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(54) **ATOMIZER AND ELECTRONIC ATOMIZATION DEVICE**

(57) An atomizer (100) and an electronic atomization device, the atomizer (100) comprising a porous body (30), the porous body (30) being provided with a liquid channel (33) penetrating the porous body (30) in the length direction; a support frame (60), for accommodating and holding the porous body (30); the support frame (60) is provided with at least one air channel (64), the air channel (64) each being provided with an air inlet end and an air outlet end, and the air outlet ends being close to the liquid channel (33); and a flexible sealing element (70), which is positioned between the support frame (60) and the porous body (30); the sealing element (70) is provided with a shielding portion (53), which shields or seals the air outlet ends of the air channels (64), and the shielding portion (53) being configured to be able to bend or deform in response to a change in the negative pressure within a liquid storage cavity (12) so as to open the air channels (64) for external air to enter the liquid channel (33).

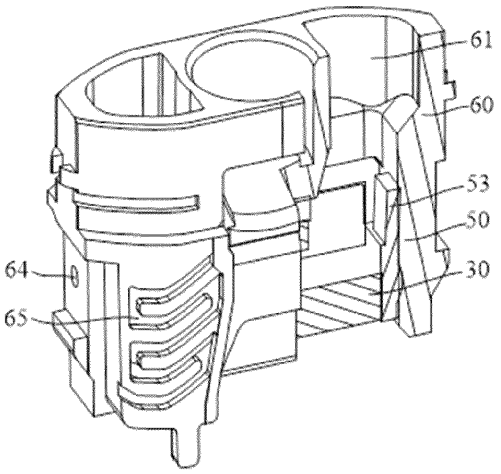

FIG. 7

EP 4 233 582 A1

Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Chinese Patent Application No. 202022360789.5, entitled " ATOMIZER AND ELECTRONIC ATOMIZATION DEVICE" and filed with the China National Intellectual Property Administration on October 21, 2020, which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] Embodiments of this application relate to the technical field of electronic atomization devices, and in particular, to an atomizer and an electronic atomization device.

BACKGROUND

[0003] There are aerosol-providing articles, for example, electronic atomization devices. These devices generally include e-liquid. The e-liquid is heated to be atomized, thereby generating an inhalable vapor or aerosol. The e-liquid may include nicotine and/or aromatics and/or an aerosol-generation article (for example, glycerol), except for the aromatics in the e-liquid.

[0004] An existing electronic atomization device generally includes a porous ceramic body that has a large amount of micropores provided inside and is configured to absorb and conduct the e-liquid, and a heating element is arranged on a surface of the porous ceramic body and configured to heat and atomize the absorbed e-liquid. The micropores in the porous body are used as channels for the e-liquid to infiltrate and flow to an atomization surface, and are also used as air exchange channels for air to be supplemented from the outside and enter an e-liquid storage cavity to maintain air pressure balance in the e-liquid storage cavity after the e-liquid in the e-liquid storage cavity is consumed. In this way, bubbles are generated in the porous ceramic body when the e-liquid is heated, atomized, and consumed, and then the bubbles emerge from an e-liquid absorbing surface and then enter the e-liquid storage cavity.

[0005] For the existing electronic atomization device, as the e-liquid in the liquid storage cavity arranged inside is consumed, the liquid storage cavity is gradually in a negative pressure state, to prevent fluid transmission to a certain extent, so that the e-liquid is less conveyed to the atomization surface through micropore channels of the porous ceramic body for atomization. Particularly, when the existing electronic atomization device is in a continuous inhaling and use state, the air outside the liquid storage cavity is difficult to pass through the micropore channels of the porous ceramic body to enter the liquid storage cavity in a short time, thereby slowing down a speed of conveying the e-liquid to the atomization surface. Insufficient e-liquid supplied to the heating element causes the temperature of the heating element to be excessively high, resulting in decomposition and volatilization of e-liquid components to generate harmful substances such as formaldehyde.

SUMMARY

[0006] Embodiments of this application provide an atomizer, configured to atomize a liquid substrate to generate an aerosol. The atomizer includes:

a liquid storage cavity, configured to store a liquid substrate;

a porous body, including a liquid channel running through the porous body in a length direction and being in fluid communication with the liquid storage cavity through the liquid channel to absorb the liquid substrate of the liquid storage cavity;

a heating element, combined with the porous body and configured to heat at least a part of the liquid substrate in the porous body to generate an aerosol;

a support frame, configured to hold the porous body, where at least one air channel is provided on the support frame, and the air channel includes an air inlet end and an air outlet end close to the liquid channel; and

a flexible seal element, positioned between the support frame and the porous body, where the seal element includes a block portion that blocks or seals the air outlet end, and the block portion is configured to bend or deform in response to a negative pressure change in the liquid storage cavity to open the air channel for air to enter the liquid channel.

[0007] In a preferred embodiment, the support frame includes a holding cavity, and the porous body is accommodated and held in the holding cavity; and the at least one air channel extends from an inner surface of the holding cavity to an outer surface of the support frame.

[0008] In a preferred embodiment, the block portion is configured to be located between the liquid channel and the air channel.

[0009] In a preferred embodiment, the at least one air channel is configured to extend in the length direction of the porous body.

[0010] In a preferred embodiment, the block portion is suspended relative to other parts of the seal element.

[0011] In a preferred embodiment, a notch or a slit is provided on the block portion; and the notch or the slit is configured to open or enlarge in response to the negative pressure change in the liquid storage cavity, thereby opening the air channel.

[0012] In a preferred embodiment, the porous body includes a liquid absorbing surface adjacent to the liquid channel for absorbing the liquid substrate, and an atomization surface for the aerosol to release and escape; and the atomizer includes an atomization cavity that is in airflow communication with external air, where at least

a part of the atomization cavity is defined by the atomization surface, and the air channel is in airflow communication with the atomization cavity and then is in communication with the external air.

[0013] In a preferred implementation, a recessed structure is arranged on the block portion to reduce strength of the block portion, so that the block portion is easier to bend or deform.

[0014] In a preferred embodiment, the seal element is configured in the holding cavity and wraps at least a part of an outer surface of the porous body.

[0015] In a preferred embodiment, the air channel extends in a substantially same direction as the liquid channel, and the air outlet end of the air channel is configured to face the liquid channel.

[0016] This application further provides an electronic atomization device, including an atomization device configured to atomize a liquid substrate to generate an aerosol, and a power supply assembly configured to supply power to the atomization device. The atomization device includes the foregoing atomizer.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] One or more embodiments are described by way of example with reference to the corresponding figures in the accompanying drawings, and the exemplary descriptions are not to be construed as limiting the embodiments. Elements/modules and steps in the accompanying drawings that have same reference numerals are represented as similar elements/modules and steps, and unless otherwise particularly stated, the figures in the accompanying drawings are not drawn to scale.

FIG. 1 is a schematic structural diagram of an electronic atomization device according to an embodiment of this application;

FIG. 2 is a schematic structural diagram of an embodiment of the atomizer in FIG. 1;

FIG. 3 is a schematic exploded view of an atomizer of an embodiment in FIG. 2 from a perspective;

FIG. 4 is a schematic cross-sectional structural view of the atomizer in FIG. 2;

FIG. 5 is a schematic structural diagram of a flexible silicone sleeve in FIG. 3 from another perspective;

FIG. 6 is a schematic structural diagram of a porous body in FIG. 3 from another perspective;

FIG. 7 is a schematic diagram of a porous body and flexible silicone sleeve in FIG. 5 that are assembled in a support frame;

FIG. 8 is a schematic diagram in which a block portion opens an air pressure balance hole or channel after bending in FIG. 7; and

FIG. 9 is a schematic structural diagram of a flexible silicone sleeve according to another embodiment.

DETAILED DESCRIPTION

[0018] For ease of understanding of this application, this application is described in more detail below with reference to the accompanying drawings and specific implementations.

[0019] An embodiment of this application provides an electronic atomization device. Referring to FIG. 1, the electronic atomization device includes: an atomizer 100, configured to store a liquid substrate and atomize the liquid substrate to generate an aerosol; and a power supply assembly 200, configured to supply power to the atomizer 100.

[0020] In an optional implementation, as shown in FIG. 1, the power supply assembly 200 includes: a receiving cavity 270, provided at an end in a length direction and configured to receive and accommodate at least a part of the atomizer 100; and a first electrical contact 230, at least partially exposed on a surface of the receiving cavity 270, and configured to be electrically connected to the atomizer 100 when at least a part of the atomizer 100 is received and accommodated in the power supply assembly 200, to supply power to the atomizer 100.

[0021] According to a preferred implementation shown in FIG. 1, a second electrical contact 21 is arranged on an end portion of the atomizer 100 opposite to the power supply assembly 200 in the length direction, so that when at least a part of the atomizer 100 is received in the receiving cavity 270, the second electrical contact 21 contacts with and abuts against the first electrical contact 230 to form conductivity.

[0022] A seal member 260 is arranged inside the power supply assembly 200, and at least a part of an inner space of the power supply assembly 200 is separated through the seal member 260 to form the receiving cavity 270. In the preferred implementation shown in FIG. 1, the seal member 260 is configured to extend in a cross section direction of the power supply assembly 200, and is prepared by a flexible material, so as to prevent the liquid substrate seeping from the atomizer 100 to the receiving cavity 270 from flowing to a controller 220, a sensor 250, and other components inside the power supply assembly 200.

[0023] In the preferred implementation shown in FIG. 1, the power supply assembly 200 further includes: a battery cell 210, located at an other end facing away from the receiving cavity 270 in the length direction, and configured to supply power; and a controller 220, arranged between the battery cell 210 and an accommodating cavity, and operably guiding a current between the battery cell 210 and the first electrical contact 230.

[0024] During use, the power supply assembly 200 includes a sensor 250, configured to sense an inhalation airflow generated by a suction nozzle cap 20 of the atomizer 100 during inhalation, so that the controller 220 controls, according to a detection signal of the sensor 250, the battery cell 210 to output the current to the atomizer 100.

[0025] Further, in the preferred implementation shown in FIG. 1, a charging interface 240 is arranged on an other end of the power supply assembly 200 opposite to the receiving cavity 270, and is configured to be connected to an external device charging device to charge the battery cell 210.

[0026] Embodiments in FIG. 2 to FIG. 4 are schematic structural diagrams of an embodiment of the atomizer 100 in FIG. 1. The atomizer 100 includes:

a main housing 10. As shown in FIG. 2 and FIG. 3, the main housing 10 is substantially in a flat cylindrical shape, and certainly, a hollow interior of the main housing 10 is a necessary functional device configured to store and atomize the liquid substrate. The main housing 10 has a near end 110 and a far end 120 opposite to each other in the length direction. According to requirements for common use, the near end 110 is configured as an end for a user to inhale the aerosol, and a suction nozzle A for the user to inhale is arranged at the near end 110; and the far end 120 is used as an end combined with the power supply assembly 200, and the far end 120 of the main housing 10 is an opening on which a detachable end cap 20 is mounted. The opening is configured to mount necessary functional components inside the main housing 10.

[0027] Further, in the embodiment shown in FIG. 2, the second electrical contact 21 for conducting with the first electrical contact 230 of the power supply assembly 200 is arranged on the end cap 20.

[0028] Further, referring to FIG. 3 and FIG. 4, a liquid storage cavity 12 configured to store a liquid substrate, a porous body 30 configured to absorb the liquid substrate from the liquid storage cavity 12, and a heating element 40 configured to heat and atomize the liquid substrate absorbed by the porous body 30 are arranged inside the main housing 10. Specifically, in a cross-sectional structural diagram shown in FIG. 4, a vapor-gas transmission pipe 11 in an axial direction is arranged inside the main housing 10, and the liquid storage cavity 12 configured to store the liquid substrate is formed in a space between an outer wall of the vapor-gas transmission pipe 11 and an inner wall of the main housing 10. A first end of the vapor-gas transmission pipe 11 opposite to the near end 110 is in communication with the suction nozzle A, and a second end opposite to the far end 120 is in airflow connection with an atomization cavity 80 that releases the aerosol, thereby transmitting the aerosol generated by atomizing the liquid substrate by the heating element 40 and released to the atomization cavity 80 to the suction nozzle A for inhalation.

[0029] Referring to a structure of the porous body 30 shown in FIG. 3, FIG. 4, and FIG. 6, a shape of the porous body 30 is configured to be substantially, but not limited to, a block structure in this embodiment. According to a preferred design in this embodiment, the porous body includes a liquid absorbing surface 310 and an atomization surface 320 that are arched in shape and face away from each other in the axial direction of the main housing 10, that is, an upper surface and a lower surface of a base portion of the porous body 30 in FIG. 3. The liquid absorbing surface 310 is opposite to the liquid storage cavity 12, and directly or indirectly contacts with the liquid substrate in the liquid storage cavity 12 to absorb the liquid substrate. A microporous structure inside the porous body 30 conducts the liquid substrate to the atomization surface 320 for heating and atomizing to form the aerosol, and the aerosol is released or escapes from the atomization surface 320. For the structure of the porous body 30 shown in FIG. 4, because the liquid absorbing surface 310 is parallel to the atomization surface 320, both movement directions of the liquid substrate and the aerosol in the porous body 30 are perpendicular to a plane on which the atomization surface 320 is located. The aerosol and the liquid substrate move in the porous body 30 more smoothly and are relatively convenient to manufacture.

[0030] Further, referring to FIG. 6, the porous body 30 is arched in shape and has a first side wall 31 and a second side wall 32 opposite to each other in a thickness direction, and a base part 34 extending between the first side wall 31 and the second side wall 32. An upper surface and a lower surface of the base part 34 are respectively configured as the liquid absorbing surface 310 and the atomization surface 320. In addition, the first side wall 31 and the second side wall 32 extend in a width direction to define a liquid channel 33 between the first side wall 31 and the second side wall 32, and the liquid absorbing surface 310 is exposed in the liquid channel 33 to absorb the liquid substrate.

[0031] In some implementations, the porous body 30 may be made of a material of a hard capillary structure such as a porous ceramic, a porous glass ceramic, or a porous glass. The heating element 40 is preferably formed on the atomization surface 320 by mixing conductive raw material powder with a printing assistant to form a slurry and then sintering after printing, so that an entire surface or most of the surface of the heating element is closely attached to the atomization surface 320, and the heating element has effects such as high atomization efficiency, less heat loss, and dry-burn prevention or dry-bum reduction. In some embodiments, the heating element 40 may be made of a material such as stainless steel, nickel chromium alloy, iron chromium aluminum alloy, or metal titanium.

[0032] Further, referring to FIG. 3 and FIG. 4, to assist in mounting and fixing the porous body 30 and sealing the liquid storage cavity 12, the main housing 10 is further provided with a flexible seal element 50, a rigid support frame 60, and a flexible seal element 70. The flexible seal element 50 can not only seal an opening of the liquid storage cavity 12, but also fixes and holds the porous body 30 inside the support frame 60. For a specific structure and shape, the flexible seal element 50 may be a flexible silicone sleeve, and the flexible silicone sleeve is substantially in a hollow cylinder shape. A hollow interior is configured to accommodate the porous body 30,

and is sleeved outside the porous body 30 in a tight fitting manner.

[0033] The rigid support frame 60 holds the porous body 30 sleeved with the flexible silicone sleeve 50. In some embodiments, the rigid support frame may be substantially in a ring shape with a lower end being an opening, and an inner space thereof is configured to accommodate and hold the flexible silicone sleeve 50 and the porous body 30. On one hand, the flexible silicone sleeve 50 can seal a gap between the porous body 30 and the support frame 60 to prevent the liquid substrate from seeping out of the gap between the porous body 30 and the support frame 60. On the other hand, the flexible silicone sleeve 50 is located between the porous body 30 and the support frame 60, which is advantageous for the porous body 30 to be stably accommodated in the support frame 60 to avoid loosening.

[0034] The flexible seal element 70 is arranged on an end portion of the liquid storage cavity 12 facing the far end 120, and a shape thereof matches a cross section of an inner contour of the main housing 10, thereby sealing the liquid storage cavity 12 and preventing the liquid substrate from seeping from the liquid storage cavity 12. Further, to prevent shrinkage and deformation of a flexible silicone base 53 made of a flexible material from affecting sealing tightness, the rigid support frame 60 is accommodated in the flexible seal element 70 to support the flexible silicone base.

[0035] After mounting, to ensure smooth conveying of the liquid substrate and output of the aerosol, a first liquid guide hole 71 for the liquid substrate to flow through is provided on the flexible seal element 70, a second liquid guide hole 61 is correspondingly provided on the rigid support frame 60, and a third liquid guide hole 51 is provided on the flexible silicone sleeve 50. During use, the liquid substrate in the liquid storage cavity 12 sequentially passes through the first liquid guide hole 71, the second liquid guide hole 61, and the third liquid guide hole 51 and flows to the liquid channel 33 of the porous body 30 held in the flexible silicone sleeve 50, and then is absorbed by the liquid absorbing surface 310. Further, as shown by arrow R1 in FIG. 4, the liquid substrate is absorbed and conveyed to the atomization surface 320 for atomization, and then the generated aerosol is released into the atomization cavity 80 defined between the atomization surface 320 and the end cap 20.

[0036] During inhalation, for an output structure of the aerosol, referring to FIG. 3 to FIG. 6, a first insertion hole 72 for a lower end of the vapor-gas transmission pipe 11 to insert is provided on the flexible seal element 70, a second insertion hole 62 is correspondingly provided on the rigid support frame 60, and a first airflow channel 65 for the atomization surface 320 and the second insertion hole 62 to be in airflow communication is provided on one side of the rigid support frame 60 opposite to the main housing 10. After mounting, a complete airflow inhalation path is shown by arrow R2 in FIG. 3. The external air enters the atomization cavity 80 through an air inlet 23 on the end cap 20, carries the generated aerosol to flow from the first airflow channel 65 to the second insertion hole 62, and then is outputted to the vapor-gas transmission pipe 11 through the first insertion hole 72.

[0037] In the preferred embodiments shown in FIG. 3 and FIG. 4, the end cap 20 is further provided with a circumferential seal ring 25 surrounding the end cap 20. The seal ring is configured to seal a gap between the main housing 10 and the end cap 20.

[0038] With reference to the shape of the porous body 30 shown in FIG. 6, FIG. 3 and FIG. 4 show the structure of the support frame 60 that can supplement air into the liquid storage cavity 12 through the liquid channel 33 of the porous body 30. Specifically, each of two opposite side walls of the support frame 60 in a width direction thereof is provided with an air pressure balance channel 64. The air pressure balance channel 64 provides an air channel for air to enter the liquid channel 33, and the air channel may be formed by pores running through the side walls. The air pressure balance channel 64 is configured to extend in the length direction of placing the porous body and is opposite to the liquid channel 33 of the porous body 30, that is, the air pressure balance channel 64 extends substantially in a same direction as the liquid channel 33.

[0039] In a specific implementation, with reference to examples shown in FIG. 3 and FIG. 4, a holding space 66 for accommodating and holding the porous body 30 is provided in the support frame 60. The air pressure balance channel 64 runs through from an inner wall surface of the holding space 66 to an outer wall surface of the support frame 60, and the air pressure balance channel 64 includes an air inlet end and an air outlet end. The air inlet end is located on the outer wall surface of the support frame 60, and the air outlet end is located on the inner wall surface of the holding space 66, so that when the porous body is accommodated in the holding space 66, the air outlet end of the air pressure balance channel 64 is close to the liquid channel 33. In the example shown in FIG. 4, the air pressure balance channel 64 is configured to face the liquid channel 33.

[0040] In addition, to prevent the air pressure balance channel 64 from directly communicating with the liquid channel 33 of the porous body 30, causing the conveyed liquid substrate to be leaked out from the air pressure balance channel 64, a block portion 53 extending in the length direction of the main housing 10 is arranged on an end portion of the flexible silicone sleeve 50 in the width direction shown in FIG. 5 includes. When the flexible silicone sleeve 50 wraps the porous body 30 and then is accommodated in the support frame 60, the block portion 53 may block or seal the air pressure balance channel 64, as shown in FIG. 7.

[0041] As the liquid substrate in the liquid storage cavity 12 is gradually consumed, a negative pressure in the liquid storage cavity 12 gradually increases. When the negative pressure exceeds a certain threshold, the block portion 53 bends or deforms in a direction away from the

air pressure balance channel 64, thereby opening the air pressure balance channel 64. As shown in FIG. 8, in this case, the external air can enter the second liquid guide hole 61 through the air pressure balance channel 64 and finally enter the liquid storage cavity 12, at least partially eliminating or relieving the negative pressure in the liquid storage cavity 12, and maintaining smooth supply of the liquid substrate to the porous body 30.

[0042] In other feasible implementations, a specific form of the air channel provided on the support frame 60 may be diversified. For example, the air channel includes a groove provided on the inner wall surface of the holding space 66. An end of the groove extends outside the holding space 66 to facilitate air to enter the groove, and an other end of the groove terminates at a position on the inner wall surface of the holding space 66, and the position is close to the liquid channel on the porous body. The groove may be partially covered by the flexible silicone sleeve 50, a termination end of the groove is configured as the air outlet end of the air channel, and the termination end is covered by the block portion 53 on the flexible silicone sleeve 50, so that an air pressure of the groove can push the block portion 53 to deform toward the liquid channel, thereby causing the termination end of the groove to be in fluid communication with the liquid channel.

[0043] In the preferred embodiment shown in FIG. 5, the block portion 53 is suspended in a form of a cantilever. Further, in FIG. 5, a recessed structure 531 is further arranged on the block portion 53. The recessed structure 531 reduces the thickness or strength of the block portion 53, so that the block portion is easier to bend or deform under a negative pressure.

[0044] FIG. 9 shows a schematic structural diagram of a flexible silicone sleeve 50a according to another variation embodiment. A portion of the flexible silicone sleeve 50a corresponding to an end opening of the air pressure balance channel 64 is recessed inward to form a block portion 53a that blocks or seals the air pressure balance channel 64. In addition, a notch or a slit 531a is formed on the block portion 53a, and when the negative pressure in the liquid storage cavity 12 increases beyond a threshold range, the block portion 53a is further recessed and deformed inward to further open or enlarge the notch or slit 531a, thereby opening the end opening of the air pressure balance channel 64 to allow the external air to enter.

[0045] Further, in a preferred embodiment, the notch or the slit 531a is in a shape of a cross.

[0046] The notch or the slit 531a in FIG. 9 may be formed in mold molding, or may be formed in manners such as cutting and carving. In a non-inhalation state, the block portion 53a closes the notch or the slit 531a by a pressure of the liquid substrate in the liquid channel 33. During inhalation, the negative pressure in the liquid storage cavity 12 gradually increases and is conveyed to the liquid channel 33, and the notch or the slit 531a can be enlarged and opened, thereby opening the end opening of the air pressure balance channel 64 to allow the external air to enter.

[0047] Further, as shown in FIG. 7 and FIG. 8, after assembly, the air pressure balance channel 64 is in airflow communication with the atomization cavity 80 through a gap between the support frame 60 and the main housing 10, or the like. Therefore, during implementations, when the block portion 53 is bent or deformed to open the air pressure balance channel 64, the air in the atomization cavity 80 enters the liquid storage cavity 12 through the air pressure balance channel 64 to relieve the negative pressure. In a preferred embodiment, a plurality of capillary grooves 65 extending in a circumferential direction are arranged on an outer surface of the support frame 60. The capillary grooves 65 can, on one hand, provide a path for airflow communication between the air pressure balance channel 64 and the atomization cavity 80, and on the other hand, maintain aerosol condensate in the atomization cavity 80 or in the airflow in a manner of capillary adsorption.

[0048] It should be noted that, the specification of this application and the accompanying drawings thereof illustrate preferred embodiments of this application, but this application is not limited to the embodiments described in this specification. Further, a person of ordinary skill in the art may make improvements or modifications according to the foregoing description, and all the improvements and modifications shall fall within the protection scope of the attached claims of this application.

Claims

1. An atomizer, comprising:

a liquid storage cavity, configured to store a liquid substrate;

a porous body, comprising a liquid channel running through the porous body in a length direction and being in fluid communication with the liquid storage cavity through the liquid channel to absorb the liquid substrate of the liquid storage cavity;

a heating element, combined with the porous body and configured to heat at least a part of the liquid substrate in the porous body to generate an aerosol;

a support frame, configured to hold the porous body, wherein at least one air channel is provided on the support frame, and the air channel comprises an air inlet end and an air outlet end close to the liquid channel; and

a flexible seal element, positioned between the support frame and the porous body, wherein the seal element comprises a block portion that blocks or seals the air outlet end, and the block portion is configured to bend or deform in response to a negative pressure change in the liquid storage cavity to open the air channel for air

to enter the liquid channel.

2. The atomizer according to claim 1, wherein the support frame comprises a holding cavity, and the porous body is accommodated and held in the holding cavity; and
the at least one air channel extends from an inner surface of the holding cavity to an outer surface of the support frame.

3. The atomizer according to claim 1 or 2, wherein the block portion is configured to be located between the liquid channel and the air channel.

4. The atomizer according to claim 1 or 2, wherein the at least one air channel is configured to extend in the length direction of the porous body.

5. The atomizer according to claim 1 or 2, wherein the block portion is suspended relative to other parts of the seal element.

6. The atomizer according to claim 1 or 2, wherein a notch or a slit is provided on the block portion; and the notch or the slit is configured to open or enlarge in response to the negative pressure change in the liquid storage cavity, thereby opening the air channel.

7. The atomizer according to claim 1 or 2, wherein a recessed structure is arranged on the block portion to reduce strength of the block portion, so that the block portion is easier to bend or deform.

8. The atomizer according to claim 1 or 2, wherein the porous body comprises a liquid absorbing surface adjacent to the liquid channel for absorbing the liquid substrate, and an atomization surface for the aerosol to release and escape; and
the atomizer comprises an atomization cavity that is in airflow communication with external air, wherein at least a part of the atomization cavity is defined by the atomization surface, and the air channel is in airflow communication with the atomization cavity and then is in communication with the external air.

9. The atomizer according to claim 2, wherein the seal element is configured in the holding cavity and wraps at least a part of an outer surface of the porous body.

10. The atomizer according to claim 1 or 2, wherein the air outlet end of the air channel is configured to face the liquid channel.

11. An electronic atomization device, comprising an atomizer for atomizing a liquid substrate to generate an aerosol, and a power supply assembly for supplying power to the atomizer, wherein the atomizer comprises the atomizer according to any one of claims 1 to 10.

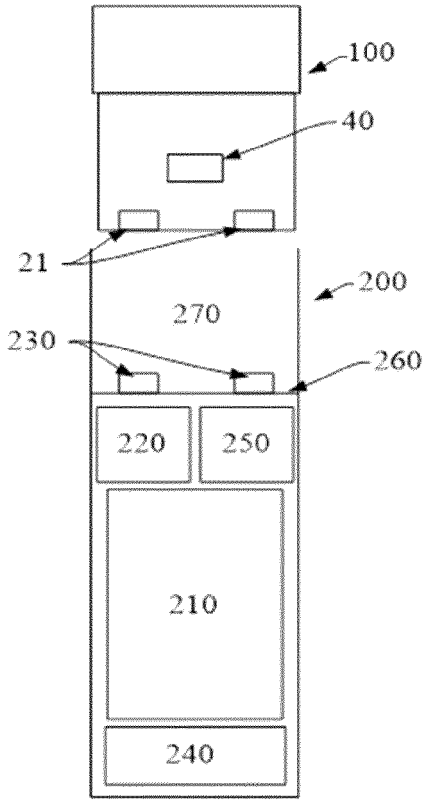

FIG. 1

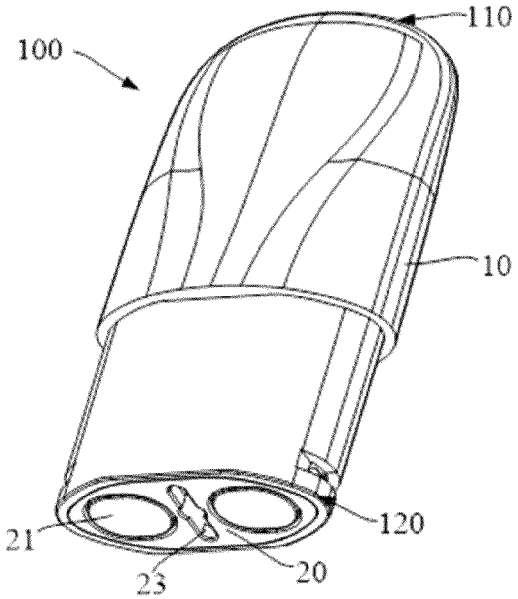

FIG. 2

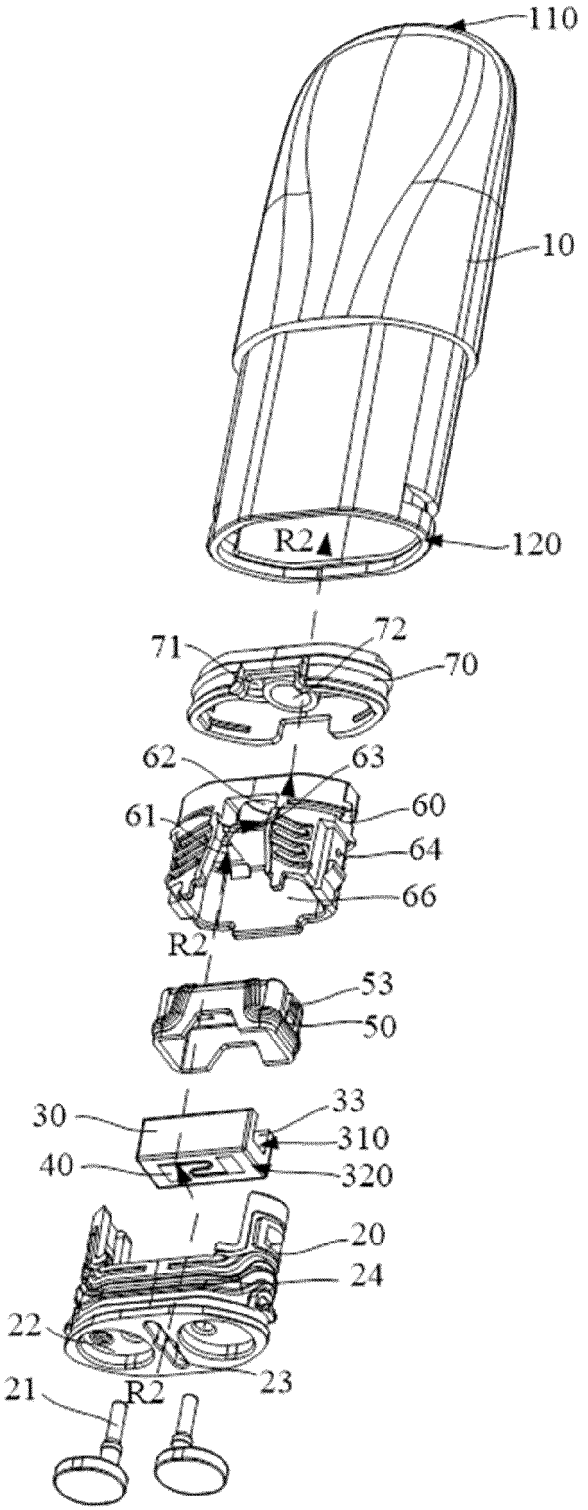
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FIG. 3

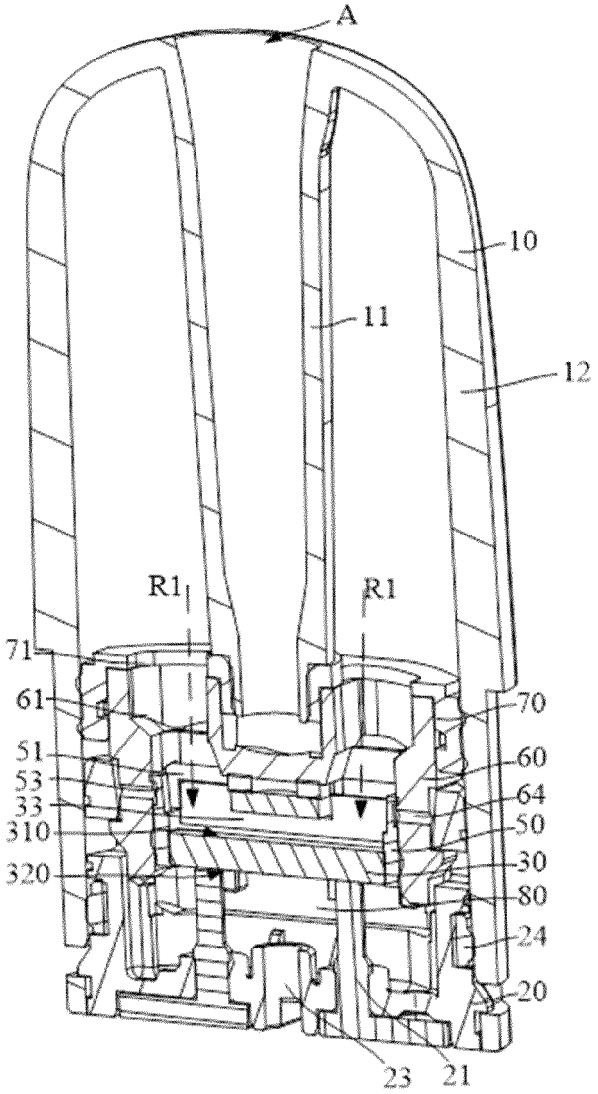
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FIG. 4

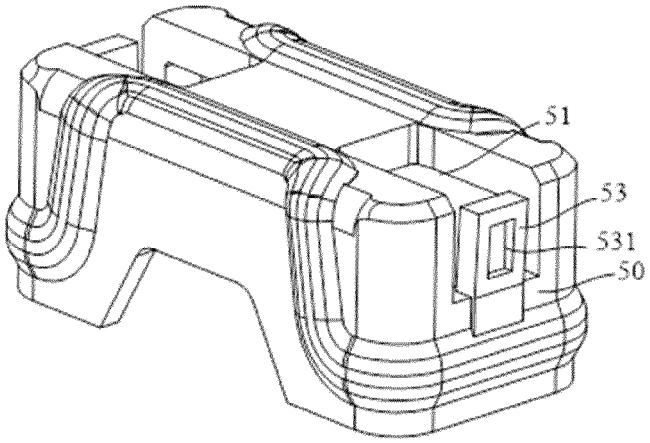
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FIG. 5

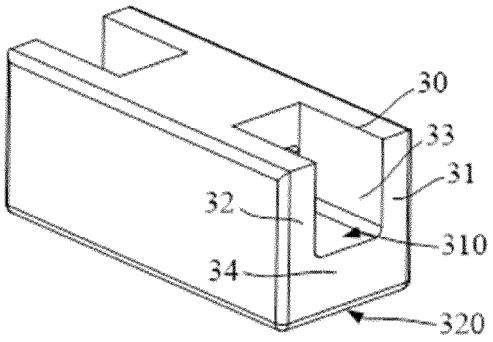

FIG. 6

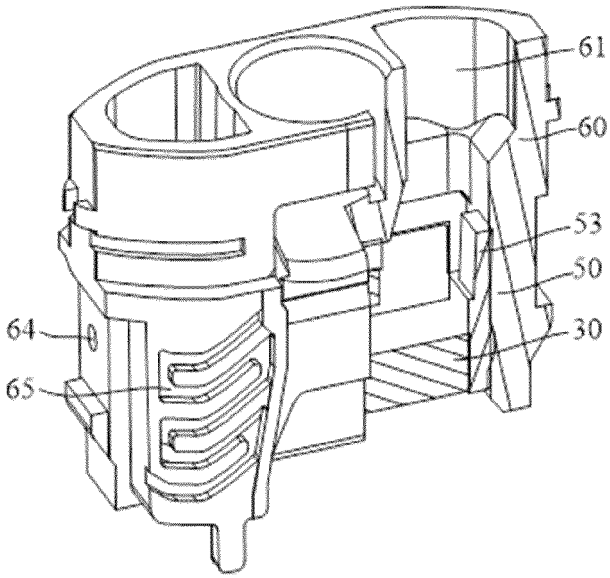

FIG. 7

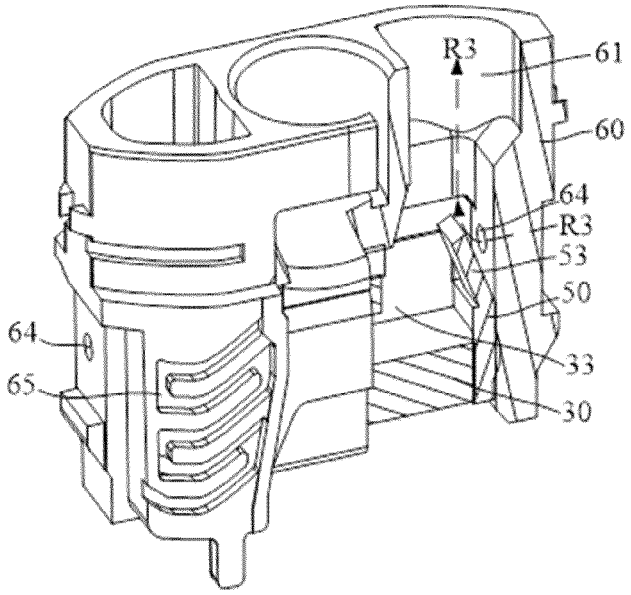

FIG. 8

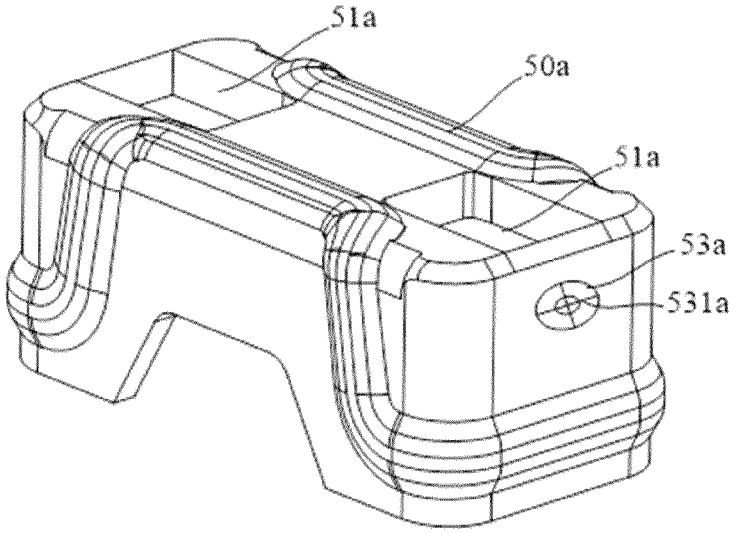

FIG. 9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2021/125372

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/10(2020.01)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)

A24F40/-, 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)

WPI, EPODOC, CNKI, CNPAT: 雾化器, 多孔, 架, 座, 遮挡, 密封, 负压, 变形, 弯曲, 储油, 储液, 空气, 通道; atomizer, porous, frame, seat+, barrier, seal+, suction pressure, negative pressure, deform+, bend+, oil, air, passage

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 213819836 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 30 July 2021 (2021-07-30) claims 1-10, and figures 1-9	1-11
X	CN 111657548 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 15 September 2020 (2020-09-15) description, paragraph [0047] to paragraph [0065], figures 1-14	1-11
A	CN 110613166 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 27 December 2019 (2019-12-27) entire document	1-11
A	CN 209498584 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 18 October 2019 (2019-10-18) entire document	1-11
A	CN 110250577 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 20 September 2019 (2019-09-20) entire document	1-11
A	US 2014318557 A1 (BREMER, Elijah) 30 October 2014 (2014-10-30) entire document	1-11

☐ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
04 January 2022	**19 January 2022**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2021/125372

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 213819836 U	30 July 2021	None	
CN 111657548 A	15 September 2020	CN 212911660 U	09 April 2021
CN 110613166 A	27 December 2019	CN 210901382 U	03 July 2020
CN 209498584 U	18 October 2019	None	
CN 110250577 A	20 September 2019	CN 213819839 U	30 July 2021
US 2014318557 A1	30 October 2014	None	

Form PCT/ISA/210 (patent family annex) (January 2015)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 202022360789 **[0001]**