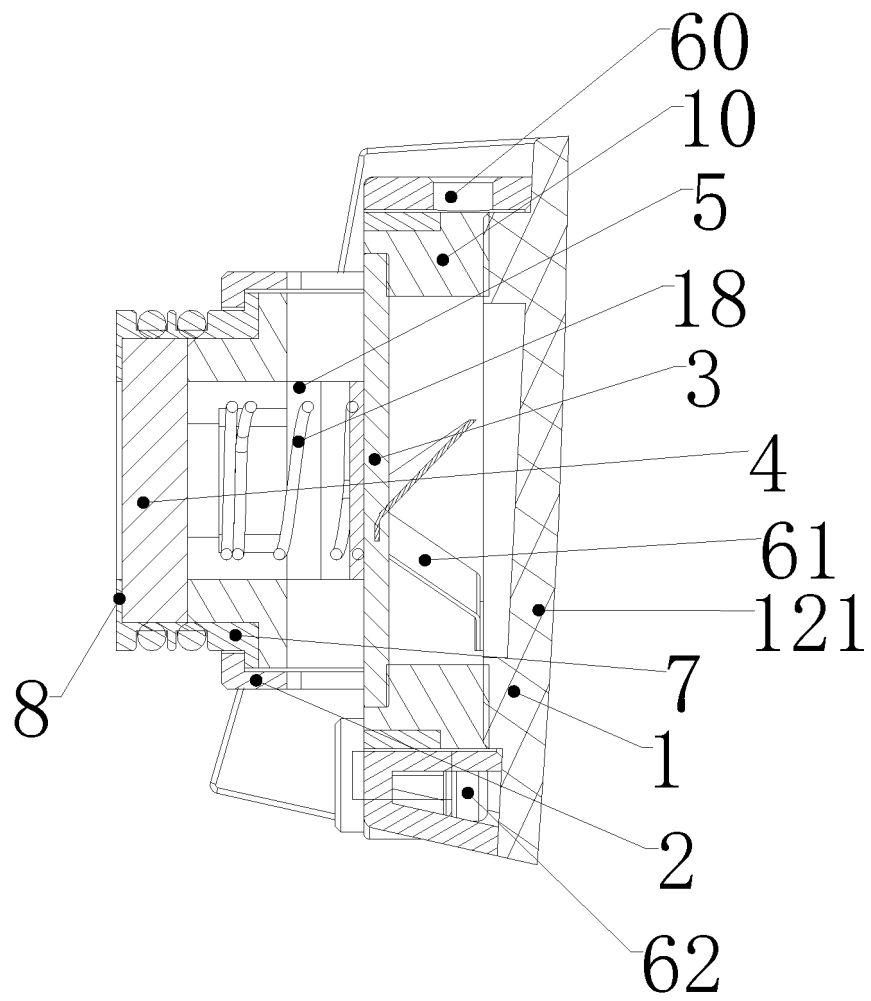


Fig.13

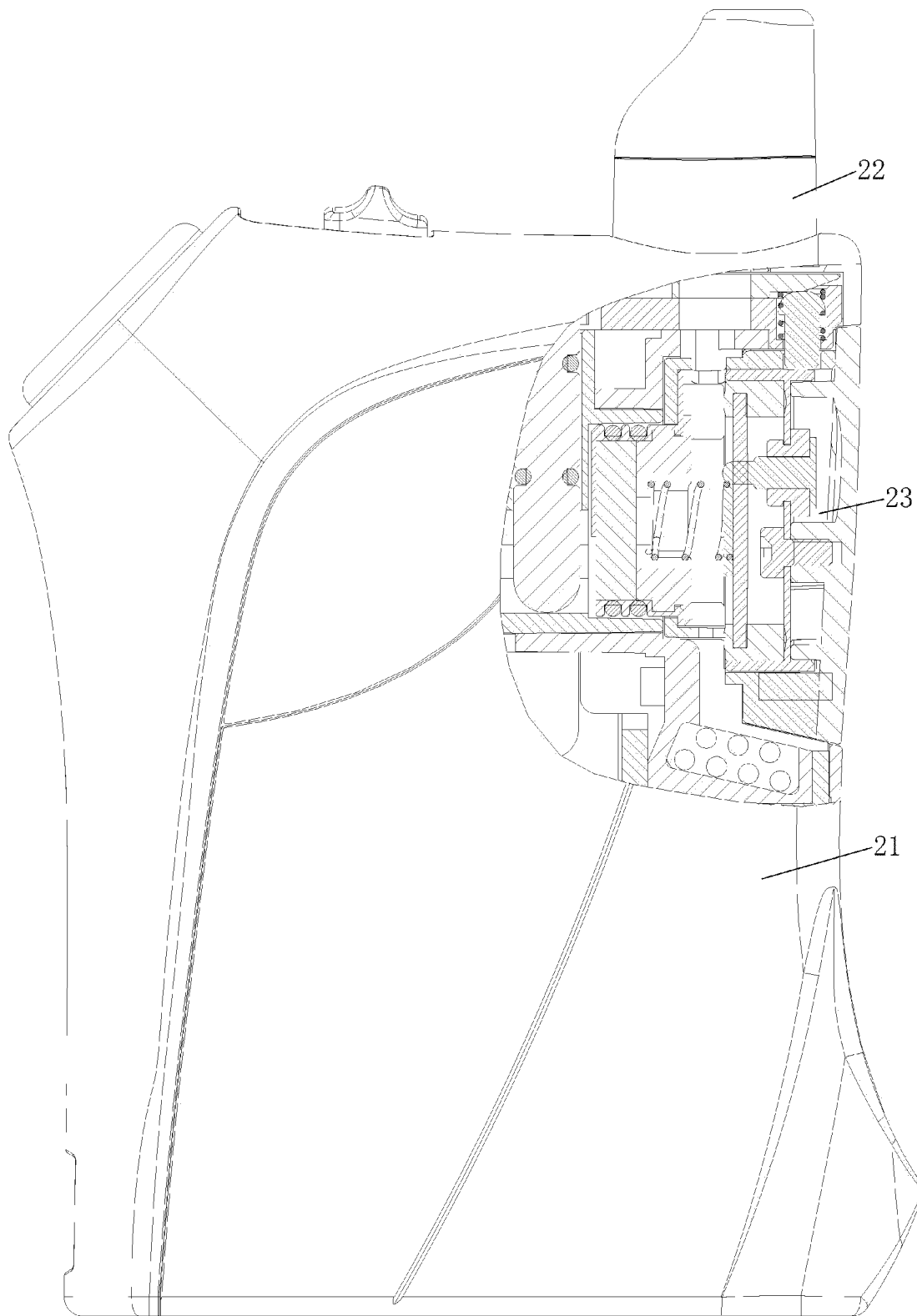


Fig. 14

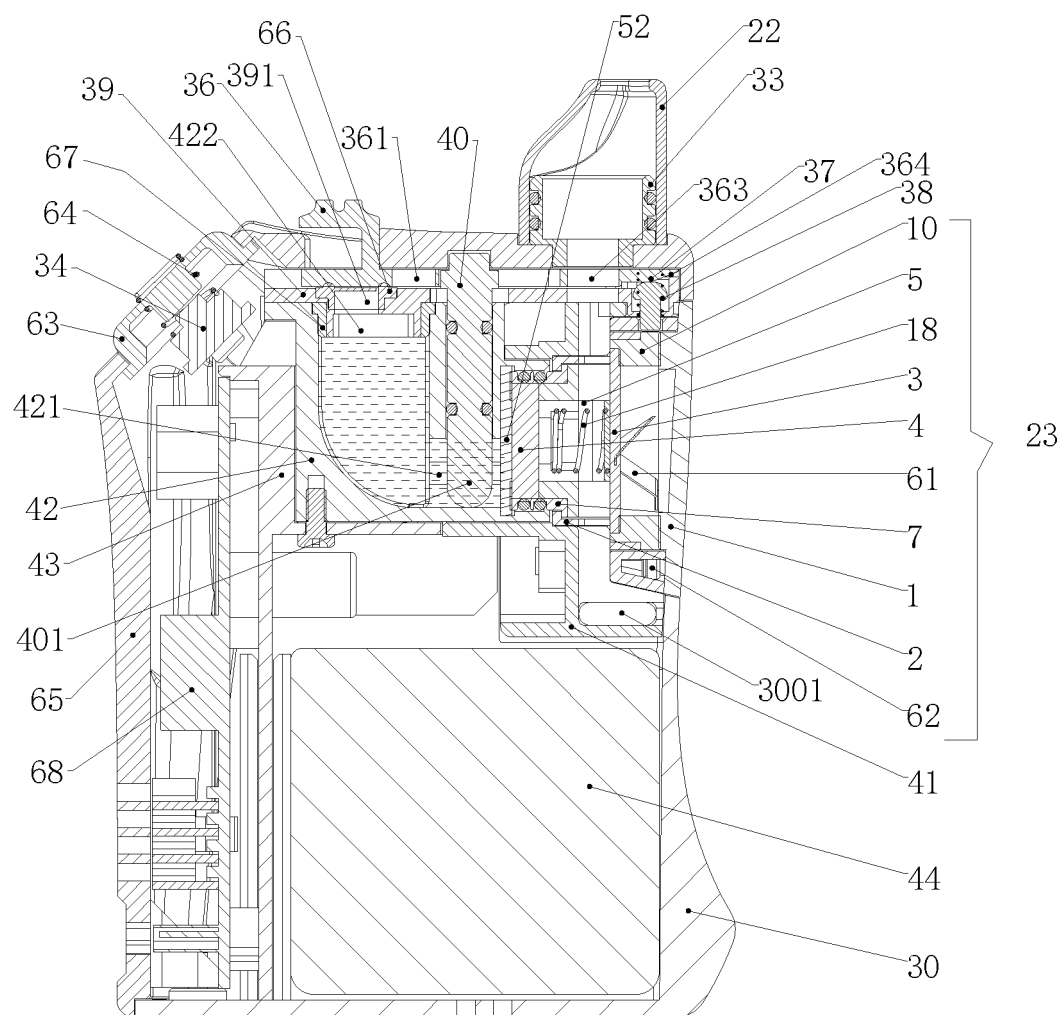


Fig.15

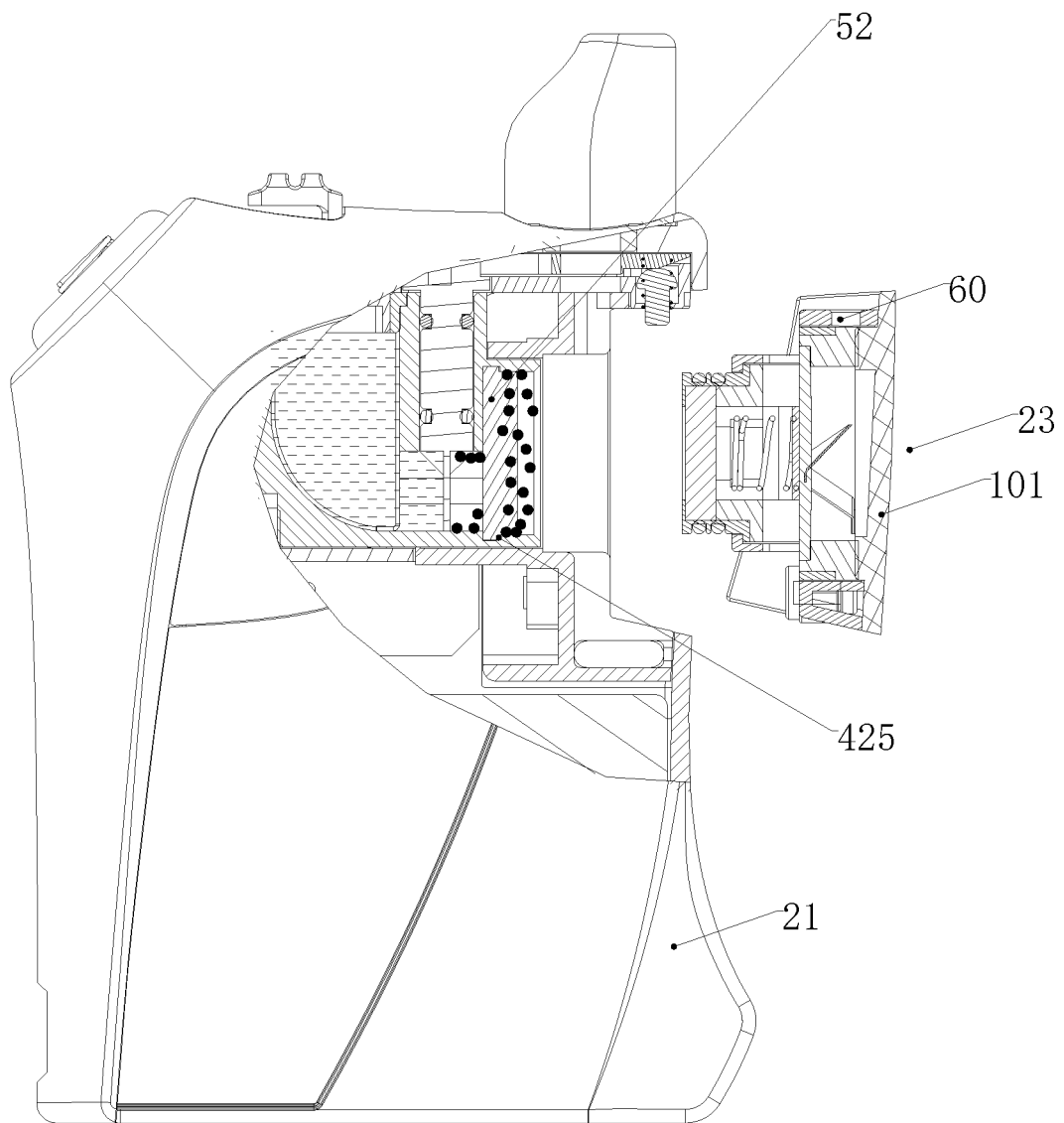


Fig.16

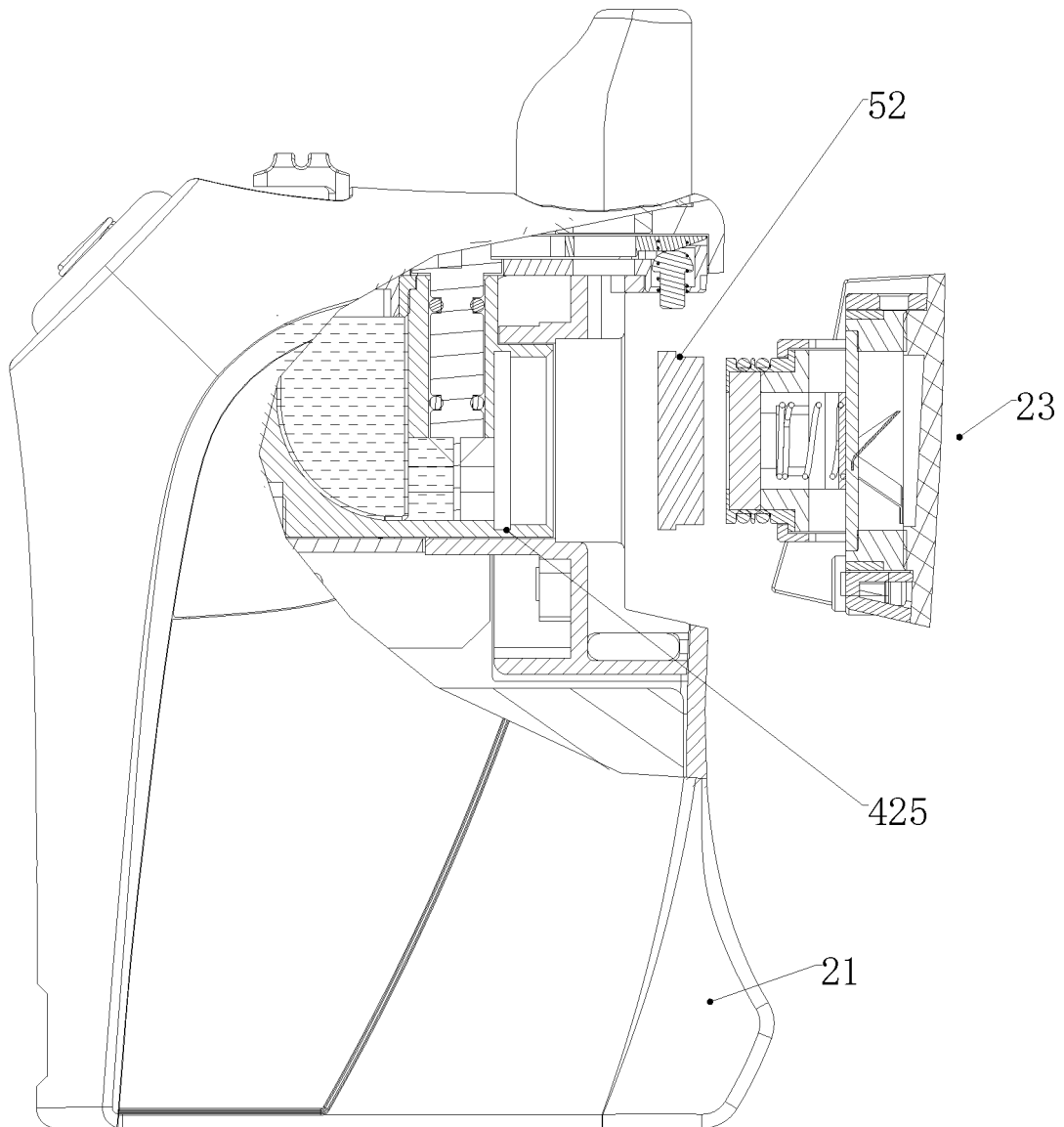


Fig.17

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2018/106184

A. CLASSIFICATION OF SUBJECT MATTER A24F 47/00(2006.01)i According to International Patent Classification (IPC) or to both national classification and IPC	B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) A24F47/- Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched																					
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) CNPAT, CNKI, WPI, EPODOC: 超声波, 雾化器, 雾化芯, 雾化片, 注油孔, 烟雾, 外壳, 壳内, 油仓, 相连, 导油, 内腔, ultrasonic, electronic, cigarette, atomizer, guide, structure, atomizing, sheet, oil, chamber, side, wall, outlet, end, passing, hole																						
C. DOCUMENTS CONSIDERED TO BE RELEVANT																						
<table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>PX</td> <td>CN 207185932 U (CHINA TOBACCO HUNAN INDUSTRIAL CO., LTD.) 06 April 2018 (2018-04-06) description, paragraphs [0002]-[0049], and figures 1-8</td> <td>1-5, 10</td> </tr> <tr> <td>A</td> <td>CN 206079039 U (CHINA TOBACCO HUNAN INDUSTRIAL CO., LTD.) 12 April 2017 (2017-04-12) description, paragraphs [0002]-[0051], and figures 1-11</td> <td>1-16</td> </tr> <tr> <td>A</td> <td>CN 105768228 A (SHENZHEN HANGSEN STAR TECHNOLOGY CO., LTD. ET AL.) 20 July 2016 (2016-07-20) entire document</td> <td>1-16</td> </tr> <tr> <td>A</td> <td>CN 106136335 A (ETSONG (QINGDAO) INDUSTRIAL CO., LTD.) 23 November 2016 (2016-11-23) entire document</td> <td>1-16</td> </tr> <tr> <td>A</td> <td>CN 105768239 A (SHENZHEN INNOKIN TECHNOLOGY CO., LTD.) 20 July 2016 (2016-07-20) entire document</td> <td>1-16</td> </tr> <tr> <td>A</td> <td>JP 2013150593 A (SHIMIZU, K.) 08 August 2013 (2013-08-08) entire document</td> <td>1-16</td> </tr> </tbody> </table>	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	PX	CN 207185932 U (CHINA TOBACCO HUNAN INDUSTRIAL CO., LTD.) 06 April 2018 (2018-04-06) description, paragraphs [0002]-[0049], and figures 1-8	1-5, 10	A	CN 206079039 U (CHINA TOBACCO HUNAN INDUSTRIAL CO., LTD.) 12 April 2017 (2017-04-12) description, paragraphs [0002]-[0051], and figures 1-11	1-16	A	CN 105768228 A (SHENZHEN HANGSEN STAR TECHNOLOGY CO., LTD. ET AL.) 20 July 2016 (2016-07-20) entire document	1-16	A	CN 106136335 A (ETSONG (QINGDAO) INDUSTRIAL CO., LTD.) 23 November 2016 (2016-11-23) entire document	1-16	A	CN 105768239 A (SHENZHEN INNOKIN TECHNOLOGY CO., LTD.) 20 July 2016 (2016-07-20) entire document	1-16	A	JP 2013150593 A (SHIMIZU, K.) 08 August 2013 (2013-08-08) entire document	1-16	☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																				
PX	CN 207185932 U (CHINA TOBACCO HUNAN INDUSTRIAL CO., LTD.) 06 April 2018 (2018-04-06) description, paragraphs [0002]-[0049], and figures 1-8	1-5, 10																				
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Date of the actual completion of the international search 20 November 2018	Date of mailing of the international search report 20 December 2018																					
Name and mailing address of the ISA/CN State Intellectual Property Office of the P. R. China (ISA/CN) No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088 China Facsimile No. (86-10)62019451	Authorized officer Telephone No.																					

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2018/106184

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