ATOMIZING DEVICE, ATOMIZING ASSEMBLY THEREOF, AND MANUFACTURING PROCESS OF ATOMIZING ASSEMBLY

FIELD

[0001] The present invention relates to the technical field of atomization, and more specifically, to an atomizing device, an atomizing assembly thereof, and a manufacturing process of the atomizing assembly.

BACKGROUND

[0002] The electric heating atomization technology is to use the electric energy to heat an atomizable liquid to make it reach the boiling point to produce aerosol mixed with vapor and air. The electronic atomizing device is widely used in the field of electronic cigarette. The atomizing core is the core part of the atomizer, and the key of the atomizing core lies in the coordination relationship between the liquid conducting material and the heating material.

[0003] The heating material needs to be tightly attached to the liquid conducting material, so that the heat generated by the heating material when electrified can heat and evaporate the atomizable liquid in the liquid conducting material to generate aerosol substances. However, due to the fact that the temperature needs to reach the boiling point of the atomizable liquid at the moment of the suction of the user due to the use environment, and the atomizing device needs to be small and easy to carry, which results in a smaller power supply, so that the heating member in the field is relatively fine and has a poor structural strength, and therefore, the problem that the heating member and the liquid conducting material are not well attached is likely to occur.

[0004] When the heating member is not attached to the liquid conducting material, part of the heating section will be suspended, which means that dry burning will occur in the part of the heating section, which is prone to producing harmful substances such as aldehydes, endangering the health of the user and causing a bad user experience.

[0005] Therefore, a relatively safe and reliable atomizing assembly is needed. Meanwhile, due to the special use environment, the atomizing assembly is an easily consumed consumable and thus has a large demand quantity, thereby larger-batch production needs to be considered.

SUMMARY

[0006] A technical problem to be solved by the present invention is, in view of the aforementioned defects in the prior art, to provide an atomizing device, an atomizing assembly thereof, and a manufacturing process of the atomizing assembly.

[0007] A technical solution adopted by the present invention to solve the technical problem is, to provide an atomizing assembly, including:

[0008] a liquid conducting member configured for adsorbing an atomizable medium, and provided with at least two installation positions;

[0009] a heating assembly sewn to the liquid conducting member; and

[0010] electrodes, including at least two conductive electrodes respectively arranged on the at least two installation positions and electrically connected to the heating assembly to enable the heating assembly to heat and atomize the atomizable medium on the liquid conducting member when electrified.

[0011] In some embodiments, the heating assembly includes at least two conductive portions respectively located at the at least two installation positions, and the at least two conductive electrodes respectively fix the at least two conductive portions at the at least two installation positions and are respectively conductive to the at least two conductive portions.

[0012] In some embodiments, the heating assembly includes a first wire sewn to the liquid conducting member, and the first wire is electrically conductive, and electrically connected to the at least two conductive electrodes.

[0013] In some embodiments, the first wire forms the at least two conductive portions at the at least two installation positions.

[0014] In some embodiments, the first wire is made of one or more of a conductive metal alloy wire, a conductive metal fiber wire, a conductive carbon fiber wire, and a conductive graphite wire.

[0015] In some embodiments, the heating assembly further includes a second wire sewn to the liquid conducting member, and the first wire and the second wire are sewn to the liquid

conducting member from two opposite sides of the liquid conducting member and interwoven with each other.

[0016] In some embodiments, each of the at least two installation positions is a hole or a groove arranged on the liquid conducting member.

[0017] In some embodiments, each of the at least two conductive electrodes includes a first conductive component and a second conductive component, and

[0018] the first conductive component and the second conductive component are respectively arranged from two sides of the liquid conducting member to one of the at least two installation positions, fix a conductive portion of the heating assembly, and are conductive with the conductive portion.

[0019] In some embodiments, the first conductive component and the second conductive component are interconnected and fixed to the one of the at least two installation positions.

[0020] In some embodiments, the first conductive component includes a first inserting portion and a first blocking portion, and the second conductive component includes a second inserting portion and a second blocking portion, and

[0021] the first inserting portion and the second inserting portion are respectively inserted in the one of the at least two installation positions and connected to each other, and the first blocking portion and the second blocking portion are located on and abut against two opposite sides of the liquid conducting member, respectively.

[0022] In some embodiments, the conductive portion of the heating assembly is clamped between the first blocking portion and the liquid conducting member, and/or, the conductive portion of the heating assembly is clamped between the second blocking portion and the liquid conducting member, and/or, the conductive portion of the heating assembly is clamped between the first inserting portion, the second inserting portion, and an inner wall of the one of the at least two installation positions.

[0023] In some embodiments, the first inserting portion and the second inserting portion are mutually connected in a sleeved manner, or, the first inserting portion and the second inserting portion are mutually connected in an inserted manner, or, the first inserting portion and the second inserting portion are mutually connected in a snap-fit manner.

[0024] In some embodiments, each of the at least two conductive electrodes includes a third inserting portion, and a third blocking portion and a fourth blocking portion that are respectively arranged at two ends of the third inserting portion, the third inserting portion is inserted in one of the at least two installation positions, the third blocking portion and the fourth blocking portion respectively abut against two sides of the liquid conducting member, and one of the at least two conductive electrodes fixes a conductive portion of the heating assembly and is conductive to the conductive portion.

[0025] In some embodiments, the conductive portion of the heating assembly is clamped between the third blocking portion and the liquid conducting member, and/or, the conductive portion of the heating assembly is clamped between the fourth blocking portion and the liquid conducting member, and/or, the conductive portion of the heating assembly is clamped between the third inserting portion and an inner wall surface of the one of the at least two installation positions.

[0026] In some embodiments, each of the at least two conductive electrodes includes an extension portion extending away from one of the at least two installation positions, and the extension portion is arranged along a surface of the liquid conducting member or at an angle with the surface of the liquid conducting member.

[0027] An atomizing device is provided, including the atomizing assembly.

[0028] A manufacturing process of an atomizing assembly is provided, including the steps of:

[0029] providing a liquid conducting substrate that is flexible, and forming an installation position on the liquid conducting substrate,

[0030] sewing a heating assembly to the liquid conducting substrate, and

[0031] mounting a conductive electrode to the installation position and electrically connecting the conductive electrode to the heating assembly.

[0032] In some embodiments, the step of sewing a heating assembly to the liquid conducting substrate includes the step of:

[0033] providing a first wire that is electrically conductive, and threading the first wire through the liquid conducting substrate to sew it to the liquid conducting substrate to form the heating assembly.

[0034] In some embodiments, the step of sewing a heating assembly to the liquid conducting substrate includes the step of:

[0035] providing a first wire that is flexible and electrically conductive and a second wire that is flexible, and sewing the first wire and second wire to the liquid conducting substrate from two opposite sides of the liquid conducting substrate in an interwoven manner to form the heating assembly.

[0036] In some embodiments, the first wire forms a conductive portion at the installation position.

[0037] In some embodiments, the conductive electrode includes a first conductive component and a second conductive component, and the manufacturing process further includes the step of:

[0038] mounting the first conductive component and the second conductive component from two sides of the liquid conducting member to the installation position, respectively, and connecting the first conductive component and the second conductive component with each other and fixing them to the installation position to clamp the conductive portion and the liquid conducting substrate and to be conductive with the conducting portion.

[0039] In some embodiments, the first conductive component and the second conductive component are connected in a sleeved manner or in an inserted manner.

[0040] In some embodiments, the conductive electrode includes a third conductive component, the third conductive component is threaded through the installation position, and two ends of the third conductive component are pressed respectively to form a third blocking portion and a fourth blocking portion on two sides of the liquid conducting substrate for clamping the conductive portion and the liquid conducting substrate.

[0041] In some embodiments, the liquid conducting substrate is divided into zones, a set of installation positions and the heating assembly are arranged in each of the zones, and the

first wire is connected to the heating assembly in each of the zones and passes across the installation positions;

[0042] the conductive electrode is mounted at each of the installation positions; and

[0043] the liquid conducting substrate is cut according to the zones to form the atomizing assembly with the heating assembly and an electrode, respectively.

[0044] The implementation of the atomizing device, the atomizing assembly thereof, and the manufacturing process of the atomizing assembly in the present invention provides the following beneficial effects: the conductive electrode is fixed to the installation position in an assembly manner, so that the positioning is stable and reliable, the dry burning caused by the disengagement of the heating assembly and the liquid conducting member due to that the conductive electrode is stressed to pull the heating assembly during the assembly process is avoided, and a good conductivity with the sewn heating assembly can be well achieved, and the installation of the conductive electrode is convenient, the contact area between the electrode and the outside is improved, resulting in a good conductivity; meanwhile, the manufacturing process of the atomizing assembly is more convenient and efficient, the production efficiency and the material utilization rate can be significantly increased, an automated and batch production is facilitated, the cost is effectively reduced, the consistency of the atomizing assembly is high, and the yield can be improved.

BRIEF DESCRIPTION OF THE DRAWINGS

[0045] Subject matter of the present invention will be described in even greater detail below based on the exemplary figures. In the accompanying drawings:

[0046] Fig. 1 is a three-dimensional structural diagram of an atomizing assembly in an embodiment of the present invention;

[0047] Fig. 2 is a sectional schematic diagram of the atomizing assembly in Fig. 1;

[0048] Fig. 3 is an exploded diagram of the atomizing assembly in Fig. 1;

[0049] Fig. 4 is a sectional schematic diagram of a conductive electrode after assembled according to a first embodiment of the atomizing assembly of the present invention;

[0050] Fig. 5 is a schematic diagram of the conductive electrode before assembled of the atomizing assembly of the present invention;

[0051] Fig. 6 is a sectional schematic diagram of the conductive electrode after assembled and before pressed according to a second embodiment of the atomizing assembly of the present invention;

[0052] Fig. 7 is a sectional schematic diagram of the conductive electrode when pressed and fixed to a liquid conducting member in Fig. 6;

[0053] Fig. 8 is a schematic diagram of the liquid conducting member when provided with installation positions during the production of the atomizing assembly;

[0054] Fig. 9 is a schematic diagram when a heating assembly is sewn on the liquid conducting member in Fig. 8;

[0055] Fig. 10 is a schematic diagram of the atomizing assembly manufactured completely when conductive electrodes are mounted on the liquid conducting member in Fig. 9;

[0056] Fig. 11 is a schematic diagram where the extension portion of the conductive electrode is arranged along the liquid conducting member;

[0057] Fig. 12 is a schematic diagram where the extension portion of the conductive electrode is arranged at an angle with the liquid conducting member;

[0058] Fig. 13 is a schematic diagram where installation positions are formed on the liquid conducting substrate in a zoned mode;

[0059] Fig. 14 is a schematic diagram when heating assemblies are sewn on various zones of the liquid conducting substrate in Fig. 13;

[0060] Fig. 15 is a schematic diagram when conductive electrodes are installed on the conductive conducting substrate in Fig. 14; and

[0061] Fig. 16 is a schematic diagram of cutting the conductive conducting substrate installed with the conductive electrodes according to the zone.

DETAILED DESCRIPTION

[0062] For better understanding of the technical features, objects and effects of the present invention, the specific embodiments of the present invention will be described in detail with reference to the accompanying drawings.

[0063] An atomizing device in a preferred embodiment of the present invention includes an atomizer and a battery assembly. The atomizer includes a housing, and a liquid storage cavity and an atomizing assembly 10 that are arranged in the housing. The liquid storage cavity is configured to store an atomizable medium. The atomizing assembly 10 can adsorb the atomizable medium. When the atomizing assembly 10 is electrified by the battery assembly, the atomizable medium on the atomizing assembly 10 can be heated to generate aerosols to flow out.

[0064] As shown in Fig. 1 to Fig. 3, the atomizing assembly 10 includes a liquid conducting member 1, a heating assembly 2, and electrodes 3. The liquid conducting member 1 is flexible and configured to adsorb the atomizable medium. The liquid conducting member 1 is provided with two installation positions 11 configured for the installation of the electrodes 3. The heating assembly 2 is fixed to the liquid conducting member 1 through sewing. The electrodes 3 are electrically connected to the heating assembly 2 after installed, and can conduct electricity to the heating assembly 2 to heat the atomizable medium on the atomizing assembly 10.

[0065] In this embodiment, the electrodes 3 include two conductive electrodes 31 that are arranged on the installation positions 11 respectively. The conductive electrodes 31 are electrically connected to the heating assembly 2, and when the electrodes 3 are electrified, the heating assembly 2 is energized to generate heat to heat and atomize the atomizable medium on the liquid conducting member 1.

[0066] In some embodiments, the liquid conducting member 1 includes an atomizing surface A and a liquid inlet surface B. Generally, the atomizing surface A and the liquid inlet surface B are located on two opposite sides of the liquid conducting member 1, respectively. The atomizable medium enters the liquid conducting member 1 from the liquid inlet surface B, and the adsorbed atomizable medium is heated to generate aerosol when the heating assembly 2 is powered on, then the generated aerosol flows outward from the atomizing surface A by airflow, so that the liquid inlet and the atomization are not interfered.

[0067] The liquid conducting member 1 may include one layer of liquid conducting layer, or may include more than one layer of liquid conducting layer stacked in layers. When multiple layers of liquid conducting layers 111 are adopted, gaps are reserved between the various layers, which can store part of the atomizable liquid to improve the use effect. Meanwhile, the multi-layer liquid conducting member 1 is sewn into a whole structure, which is also convenient for subsequent assembly. Further, the multi-layer structure may be made of different materials, so that some requirements can be taken into account, for example, the liquid inlet side needs to be made of a material with fast liquid conduction and good oil locking, and the part that is tightly attached to the atomizing surface A needs to be made of a material with a high-temperature resistant, while the problem can be well solved by adopting the multi-layer liquid conducting member 1.

[0068] When the liquid conducting member 1 is a multi-layer liquid conducting layer, the liquid conducting layer of the atomizing surface A of the liquid conducting member 1 may be made of one of the materials of linen cotton or aramid fiber woven fabric, or may be formed by weaving the above several materials, or may be made of some high-temperature resistant mixed materials.

[0069] In addition, when the liquid conducting member 1 is a multi-layer liquid conducting layer, the liquid conducting layer of the liquid inlet surface B of the liquid conducting member 1 may be made of one or a combination of a non-woven fabric, a grating, and a mesh cotton. Further, the liquid inlet surface B is provided with grooves or mesh holes, so that the conduction of the liquid atomizable medium is faster, ensuring a timely supply of the liquid atomizable medium during atomization, and avoiding the dry burning due to insufficient supply of the atomizable medium.

[0070] Further, as shown in Fig. 2 and Fig. 3, in a first embodiment, the heating assembly 2 includes a first wire 21 and a second wire 22 that are flexible. Preferably, the first wire 21 is made of an electrically conductive material. The first wire 21 and the second wire 22 are respectively sewn onto the liquid conducting member 1 from two opposite sides of the liquid conducting member 1 and interwoven with each other, and are respectively fixed to the liquid conducting member 1 from the two sides.

[0071] Correspondingly, in this embodiment, the side where the first wire 21 is located is the atomizing surface A, and the side where the second wire 22 is located is the liquid inlet

surface B. The atomizable medium enters the liquid conducting member 1 from the side where the second wire 22 is located. When the first wire 21 made of the electrically conductive material is electrified, the adsorbed atomizable medium is heated to generate aerosol, which flows outward from the side where the first wire 21 is located under the action of the airflow. Of course, when the second wire 22 is made of an electrically conductive material and the first wire 21 is made of a non-conductive material, the liquid inlet surface B and the atomizing surface A are exchanged. Or alternatively, both the first wire 21 and the second wire 22 are made of conductive materials, and both sides are atomized simultaneously, and the liquid may be entered from an end portion or a lateral side.

[0072] Further, in some embodiments, the second wire 22 may be made of a non-conductive material, and of course, the second wire 22 may also be made of a conductive material. When the second wire 22 is made of a conductive material, the resistance of the first wire 21 is less than the resistance of the second wire 22. In this case, the second wire 22 will also generate some heat, which is equivalent to preheating the e-liquid to a certain extent, reducing its viscosity, and thus accelerating its flow rate.

[0073] According to the sewing principle of a sewing machine, the first wire 21 and second wire 22 with different resistances on the two sides are interwoven to form an integral structure with the liquid conducting member 1. At least one of the first wire 21 and the second wire 22 can generate heat. The first wire 21 that can generate heat is fixed to the liquid conducting member 1, which can effectively ensure the contact between the first wire 21 and the liquid conducting member 1, and is conducive to heating and atomizing, so that the problem of dry burning is avoided, and mass production can be realized.

[0074] According to the sewing principle of the sewing machine, one of the wires is changed into a conductive heating wire and the heating wire is fixed to the liquid conducting member 1, so that the heating wire is assisted by an object and not easily separated from the liquid conducting substrate, meanwhile, large-batch production can be achieved, and the production cost is low. Large-scale production is facilitated in the mode that the first wire 21 and the second wire 22 are interwoven after sewing. The wire-shaped process generally adopts a wire drawing forming through a die hole, and the sizes of the first wire 21 and the second wire 22 can be controlled accurately, which can make the resistance of the atomizing assembly 10 more stable.

[0075] Generally, the conductive material of the first wire 21 is one or a combination of a conductive metal alloy wire, a conductive metal fiber wire, a conductive carbon fiber wire, and a conductive graphite wire, which generates heat when the current is input, so that the first wire 21 generates heat when energized. In some embodiments, the first wire 21 may adopt a round wire with the wire diameter ranging from 0.03 mm to 0.2 mm, and preferably 0.11 mm, which is relatively proper in diameter and is not easy to break, and relatively thin and soft to be bent easily, and meanwhile, some requirements of the atomizing device on the resistance can be met. Specially, an optional material of the first wire 21 may be a metal material such as a nickel-based alloy, a stainless steel series alloy, a chromium-containing alloy, a titanium-containing alloy, a tungsten-containing alloy, a molybdenum-containing alloy, an iron-containing alloy, or a tin-containing alloy, or may be a non-metallic conductive material such as a carbon fiber wire or a graphite fiber wire, or may also be a filamentary shape twisted by one or two of an extremely fine conductive metal wire and an extremely fine conductive non-metallic wire. The conductive metal wire and the conductive non-metallic wire are relatively thin, and may be a fine wire with a diameter of several microns to tens of microns, which are not limited specifically.

[0076] The second wire 22 used to fix the first wire 21 has a wide selection range of material, which may be made of either a conductive material or a non-conductive material. The wire diameter of the second wire 22 also has a wide selection, and preferably is about 0.15 mm with a shape of a filament.

[0077] Specifically, the liquid conducting member 1 is a liquid conducting cotton. After sewing, most of the first wire 21 is exposed on the atomizing surface A, and part of the first wire 21 is slightly sunken into the liquid conducting member 1, so that the liquid on the surface of the liquid conducting member 1 can be rapidly heated to the boiling point to generate atomized vapor when the two ends of the first wire 21 are energized.

[0078] Of course, in other embodiments, the second wire 22 may also be omitted, and the first wire 21 may be sewn separately on the liquid conducting member 1. Preferably, the first wire 21 threads between two opposite sides of the liquid conducting member 1, with one of the two opposite sides being the liquid inlet surface B and the other of the two opposite sides being the atomizing surface A. In other embodiments, the first wire 21 may also thread between other different sides of the liquid conducting member 1 according to the position requirements of the liquid inlet and atomization.

[0079] The heating assembly 2 after sewing includes a conductive portion 211 located at the installation position 11. After the conductive electrode 31 is installed, the conductive electrode 31 fixes the conductive portion 211 at the installation position 11 and is conducted with the conductive portion 211.

[0080] Preferably, in this embodiment, the first wire 21 after sewing may be directly electrically connected to the conductive electrode 31, thereby reducing the assembly of components. Further, the first wire 21 forms the conductive portion 211 at the installation position 11, after the first wire 21 is sewn, the wire may be guided to the position of the installation position 11, and may directly contact the first wire 21 to achieve conductivity when the conductive electrode 31 is mounted, thereby reducing the number of components and simplifying the assembly process. Of course, in other embodiments, the conductive portion 211 may also be an independent accessory from the first wire 21.

[0081] In some embodiments, the installation position 11 is a hole or a groove arranged on the liquid conducting member 1, which is configured for the fixation of the conductive electrode 31.

[0082] As shown in Fig. 3 to Fig. 5, in the first embodiment, the conductive electrode 31 includes a first conductive component 311 and a second conductive component 312. The first conductive component 311 and the second conductive component 312 may be respectively attached to the installation position 11 from two sides of the liquid conducting member 1. The first conductive component 311 and the second conductive component 312 are connected to each other and fixed to the installation position 11, so as to fix the conductive portion 211 of the heating assembly 2 and electrically conduct with the conductive portion 211. In other embodiments, the first conductive component 311 and the second conductive component 312 may also be fixed to the liquid conducting member 1 respectively, to fix the conductive portion 211 and electrically conduct with the conductive portion 211.

[0083] Further, in this embodiment, the first conductive component 311 includes a first inserting portion 3111 and a first blocking portion 3112, and the second conductive component 312 includes a second inserting portion 3121 and a second blocking portion 3122. During assembly, the first inserting portion 3111 and the second inserting portion 3121 are respectively inserted into the installation position 11 and connected to each other.

Preferably, the first inserting portion 3111 and the second inserting portion 3121 are mutually sleeved and connected, and are in an interference fit to achieve tight sleeving. It can be understood that in other embodiments, the first inserting portion 3111 and the second inserting portion 3121 may also be connected to each other in an insertion manner or in a clamped manner.

[0084] In addition, the first blocking portion 3112 and the second blocking portion 3122 are respectively located on two opposite sides of the liquid conducting member 1, and are abutted against the outer surfaces of the liquid conducting member 1, which play a positioning role to prevent the conductive electrode 31 from loosening and falling off, and also play a role in positioning and fixing the conductive portion 211.

[0085] Specifically, in this embodiment, the conductive portion 211 of the heating assembly 2 is clamped between the first blocking portion 3112 and the liquid conducting member 1, so that the conductive portion 211 is positioned and fixed. Of course, the conductive portion 211 of the heating assembly 2 may also be clamped between the second blocking portion 3122 and the liquid conducting member 1, or the conductive portion 211 of the heating assembly 2 may be clamped between the first inserting portion 3111, the second inserting portion 3121 and the inner wall surface of the installation position 11. In the specific application, the above three clamping and positioning methods may also be combined or adopted simultaneously based on the shape of the conductive portion 211 and the actual installation process.

[0086] Further, as shown in Fig. 6 and Fig. 7, in a second embodiment, the conductive electrode 31 is a single component, and includes a third inserting portion 3131, and a third blocking portion 3132 and a fourth blocking portion 3133 respectively arranged at two ends of the third inserting portion 3131. The third inserting portion 3131 is inserted in the installation position 11. The third blocking portion 3132 and the fourth blocking portion 3133 respectively extend laterally outward from the third inserting portion 3131, and are in contact with the two sides of the liquid conducting member 1. The conductive electrode 31 fixes the conductive portion 211 of the heating assembly 2 and is electrically conductive to the conductive portion 211.

[0087] Specifically, the conductive portion 211 of the heating assembly 2 may be clamped between the third blocking portion 3132 and the liquid conducting member 1, of

course, the conductive portion 211 of the heating assembly 2 may also be clamped between the fourth blocking portion 3133 and the liquid conducting member 1, or the conductive portion 211 of the heating assembly 2 may be clamped between the third inserting part 3131 and the inner wall of the installation position 11. Further, in the specific application, the above three clamping and positioning methods may also be combined or adopted simultaneously based on the shape of the conductive portion 211 and the actual installation process.

[0088] The conductive electrode 31 in the second embodiment may be prefabricated and then penetrate through the installation position 11 for installation and position, or may be reshaped after being mounted to the installation position 11.

[0089] Preferably, as shown in Fig. 11 and Fig. 12, in some embodiments, the conductive electrode 31 includes an extension portion 314 extending away from the installation position 11, and may extend beyond the installation position 11 to be act as an electrode to be in contact with the outside, or act as a lead for welding. It can be understood that as shown in Fig. 11, the extension portion is arranged along the surface of the liquid conducting member 1, and attached to the liquid conducting member 1. As shown in Fig. 12, or alternatively, the extension portion is arranged at an angle with the surface of the liquid conducting member 1, and extends out of the liquid conducting member 1. In the first embodiment above, the extension portion 314 may extend from the first blocking portion 3112 or the second blocking portion 3122. In the second embodiment above, the extension portion 314 may extend from the third blocking portion 3132 or the fourth blocking portion 3133.

[0090] In some embodiments, as shown in Fig. 8 to Fig. 10 and Fig. 13 to Fig. 16, the present invention further provides a manufacturing process of the atomizing assembly 10 that facilitates a mass production, including the following steps:

[0091] as shown in Fig. 8 and Fig. 13, providing a liquid conducting substrate that is flexible, and may be one liquid conducting member 1, and forming installation positions 11 on the liquid conducting substrate;

[0092] as shown in Fig. 9 and Fig. 14, sewing a heating assembly 2 on the liquid conducting substrate; and

[0093] as shown in Fig. 10 and Fig. 15, mounting the conductive electrodes 31 to the installation positions 11 and electrically connect them to the heating assembly 2.

[0094] The conductive electrode 31 is fixed on the liquid conducting member 1 through installation and fixation, and forms an integral structure with the liquid conducting member 1, which is more stable and can realize a contact conduction with an external power supply, and may be electrically connected to the heating assembly 2 after being mounted, thereby improving the assembly efficiency and the conductivity stability.

[0095] Specifically, as shown in Fig. 3, when the heating assembly 2 is sewn with two wires, the manufacturing process further includes the following steps:

[0096] providing a first wire 21 that is flexible and electrically conductive and a second wire 22 that is flexible, and sewing the first wire 21 and the second wire 22 to the liquid conducting substrate from two opposite sides of the liquid conducting substrate in an interwoven manner to form the heating assembly 2.

[0097] Further, in other embodiments, when the heating assembly 2 is sewn with a single wire, the manufacturing process further includes the following steps:

[0098] providing a first wire 21 that is electrically conductive, and threading the first wire 21 through the liquid conducting member 1 to sew it to the liquid conducting substrate to form the heating assembly 2.

[0099] Preferably, as shown in Fig. 14 and Fig. 15, when sewing the heating assembly 2 through the two above-mentioned methods, the first wire 21 may be pulled to the installation position 11, or the first wire 21 may form a conductive portion 211 at the installation position 11 through the installation position 11. When installing the conductive electrode 31, the conductive electrode 31 may be in contact with and conducted with the conductive portion 211 on the installation position 11.

[0100] Further, in order to facilitate the contact and conduction of the conductive portion 211 with the conductive electrode 31, the installation position 11 is a hole or a groove provided on the liquid conducting substrate. After being pulled to the installation position 11, the conductive portion 211 may be close to an edge of the installation position 11, or pass

through the installation position 11, so that the conductive portion 211 can be exposed from the other end of the installation position 11.

[0101] Combined with the above-mentioned embodiment of the atomizing assembly 10, the conductive electrode 31 may be mounted to the installation position 11 in a riveting manner after passing through the installation position 11.

[0102] Specifically, as shown in Fig. 4 and Fig. 5, when the conductive electrode 31 is consisted of two components, and includes the first conductive component 311 and the second conductive component 312, the manufacturing process further includes the following steps:

[0103] mounting the first conductive component 311 and the second conductive component 312 respectively from two sides of the liquid conducting member 1 to the installation position 11, connecting the first conductive component 311 and the second conductive component 312 with each other and fixing them to the installation position 11 to clamp the conductive portion 211 and the liquid conducting substrate and be conductive with the conductive portion 211. The conductive portion 211 is fixed through the clamping force of the assembly of the first conductive component 311 and the second conductive component 312, and the operation process is simple and fast.

[0104] Generally, the first conductive component 311 and the second conductive component 312 are connected in a sleeved manner, and may also be connected in an insertion manner or in a snapped manner.

[0105] In addition, as shown in Fig. 6 and Fig. 7, in other embodiments, the conductive electrode 31 may be one component, and includes a third conductive component 313, which may be tubular. The third conductive component 313 is threaded through the installation position 11, and the two ends of the third conductive component 313 are pressed to form a third blocking portion 3132 and a fourth blocking portion 3133 on the two sides of the liquid conducting substrate for clamping the conductive portion 211 and the liquid conducting substrate. Of course, one end of the third conductive component 313 may be provided with a flange, which may serve as the third blocking portion 3132. After passing through the installation position 11, the flange is attached to one side of the liquid conducting substrate, and the end of the third conductive component 313 passing through the installation position 11 is pressed and bent to form the fourth blocking portion 3133, so that the third blocking

portion 3132 and the fourth blocking portion 3133 clamp the liquid conducting substrate from the two sides, and meanwhile, clamp and fix the conductive portion 211 at the installation position 11.

[0106] Specifically, as shown in Fig. 13 to Fig. 16, when the size of the liquid conducting substrate is relatively small, it may be the liquid conducting member 1, and the electrode 3 and the heating assembly 2 are arranged on the liquid conducting member 1.

[0107] As shown in Fig. 13, a large block of conducting substrate may be divided into zones in advance, and a set of installation positions 11 are arranged in each zone. Each set of installation positions 11 usually include two or more installation positions 11. Then as shown in Fig. 14, the heating assembly 2 corresponding to each set of installation positions 11 are sewn in each zone.

[0108] Preferably, the heating assemblies 2 in the various zones are sewn at one time, and the circuits of the first wires 21 in the various zones are connected to each other and across the installation positions 11. As shown in Fig. 15, after the sewing is completed, the conductive electrode 31 is mounted at each installation position 11.

[0109] Finally, as shown in Fig. 16, the liquid conducting substrate is cut according to the zones to form a plurality of atomizing assemblies 10 with the heating assemblies 2 and the electrodes 3.

[0110] The conductive electrode 31 of the present invention is fixed to the installation position in an assembly manner, and is equivalent to being fixed on the liquid conducting member 1, so that the positioning is stable and reliable, the dry burning caused by the disengagement of the heating assembly 2 and the liquid conducting member 1 due to that the conductive electrode 31 is stressed to pull the heating assembly 2 during the assembly process is avoided, and a good conductivity with the sewn heating assembly 2 can be well achieved, and the installation of the conductive electrode 31 is convenient, the contact area between the electrode 3 and the outside is improved, resulting in a good conductivity. Meanwhile, the manufacturing process of the atomizing assembly 10 is more convenient and efficient, the production efficiency and the material utilization rate can be significantly increased, an automated and batch production is facilitated, the cost is effectively reduced, the consistency of the atomizing assembly 10 is high, and the yield can be improved.

[0111] It is understood that the above-mentioned technical features can be used in any combination without limitation.

[0112] While the present invention has been illustrated and described in detail in the drawings and foregoing description, such illustration and description are to be considered illustrative or exemplary and not restrictive. It will be understood that changes and modifications may be made by those of ordinary skill within the scope of the following claims. In particular, the present invention covers further embodiments with any combination of features from different embodiments described above and below. Additionally, statements made herein characterizing the present invention refer to an embodiment of the present invention and not necessarily all embodiments.

CLAIMS

What is claimed is:

1. An atomizing assembly, comprising:

a liquid conducting member (1) configured for adsorbing an atomizable medium, and provided with at least two installation positions (11);

a heating assembly (2) sewn to the liquid conducting member (1); and

electrodes (3), including at least two conductive electrodes (31) respectively arranged on the at least two installation positions (11) and electrically connected to the heating assembly (2) to enable the heating assembly (2) to heat and atomize the atomizable medium on the liquid conducting member (1) when electrified.

2. The atomizing assembly of claim 1, wherein the heating assembly (2) comprises at least two conductive portions (211) respectively located at the at least two installation positions (11), and the at least two conductive electrodes (31) respectively fix the at least two conductive portions (211) at the at least two installation positions (11) and are respectively conductive to the at least two conductive portions (211).

3. The atomizing assembly of claim 2, wherein the heating assembly (2) comprises a first wire (21) sewn to the liquid conducting member (1), and

wherein the first wire (21) is electrically conductive, and electrically connected to the at least two conductive electrodes (31).

4. The atomizing assembly of claim 3, wherein the first wire (21) forms the at least two conductive portions (211) at the at least two installation positions (11).

5. The atomizing assembly of claim 3, wherein the first wire (21) is made of one or more of a conductive metal alloy wire, a conductive metal fiber wire, a conductive carbon fiber wire, and a conductive graphite wire.

6. The atomizing assembly of claim 3, wherein the heating assembly (2) further comprises a second wire (22) sewn to the liquid conducting member (1), and

wherein the first wire (21) and the second wire (22) are sewn to the liquid conducting member (1) from two opposite sides of the liquid conducting member (1) and interwoven with each other.

7. The atomizing assembly of claim 1, wherein each of the at least two installation positions (11) is a hole or a groove arranged on the liquid conducting member (1).

8. The atomizing assembly of claims 2, wherein each of the at least two conductive electrodes (31) comprises a first conductive component (311) and a second conductive component (312), and

wherein the first conductive component (311) and the second conductive component (312) are respectively arranged from two sides of the liquid conducting member (1) to one of the at least two installation positions (11), fix one of the at least two conductive portions (211), and are conductive with the one of the at least two conductive portions (211).

9. The atomizing assembly of claim 8, wherein the first conductive component (311) and the second conductive component (312) are interconnected and fixed to the one of the at least two installation positions (11).

10. The atomizing assembly of claim 8, wherein the first conductive component (311) comprises a first inserting portion (3111) and a first blocking portion (3112), and the second conductive component (312) comprises a second inserting portion (3121) and a second blocking portion (3122),

wherein the first inserting portion (3111) and the second inserting portion (3121) are respectively inserted in the one of the at least two installation positions (11) and connected to each other, and

wherein the first blocking portion (3112) and the second blocking portion (3122) are located on and abut against two opposite sides of the liquid conducting member (1), respectively.

11. The atomizing assembly of claim 10, wherein the one of the at least two conductive portions (211) is clamped between the first blocking portion (3112) and the liquid conducting member (1), and/or,

wherein the one of the at least two conductive portions (211) is clamped between the second blocking portion (3122) and the liquid conducting member (1), and/or,

wherein the one of the at least two conductive portions (211) is clamped between the first inserting portion (3111), the second inserting portion (3121), and an inner wall of the one of the at least two installation positions (11).

12. The atomizing assembly of claim 10, wherein the first inserting portion (3111) and the second inserting portion (3121) are mutually connected in a sleeved manner, or,

wherein the first inserting portion (3111) and the second inserting portion (3121) are mutually connected in an inserted manner, or,

wherein the first inserting portion (3111) and the second inserting portion (3121) are mutually connected in a snap-fit manner.

13. The atomizing assembly of claim 2, wherein each of the at least two conductive electrodes (31) comprises a third inserting portion (3131), and a third blocking portion (3132) and a fourth blocking portion (3133) that are respectively arranged at two ends of the third inserting portion (3131),

wherein the third inserting portion (3131) is inserted in one of the at least two installation positions (11), and

wherein the third blocking portion (3132) and the fourth blocking portion (3133) respectively abut against two sides of the liquid conducting member (1).

14. The atomizing assembly of claim 13, wherein one of the at least two conductive portions (211) is clamped between the third blocking portion (3132) and the liquid conducting member (1), and/or,

wherein the one of the at least two conductive portions (211) is clamped between the fourth blocking portion (3133) and the liquid conducting member (1), and/or,

wherein the one of the at least two conductive portions (211) is clamped between the third inserting portion (3131) and an inner wall surface of the one of the at least two installation positions (11).

15. The atomizing assembly of any one of claims 1 to 7, wherein each of the at least two conductive electrodes (31) comprises an extension portion (314) extending away from one of the at least two installation positions (11), and

wherein the extension portion is arranged along a surface of the liquid conducting member (1) or at an angle with the surface of the liquid conducting member (1).

16. An atomizing device, comprising the atomizing assembly of any one of claims 1 to 15.

17. A manufacturing process of an atomizing assembly, comprising the steps of:

providing a liquid conducting substrate that is flexible, and forming an installation position (11) on the liquid conducting substrate,

sewing a heating assembly (2) to the liquid conducting substrate, and

mounting a conductive electrode (31) to the installation position (11) and electrically connecting the conductive electrode (31) to the heating assembly (2).

18. The manufacturing process of the atomizing assembly of claim 17, wherein the step of sewing a heating assembly (2) to the liquid conducting substrate comprises the step of:

providing a first wire (21) that is electrically conductive, and threading the first wire (21) through the liquid conducting substrate to sew it to the liquid conducting substrate to form the heating assembly (2).

19. The manufacturing process of the atomizing assembly of claim 17, wherein the step of sewing a heating assembly (2) to the liquid conducting substrate comprises the step of:

providing a first wire (21) that is flexible and electrically conductive and a second wire (22) that is flexible, and sewing the first wire (21) and second wire (22) to the liquid conducting substrate from two opposite sides of the liquid conducting substrate in an interwoven manner to form the heating assembly (2).

20. The manufacturing process of the atomizing assembly of claim 18 or 19, wherein the first wire (21) forms a conductive portion (211) at the installation position (11).

21. The manufacturing process of the atomizing assembly of claim 20, wherein the conductive electrode (31) comprises a first conductive component (311) and a second conductive component (312), and the manufacturing process further comprises the step of:

mounting the first conductive component (311) and the second conductive component (312) from two sides of the liquid conducting member (1) to the installation position (11), respectively, and connecting the first conductive component (311) and the second conductive component (312) with each other and fixing them to the installation position (11) to clamp the conductive portion (211) and the liquid conducting substrate and to be conductive with the conducting portion (211).

22. The manufacturing process of the atomizing assembly of claim 21, wherein the first conductive component (311) and the second conductive component (312) are connected in a sleeved manner or in an inserted manner.

23. The manufacturing process of the atomizing assembly of claim 20, wherein the conductive electrode (31) comprises a third conductive component (313), and

wherein the third conductive component (313) is threaded through the installation position (11), and two ends of the third conductive component (313) are pressed respectively to form a third blocking portion (3132) and a fourth blocking portion (3133) on two sides of the liquid conducting substrate for clamping the conductive portion (211) and the liquid conducting substrate.

24. The manufacturing process of the atomizing assembly of claim 21, wherein the liquid conducting substrate is divided into zones, a set of installation positions (11) and the heating assembly (2) are arranged in each of the zones, and the first wire (21) is connected to the heating assembly (2) in each of the zones and passes across the installation positions (11);

wherein the conductive electrode (31) is mounted at each of the installation positions (11); and

wherein the liquid conducting substrate is cut according to the zones to form the atomizing assembly (10) with the heating assembly (2) and an electrode (3), respectively.