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(54) ATOMIZATION APPARATUS AND CLOTHING TREATMENT DEVICE

(57) The present invention relates to the technical field of atomization, and specifically provided are an atomization apparatus and a clothing treatment device, aiming at solving the problems that existing atomization apparatuses are limited in usage scenario and the interior thereof cannot be cleaned. To achieve this objective, the atomization apparatus of the present invention comprises a box body, a box cover, and an atomization piece; an outlet is formed in the box body, the atomization piece is disposed at the outlet, and an abutting component and a snap-fit component are provided between the box cover and the box body; when mounting the box cover and the box body, the box cover first abuts against the box body by means of the abutting component, then the box cover is snap-fitted and fixed to the box body by means of the snap-fit component. According to the present invention, the atomization apparatus itself can accommodate, by means of the box body, a solvent to be atomized and sprayed, so that the usage scenario of the atomization apparatus is enriched, and the interior of the box body is easy to clean because the box cover and the box body can be disassembled, so that scaling and blockage in the atomization apparatus are avoided, thus prolonging the

service life of the atomization apparatus.

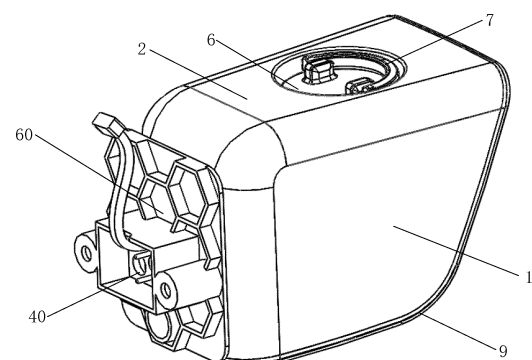


FIG.1

Description

FIELD

[0001] The present disclosure relates to the technical field of atomization, and specifically provides an atomization device and a clothing treatment apparatus.

BACKGROUND

[0002] An atomization device is a device capable of providing an atomized gas (a large area of small-particle droplets), and it is widely used in clothing treatment apparatuses or humidification apparatuses, etc.

[0003] In the prior art, the atomization devices mostly adopt a structure in which a water passage and an atomization sheet are combined, without an independent water containing chamber. When installed on other apparatuses, the atomization device takes up a lot of space. Taking a clothing treatment apparatus as an example, the atomization device needs to be fused with a water inflow system to use water inflow of the water inflow system to achieve water supply to an atomizer; then, under the action of the atomizer, the water is transformed into atomized droplets of small particles, which enter a clothing treatment cylinder to achieve atomization washing of clothing. However, due to the existence of pipelines, fusing the atomizer and the water inflow system together is not advantageous for the arrangement of elements and components, and clothing treatment agents also need to be dispensed through separate dispensers, which take up a lot of space. Moreover, in some clothing dryers, adding too many elements and components to achieve atomization washing is also not advantageous for spatial layout. The traditional structure for achieving atomization washing has affected its application range. Moreover, the water passage of the atomization device cannot be cleaned, and is prone to scaling and blockage, seriously affecting a service life of the atomization device.

[0004] In view of this, there is a need for a new atomization device and clothing treatment apparatus in the art to solve the above problems.

SUMMARY

[0005] The present disclosure aims to solve the above technical problems, that is, to solve the problems of limited application scenes and inability to clean the interior of existing atomization devices.

[0006] In a first aspect, the present disclosure provides an atomization device, which includes a box body, a box cover and an atomization sheet; an outlet is formed on the box body, and the atomization sheet is arranged at the outlet; an abutment member and a snap-fit member are arranged between the box cover and the box body; and when the box cover and the box body are installed, the box cover is first abutted onto the box body through the abutment member, and then the box cover and the box

body are snap-fitted and fixed through the snap-fit member.

[0007] In a preferred technical solution of the atomization device described above, the abutment member includes an abutment rib formed on the box cover, the box body has a box opening that is matched with the box cover, and when assembly is completed, the abutment rib abuts to an inner side of the box opening.

[0008] In a preferred technical solution of the atomization device described above, the abutment rib is an L-shaped abutment rib.

[0009] In a preferred technical solution of the atomization device described above, a sealing member is arranged between the box body and the box cover, and a through opening is formed on the sealing member; the snap-fit member includes a first snap-fit element arranged on the box cover and a second snap-fit element arranged on the box body, and the first snap-fit element passes through the through opening and is snap-fitted and fixed with the second snap-fit element.

[0010] In a preferred technical solution of the atomization device described above, the first snap-fit element is a snap-fit plate with a snap-fit opening, and the second snap-fit element is a snap-fit protrusion; the snap-fit plate passes through the through opening and exposes the snap-fit opening, and the snap-fit protrusion is snap-fitted in the snap-fit opening.

[0011] In a preferred technical solution of the atomization device described above, a positioning protrusion is formed on the sealing member, a positioning groove is formed on the box cover, and the positioning protrusion is mated with the positioning groove for positioning.

[0012] In a preferred technical solution of the atomization device described above, the atomization device further includes a feeding cover, and a feeding port is formed on the box cover; a first spiral groove is formed on the feeding cover, a second spiral groove is formed on the feeding port, and the feeding cover is screw-connected with the feeding port through the first spiral groove and the second spiral groove.

[0013] In a preferred technical solution of the atomization device described above, a handle ring is rotatably connected with an outer surface of the feeding cover, and the handle ring can rotate in a non-pulling state and be accommodated in the feeding port.

[0014] In a preferred technical solution of the atomization device described above, a water containing chamber and an electrical chamber isolated from each other are formed inside the box body; the outlet is communicated with the water containing chamber, and the electrical chamber is used to accommodate a wire harness connected with the atomization sheet.

[0015] In a second aspect, the present disclosure also provides a clothing treatment apparatus, which includes the atomization device described above;

the clothing treatment apparatus further includes a cabinet, a clothing treatment cylinder, and a door

device; the clothing treatment cylinder is arranged in the cabinet, and a clothing throw-in port is formed on the cabinet; the door device is configured to open and close the clothing throw-in port, and the clothing throw-in port is connected with the clothing treatment cylinder through a connecting member; and

the box body is arranged on the clothing treatment cylinder, the door device and/or the connecting member, and the outlet is arranged toward an interior of the clothing treatment cylinder to spray atomized gas into the clothing treatment cylinder.

[0016] In a case where the above technical solutions are adopted, the present disclosure enables the atomization device itself to use the box body to accommodate the solvent to be atomized and sprayed. When the atomization device is installed with other apparatuses, it can be used without the need to cooperate with the water inflow systems or water containing systems on the other apparatuses, thus enriching the application scenes of the atomization device. The connection between the box body and the box cover using the abutment member and the snap-fit member can achieve rapid assembly of the box cover and the box body; first, the rough positioning of the box body and the box cover is achieved through the abutment member, and then the precise snap-fit of the two is achieved through the snap-fit member, thereby improving the assembly efficiency. The box cover and the box body can be disassembled, which also facilitates cleaning of the interior of the box body, avoiding the accumulation of dirt and grime in the box body, and prolonging the service life of the atomization device.

[0017] Further, the sealing member can achieve sealing between the box body and the box cover, thus preventing the solvent in the box body from flowing through a slit between the box cover and the box body; at the same time, the first snap-fit element and the second snap-fit element can not only achieve snap-fit fixation between the box body and the box cover, but also can position the sealing member to ensure that the position of the sealing member does not deviate and avoid affecting the sealing effect of the sealing member.

[0018] Further, the positioning protrusion on the sealing member and the positioning groove on the box cover can further improve the positioning and mating ability between the two, avoiding positional displacement and deformation of the sealing member.

[0019] Further, the feeding port can achieve the addition of solvent, and the screw connection between the feeding cover and the feeding port can facilitate screw-in and screw-out of the feeding cover, thereby achieving the opening and closing of the feeding port and quick assembly, and facilitating the addition of solvent.

[0020] Further, the handle ring can not only achieve screw-in and screw-out of the feeding cover, but also can be stored in the feeding port to avoid space occupation thereof and facilitate the assembly of the atomization

device with other apparatuses.

[0021] Further, the electrical chamber and the water containing chamber are isolated from each other, so that the solvent in the water containing chamber can be prevented from flowing into the electrical chamber to cause short circuit of the wire harness, thereby improving the electrical safety of the atomization device.

[0022] Further, when the clothing treatment apparatus adopts the above atomization device, it can have the technical effects of the above atomization device, and the clothing treatment agent can be directly accommodated in the atomization device; the atomization device is arranged on the clothing treatment cylinder, the door device and/or the connecting member, and the clothing treatment agent is directly dispersed into the clothing treatment cylinder through atomization, thereby achieving atomization washing treatment of the clothing. Through such an arrangement, only one atomization device that can accommodate the clothing treatment agent is required to achieve atomization washing of the clothing, thus greatly simplifying the atomization structure, avoiding excessive space occupation, and also improving an application range of the atomization structure. For example, in a clothing dryer, it is only required to place the clothing treatment agent into the atomization device to achieve atomization washing of the clothing. There is no need to provide a water inflow system and an atomizer that are fused together, and also no need to provide a separate dispenser.

[0023] In a third aspect, the present disclosure provides an atomization device, which includes a water box, a feeding cover, a handle ring and an atomization sheet; the water box is formed with a feeding port and an outlet, and the atomization sheet is arranged at the outlet; the handle ring is connected with the feeding cover, a first spiral groove is formed on the feeding cover, and a second spiral groove is formed on the feeding port; the feeding cover is screw-connected with the feeding port through the first spiral groove and the second spiral groove, and the handle ring is arranged to enable the feeding cover to screw in and out relative to the feeding port.

[0024] In a preferred technical solution of the atomization device described above, the handle ring is rotatably connected with an outer surface of the feeding cover, and the handle ring can rotate in a non-pulling state and be accommodated in the feeding port.

[0025] In a preferred technical solution of the atomization device described above, a first sealing member is arranged between the feeding cover and the feeding port.

[0026] In a preferred technical solution of the atomization device described above, the water box includes a box body and a box cover, the outlet is formed on the box body, and the feeding port is formed on the box cover; an abutment member and a snap-fit member are arranged between the box cover and the box body; and when the box cover and the box body are installed, the box cover is first abutted onto the box body through the abutment

member, and then the box cover and the box body are snap-fitted and fixed through the snap-fit member.

[0027] In a preferred technical solution of the atomization device described above, the abutment member includes an abutment rib formed on the box cover, the box body has a box opening that is matched with the box cover, and when assembly is completed, the abutment rib abuts to an inner side of the box opening.

[0028] In a preferred technical solution of the atomization device described above, a second sealing member is arranged between the box body and the box cover, and a through opening is formed on the second sealing member; the snap-fit member includes a first snap-fit element arranged on the box cover and a second snap-fit element arranged on the box body, and the first snap-fit element passes through the through opening and is snap-fitted and fixed with the second snap-fit element.

[0029] In a preferred technical solution of the atomization device described above, the first snap-fit element is a snap-fit plate with a snap-fit opening, and the second snap-fit element is a snap-fit protrusion; the snap-fit plate passes through the through opening and exposes the snap-fit opening, and the snap-fit protrusion is snap-fitted in the snap-fit opening.

[0030] In a preferred technical solution of the atomization device described above, a positioning protrusion is formed on the second sealing member, a positioning groove is formed on the box cover, and the positioning protrusion is mated with the positioning groove for positioning.

[0031] In a preferred technical solution of the atomization device described above, a water containing chamber and an electrical chamber isolated from each other are formed inside the water box; the feeding port and the outlet are both communicated with the water containing chamber, and the electrical chamber is used to accommodate a wire harness connected with the atomization sheet.

[0032] In a fourth aspect, the present disclosure provides a clothing treatment apparatus, which includes the atomization device described above;

the clothing treatment apparatus further includes a cabinet, a clothing treatment cylinder, and a door device; the clothing treatment cylinder is arranged in the cabinet, and a clothing throw-in port is formed on the cabinet; the door device is configured to open and close the clothing throw-in port, and the clothing throw-in port is connected with the clothing treatment cylinder through a connecting member; and

the water box is arranged on the clothing treatment cylinder, the door device and/or the connecting member, and the outlet is arranged toward an interior of the clothing treatment cylinder to spray atomized gas into the clothing treatment cylinder.

[0033] In a case where the above technical solutions

are adopted, the present disclosure enables the atomization device itself to use the water box to accommodate the solvent to be atomized and sprayed. When the atomization device is installed with other apparatuses, it can be used without the need to cooperate with the water inflow systems or water containing systems on the other apparatuses, thus enriching the application scenes of the atomization device. The feeding port can achieve the addition of solvent, and the screw connection between the feeding cover and the feeding port can facilitate screw-in and screw-out of the feeding cover, thereby achieving the opening and closing of the feeding port and quick assembly, and facilitating the addition of solvent.

[0034] Further, the handle ring can not only achieve screw-in and screw-out of the feeding cover, but also can be stored in the feeding port to avoid space occupation thereof and facilitate the assembly of the atomization device with other apparatuses.

[0035] Further, the first sealing member can achieve the sealing between the feeding cover and the feeding port, ensuring that the solvent will not overflow from the feeding port.

[0036] Further, the connection between the box body and the box cover using the abutment member and the snap-fit member can achieve rapid assembly of the box cover and the box body; first, the rough positioning of the box body and the box cover is achieved through the abutment member, and then the precise snap-fit of the two is achieved through the snap-fit member, thereby improving the assembly efficiency. The box cover and the box body can be disassembled, which also facilitates cleaning of the interior of the box body, avoiding the accumulation of dirt and grime in the box body, and prolonging the service life of the atomization device.

[0037] Further, the second sealing member can achieve sealing between the box body and the box cover, thus preventing the solvent in the box body from flowing through a slit between the box cover and the box body; at the same time, the first snap-fit element and the second snap-fit element can not only achieve snap-fit fixation between the box body and the box cover, but also can position the second sealing member to ensure that the position of the second sealing member does not deviate and avoid affecting the sealing effect of the second sealing member.

[0038] Further, the positioning protrusion on the second sealing member and the positioning groove on the box cover can further improve the positioning and mating ability between the two, avoiding positional displacement and deformation of the second sealing member.

[0039] Further, the electrical chamber and the water containing chamber are isolated from each other, so that the solvent in the water containing chamber can be prevented from flowing into the electrical chamber to cause short circuit of the wire harness, thereby improving the electrical safety of the atomization device.

[0040] Further, when the clothing treatment apparatus

adopts the above atomization device, it can have the technical effects of the above atomization device, and the clothing treatment agent can be directly accommodated in the atomization device; the atomization device is arranged on the clothing treatment cylinder, the door device and/or the connecting member, and the clothing treatment agent is directly dispersed into the clothing treatment cylinder through atomization, thereby achieving atomization washing treatment of the clothing. Through such an arrangement, only one atomization device that can accommodate the clothing treatment agent is required to achieve atomization washing of the clothing, thus greatly simplifying the atomization structure, avoiding excessive space occupation, and also improving an application range of the atomization structure. For example, in a clothing dryer, it is only required to place the clothing treatment agent into the atomization device to achieve atomization washing of the clothing. There is no need to provide a water inflow system and an atomizer that are fused together, and also no need to provide a separate dispenser.

BRIEF DESCRIPTION OF DRAWINGS

[0041] Preferred embodiments of the present disclosure will be described below in connection with the accompanying drawings, in which:

FIG. 1 is a first schematic view of an overall structure of the atomization device in a first embodiment of the present disclosure;

FIG. 2 is a second schematic view of the overall structure of the atomization device in the first embodiment of the present disclosure;

FIG. 3 is an exploded view of the atomization device in the first embodiment of the present disclosure (with arrows indicating an installation process of the atomization device);

FIG. 4 is a schematic structural view of a box body of the atomization device in the first embodiment of the present disclosure;

FIG. 5 is a schematic structural view of a sealing member of the atomization device in the first embodiment of the present disclosure;

FIG. 6 is a schematic structural view of a box cover of the atomization device in the first embodiment of the present disclosure;

FIG. 7 is a first schematic view of an overall structure of the atomization device in a second embodiment of the present disclosure;

FIG. 8 is a second schematic view of the overall

structure of the atomization device in the second embodiment of the present disclosure;

FIG. 9 is an exploded view of the atomization device in the second embodiment of the present disclosure (with arrows indicating an installation process of the atomization device);

FIG. 10 is a schematic structural view of a box body of a water box of the atomization device in the second embodiment of the present disclosure;

FIG. 11 is a schematic structural view of a second sealing member of the atomization device in the second embodiment of the present disclosure; and

FIG. 12 is a schematic structural view of a box cover of the water box of the atomization device in the second embodiment of the present disclosure.

DETAILED DESCRIPTION

[0042] Preferred embodiments of the present disclosure will be described below with reference to the accompanying drawings. It should be understood by those skilled in the art that these embodiments are only used to explain the technical principle of the present disclosure, and are not intended to limit the scope of protection of the present disclosure. For example, the atomization device of the present disclosure can be applied to a humidification apparatus, or a clothing treatment apparatus, or other apparatuses; moreover, the clothing treatment apparatus can be a washing-drying integrated machine, or a clothing dryer, or a clothing care machine, etc. Such adjustments to the application object do not constitute limitations to the present disclosure.

[0043] It should be noted that in the description of the present disclosure, terms indicating directional or positional relationships, such as "upper", "lower", "inner", "outer" and the like, are based on the directional or positional relationships shown in the accompanying drawings. They are only used for ease of description, and do not indicate or imply that the device or component must have a specific orientation, or must be constructed or operated in a specific orientation; therefore, they should not be considered as limitations to the present disclosure. In addition, it should also be noted that terms "first" and "second" are only used for descriptive purpose, and should not be understood as indicating or implying relative importance.

[0044] In addition, it should also be noted that in the description of the present disclosure, unless otherwise clearly specified and defined, terms "arrange", "connect" and "connection" should be understood in a broad sense; for example, the "connection" may be a detachable connection, or an integral connection; it may be a direct connection, or an indirect connection implemented through an intermediate component. For those skilled

in the art, the specific meaning of the above terms in the present disclosure can be interpreted according to specific situations.

First embodiment

[0045] In view of the problem pointed out in the "BACKGROUND" that existing atomization devices have limited application scenes and the interior thereof cannot be cleaned, the present disclosure provides an atomization device and a clothing treatment apparatus, aiming to enrich the application scenes of atomization devices, avoiding scaling and blockage in the atomization devices, and prolonging the service life of the atomization devices.

[0046] Specifically, as shown in FIGS. 1 to 3, the atomization device of the present disclosure includes a box body 1, a box cover 2 and an atomization sheet 3; an outlet 1a is formed on the box body 1, and the atomization sheet 3 is arranged at the outlet 1a; an abutment member and a snap-fit member are arranged between the box cover 2 and the box body 1; and when the box cover 2 and the box body 1 are installed, the box cover 2 is first abutted onto the box body 1 through the abutment member, and then the box cover 2 and the box body 1 are snap-fitted and fixed through the snap-fit member. The abutment member can be an abutment rib, or a structure in which an abutment rib matches with an abutment groove. For example, an abutment rib can be formed on the box cover 2. An L-shaped abutment rib 2a is shown in FIGS. 3 and 6. During installation, as shown in FIGS. 3, 4 and 6, the L-shaped abutment rib 2a can be abutted against an edge of a box opening 1d formed on the box body 1 and matched with the box cover 2. Then, the box cover 2 can be snap-fitted with the box body 1 through the snap-fit member so that the box cover 2 can cover and close the box opening 1d. The snap-fit member can be in the form of a claw matching with a snap-fit opening, or in the form of a snap-fit protrusion matching with a snap-fit groove, which can be flexibly set by those skilled in the art.

[0047] Preferably, as shown in FIGS. 3 to 6, a sealing member 4 is arranged between the box body 1 and the box cover 2, and a through opening 4a is formed on the sealing member 4; the snap-fit member includes a first snap-fit element 51 arranged on the box cover 2 and a second snap-fit element 52 arranged on the box body 1, and the first snap-fit element 51 passes through the through opening 4a and is snap-fitted and fixed with the second snap-fit element 52. The sealing member 4 can be a sealing ring, or a sealing gasket, or other sealing structures. Through the cooperation of the through opening 4a and the first snap-fit element 51, the first snap-fit element 51 can not only be snap-fitted with the second snap-fit element 52 to achieve the installation of the box cover 2 and the box body 1, but also can position the sealing member 4 to prevent the sealing member 4 from moving when the box cover 2 covers and closes the box

opening 1d. Of course, a positioning protrusion 4b can also be formed on the sealing member 4, and a positioning groove 2b can be formed on the box cover 2. The positioning protrusion 4b is mated with the positioning groove 2b. Taking the sealing member 4 being a square ring-shaped sealing gasket as an example, there can be two first snap-fit elements 51, which are located on a pair of sides of the square ring-shaped sealing gasket; there are two positioning protrusions 4b, which are located on the other pair of sides of the square ring-shaped sealing gasket; and correspondingly, the number of the positioning grooves 2b is also two. When the box cover 2 covers and closes the box opening 1d, the mating between the first snap-fit elements 51 and the through opening 4a can achieve the positioning of one pair of sides of the square ring-shaped sealing gasket, and the mating between the positioning protrusions 4b and the positioning grooves 2b can achieve the positioning of the other pair of sides of the square ring-shaped sealing gasket, ensuring that all four sides of the square ring-shaped sealing gasket can be positioned and that the square ring-shaped sealing gasket will not move or deform. Alternatively, in the above, the number of the positioning protrusion 4b and the number of the positioning groove 2b can both be one. In a preferred case, the first snap-fit element 51 is a snap-fit plate with a snap-fit opening, and the second snap-fit element 52 is a snap-fit protrusion. During installation, the snap-fit plate passes through the through opening 4a and exposes the snap-fit opening so that the snap-fit opening is snap-fitted with the snap-fit protrusion. Of course, the first snap-fit element 51 and the second snap-fit element 52 can also use other snap-fit methods. Of course, in the above, the snap-fit member can also directly snap-fit the box body 1 with the box cover 2 without mating with the sealing member 4.

[0048] Preferably, as shown in FIGS. 1 and 3, the atomization device further includes a feeding cover 6, and a feeding port 2c is formed on the box cover 2; a first spiral groove is formed on the feeding cover 6, a second spiral groove is formed on the feeding port 2c, and the feeding cover 6 is screw-connected with the feeding port 2c through the first spiral groove and the second spiral groove. Specifically, the screw connection between the feeding cover 6 and the feeding port 2c enables the feeding cover 6 to screw in and out relative to the feeding port 2c. That is, rotating the feeding cover 6 in one direction enables the feeding cover 6 to screw in and close the feeding port 2c, and rotating the feeding cover 6 in the other direction enables the feeding cover 6 to screw out and open the feeding port 2c. Of course, the feeding cover 6 and the feeding port 2c can also adopt a flip over structure with a pivotal connection.

[0049] Preferably, as shown in FIGS. 1 and 3, an outer surface of the feeding cover 6 is rotatably connected with a handle ring 7, which can rotate in a non-pulling state and be accommodated in the feeding port 2c. The handle ring 7 can be connected to the outer surface of the feeding cover 6 through pivotal connection. After the feeding port

2c is closed by the feeding cover 6, the outer surface of the feeding cover 6 has a certain distance from an outer edge of the feeding port 2c. This distance ensures that the handle ring 7 in the non-pulling state can be accommodated. In this state, the plane where the handle ring 7 is located is parallel to the plane where the outer surface of the feeding cover 6 is located. When the handle ring 7 is in a pulling state (for example, the handle ring 7 exposes the feeding port 2c, making it easier for the user to grip), the plane where the handle ring 7 is located is perpendicular to or at a certain angle to the plane where the outer surface of the feeding cover 6 is located, so that twisting the handle ring 7 enables the feeding cover 6 to screw out of the feeding port 2c.

[0050] Preferably, as shown in FIGS. 3 and 4, a water containing chamber 1b and an electrical chamber 1c isolated from each other are formed inside the box body 1. The outlet 1a is communicated with the water containing chamber 1b, and the electrical chamber 1c is used to accommodate a wire harness 8 connected with the atomization sheet 3. Specifically, the electrical chamber 1c and the water containing chamber 1b can be separated by a partition structure 1e. The partition structure 1e, the box cover 2 and the feeding cover 6 ensure the closure of the water containing chamber 1b. The outlet 1a is formed on the partition structure 1e, and the electrical chamber 1c can be closed or non-closed. In the structure shown in FIG. 3, a lower part of the electrical chamber 1c is closed by a decorative shell 9, and the electrical chamber 1c can accommodate the wire harness 8 connected with the atomization sheet 3, thereby achieving power supply and control of the atomization sheet 3. More preferably, the partition structure is U-shaped, and the outlet 1a is formed at the bottom of the U-shaped partition structure. An accommodation groove is formed on an outer side of the bottom of the partition structure 1e, and the wire harness 8 can be partially accommodated in the accommodation groove, thereby positioning the wire harness 8.

[0051] Preferably, as shown in FIG. 3, the atomization device further includes a wireless charging assembly for supplying power to the atomization sheet 3; the wireless charging assembly is connected with the box body 1, and a part of the wireless charging assembly is located inside the electrical chamber 1c. The wireless charging assembly can adopt electromagnetic induction wireless charging method, or magnetic resonance wireless charging method; of course, other wireless charging methods can also be used. In a preferred case, the wireless charging assembly includes a fixed member, an induction coil 10, an inductive element 20, a first circuit board 30, and a second circuit board 40; the fixed member is arranged on other apparatuses, and the fixed member is connected with the box body 1; the induction coil 10 and the inductive element 20 are both arranged on the fixed member, and the induction coil 10 is sleeved on an outer side of the inductive element 20; the first circuit board 30 is connected with the induction coil 10, and the second circuit board 40 is connected with the inductive element 20. The

fixed member can be a fixed bracket, or a fixed plate, or another fixed structure. The induction coil 10 is connected to the atomization sheet 3 through the wire harness 8, or the first circuit board 30 is connected to the atomization sheet 3 through the wire harness 8. The second circuit board 40 is connected to a power source through a wire harness. The inductive element 20 generates a certain current in the induction coil 10 through electromagnetic induction based on a certain frequency of AC electricity, thereby transferring electrical energy from the inductive element 20 to the induction coil 10, and achieving power supply to the atomization sheet 3. By using this wireless charging method, the arrangement of wire harness between the inductive element 20 and the induction coil 10 is omitted. Of course, as an alternative, wired connection can also be used to provide power to the atomization sheet 3.

[0052] Preferably, as shown in FIG. 3, the fixed member includes a fixed inner plate 50 and a fixed outer plate 60; the fixed inner plate 50 is connected with the box body 1, and the fixed outer plate 60 is fixed on other apparatuses; the fixed outer plate 60 is formed with a first hollow columnar structure 60a, and the fixed inner plate 50 is formed with a second hollow columnar structure 50a; the second hollow columnar structure 50a is sleeved on the first hollow columnar structure 60a, the induction coil 10 is sleeved on the second hollow columnar structure 50a, and the inductive element 20 is arranged in the first hollow columnar structure 60a; the first circuit board 30 is arranged on the fixed inner plate 50, and the second circuit board 40 is arranged on the fixed outer plate 60. The first hollow columnar structure 60a is formed on a side of the fixed outer plate 60 that is close to the fixed inner plate 50. The second hollow columnar structure 50a is formed on a side of the fixed inner plate 50 that is away from the fixed outer plate 60. A diameter of outer tube wall of the first hollow columnar structure 60a is preferably equal to a diameter of inner tube wall of the second hollow columnar structure 50a, so that the first hollow columnar structure 60a and the second hollow columnar structure 50a can be positioned with each other. The first hollow columnar structure 60a and the second hollow columnar structure 50a are made of insulative materials such as glass, plastic, or ceramics. Not using metals can avoid electromagnetic shielding. It should be noted that the end of the first hollow columnar structure 60a and the end of the second hollow columnar structure 50a are preferably both closed. Through such an arrangement, the fixed outer plate 60 can serve as an installation base for the fixed inner plate 50, and the fixed outer plate 60 can be fixed on other apparatuses. When it is necessary to add the solvent into the box body 1 or replace the solvent, the fixed inner plate 50 can be detached from the fixed outer plate 60. Then during installation, the fixed inner plate 50 can be installed on the fixed outer plate 60. The first hollow columnar structure 60a and the second hollow columnar structure 50a can play a role of positioning during installation. At the same time, the first hollow

columnar structure 60a can accommodate the inductive element 20, and the induction coil 10 can be sleeved outside the second hollow columnar structure 50a, so that both the first hollow columnar structure 60a and the second hollow columnar structure 50a have multiple functions, thereby further improving the compactness of the atomization device. In addition, a magnetic adsorption structure can be arranged between the fixed inner plate 50 and the fixed outer plate 60. For example, a first permanent magnet is arranged on the fixed outer plate 60, and a second permanent magnet is arranged on the fixed inner plate 50. The magnetic properties of the first permanent magnet and the second permanent magnet are opposite, thereby achieving magnetic adsorption fixation of the fixed inner plate 50 by the fixed outer plate 60.

[0053] Preferably, an installation port is formed on the box body 1, an installation rib is formed on an inner wall of the installation port, and an installation groove is formed at an edge of the fixed inner plate 50; the installation rib is arranged in the installation groove to fix the fixed inner plate 50 on the box body 1. The installation port can be a square port or a semi-circular port, as long as it can allow the fixed inner plate 50 to enter the installation port. For example, in the structure shown in FIG. 3, the installation port is a square port, a U-shaped installation rib 1f is formed on the inner wall of the square port, and the edge of the fixed inner plate 50 is formed with a U-shaped installation groove 50b. The fixed inner plate 50 is inserted into the installation port from one side of the installation port, and two sides of the U-shaped installation rib 1f are first engaged with two sides of the U-shaped installation groove 50b through insertion. When inserted in place, all three sides of the U-shaped installation rib 1f are engaged with three sides of the U-shaped installation groove 50b through insertion. When the decorative shell 9 is provided, the decorative shell 9 can abut against the bottom of the fixed inner plate 50. That is, during installation, the fixed inner plate 50 is first installed on the box body 1, and then the decorative shell 9 is snap-fitted on the box body 1. The decorative shell 9 can not only bear the bottom of the fixed inner plate 50, but also can seal the electrical chamber 1c.

[0054] The clothing treatment apparatus of the present disclosure includes a cabinet, a clothing treatment cylinder, and a door device; the clothing treatment cylinder is arranged in the cabinet, and a clothing throw-in port is formed on the cabinet; the door device is configured to open and close the clothing throw-in port, and the clothing throw-in port is connected with the clothing treatment cylinder through a connecting member; the clothing treatment apparatus further includes an atomization device accommodating a clothing treatment agent; the box body 1 of the atomization device is arranged on the clothing treatment cylinder, the door device and/or the connecting member, and the atomization device has at least one outlet 1a arranged toward an interior of the clothing treatment cylinder so that the atomization device can

spray atomized gas into the clothing treatment cylinder. When the clothing treatment apparatus is a clothing dryer, the clothing treatment cylinder is a drying cylinder. When the drying cylinder is a single cylinder structure, the box body 1 of the atomization device is preferably arranged on the door device and/or the connecting member. At this time, the connecting member is a front support structure of the clothing dryer. A front end of the front support structure is connected with the clothing throw-in port of the cabinet, and a rear end of the front support structure is connected with a front end of the drying cylinder through a dynamic sealing structure. The front support structure not only supports the front end of the drying cylinder, but also does not affect the rotation of the drying cylinder. When the clothing treatment apparatus is a washing-drying integrated machine, the clothing treatment cylinder is a washing and drying cylinder, and the clothing treatment cylinder is a sleeve structure, that is, the clothing treatment cylinder has an outer cylinder and an inner cylinder (also known as a drum) rotatably arranged in the outer cylinder. The box body 1 of the atomization device can be arranged on the outer cylinder, the door device and/or the connecting member. At this time, the connecting member is a window gasket. A front end of the window gasket is connected with the clothing throw-in port, and a rear end of the window gasket is connected with the outer cylinder. The window gasket is used to ensure sealing between the outer cylinder and the clothing throw-in port. In the present disclosure, the clothing treatment agent can be water, or detergent, softener, softening agent, fragrance enhancer, or another clothing treatment solvent, or a mixture of the aforementioned water and solvents. The atomized gas is droplets with a large number of small particles formed. Since it is not easy to observe each small droplet with the naked eye, a gas like structure is formed. The atomization device can disperse the clothing treatment agent and dispense it onto the clothing in the clothing treatment cylinder.

Second embodiment

[0055] In view of the problem that existing atomization devices have limited application scenes, the present disclosure provides an atomization device and a clothing treatment apparatus, aiming to enrich the application scenes of atomization devices and facilitate the quick addition of solvent.

[0056] Specifically, as shown in FIGS. 8 to 12, the atomization device of the present disclosure includes a water box 1, a feeding cover 2, a handle ring 3 and an atomization sheet 4; the water box 1 is formed with a feeding port 1a and an outlet 1b, and the atomization sheet 4 is arranged at the outlet 1a; the handle ring 3 is connected with the feeding cover 2, a first spiral groove is formed on the feeding cover 2, and a second spiral groove is formed on the feeding port 1b; the feeding cover 2 is screw-connected with the feeding port 1b

through the first spiral groove and the second spiral groove, and the handle ring 3 is arranged to enable the feeding cover 2 to screw in and out relative to the feeding port 1b. The screw connection between the feeding cover 2 and the feeding port 1b enables the feeding cover 2 to screw in and out relative to the feeding port 1b. That is, rotating the feeding cover 2 in one direction enables the feeding cover 2 to screw in and close the feeding port 1b, and rotating the feeding cover 2 in the other direction enables the feeding cover 2 to screw out and open the feeding port 1b.

[0057] Preferably, a handle ring 3 is rotatably connected with an outer surface of the feeding cover 2, and the handle ring 3 can rotate in a non-pulling state and be accommodated in the feeding port 1b. The handle ring 3 can be connected to the outer surface of the feeding cover 2 through pivotal connection. After the feeding port 1b is closed by the feeding cover 2, the outer surface of the feeding cover 2 has a certain distance from an outer edge of the feeding port 1b. This distance ensures that the handle ring 3 in the non-pulling state can be accommodated. In this state, the plane where the handle ring 3 is located is parallel to the plane where the outer surface of the feeding cover 2 is located. When the handle ring 3 is in a pulling state (for example, the handle ring 3 exposes the feeding port 1b, making it easier for the user to grip), the plane where the handle ring 3 is located is perpendicular to or at a certain angle to the plane where the outer surface of the feeding cover 2 is located, so that twisting the handle ring 3 enables the feeding cover 2 to screw out of the feeding port 1b. Of course, as an alternative, the handle ring 3 can also be connected with the feeding cover 2 by insertion or snap-fit, which can be flexibly set by those skilled in the art.

[0058] Preferably, a first sealing member is arranged between the feeding cover 2 and the feeding port 1b, and the first sealing member can be a sealing ring, a sealing gasket, or other sealing structures.

[0059] Preferably, as shown in FIGS. 9, 10 and 12, the water box 1 includes a box body 11 and a box cover 12, the outlet 1a is formed on the box body 11, and the feeding port 1b is formed on the box cover 12; an abutment member and a snap-fit member are arranged between the box cover 12 and the box body 11; and when the box cover 12 and the box body 11 are installed, the box cover 12 is first abutted onto the box body 11 through the abutment member, and then the box cover 12 and the box body 11 are snap-fitted and fixed through the snap-fit member. The abutment member can be an abutment rib, or a structure in which an abutment rib matches with an abutment groove. For example, an abutment rib can be formed on the box cover 12. An L-shaped abutment rib 12a is shown in FIGS. 9 and 12. During installation, the L-shaped abutment rib 12a can be abutted against an inner side of an edge of a box opening 11a formed on the box body 11 and matched with the box cover 12. Then, the box cover 12 can be snap-fitted with the box body 11 through the snap-fit member so that the box cover 12 can

cover and close the box opening 11a. The snap-fit member can be in the form of a claw matching with a snap-fit opening, or in the form of a snap-fit protrusion matching with a snap-fit groove, which can be flexibly set by those skilled in the art.

[0060] Preferably, as shown in FIGS. 9 to 12, a second sealing member 5 is arranged between the box body 11 and the box cover 12, and a through opening 5a is formed on the second sealing member 5; the snap-fit member includes a first snap-fit element 61 arranged on the box cover 12 and a second snap-fit element 62 arranged on the box body 11, and the first snap-fit element 61 passes through the through opening 5a and is snap-fitted and fixed with the second snap-fit element 62. The second sealing member 5 can be a sealing ring, or a sealing gasket, or other sealing structures. Through the cooperation of the through opening 5a and the first snap-fit element 61, the first snap-fit element 61 can not only be snap-fitted with the second snap-fit element 62 to achieve the installation of the box cover 12 and the box body 11, but also can position the second sealing member 5 to prevent the second sealing member 5 from moving when the box cover 12 covers and closes the box opening 11a. Of course, a positioning protrusion can also be formed on the second sealing member 5, and a positioning groove can be formed on the box cover 12. The positioning protrusion is mated with the positioning groove. Taking the second sealing member 5 being a square ring-shaped sealing gasket as an example, there can be two first snap-fit elements 61, which are located on a pair of sides of the square ring-shaped sealing gasket; and there are two positioning protrusions, which are located on the other pair of sides of the square ring-shaped sealing gasket. When the box cover 12 covers and closes the box opening 11a, the mating between the first snap-fit element 61 and the through opening 5a can achieve the positioning of one pair of sides of the square ring-shaped sealing gasket, and the mating between the positioning protrusions and the positioning grooves can achieve the positioning of the other pair of sides of the square ring-shaped sealing gasket, ensuring that all four sides of the square ring-shaped sealing gasket can be positioned and that the square ring-shaped sealing gasket will not move or deform. In a preferred case, the first snap-fit element 61 is a snap-fit plate with a snap-fit opening, and the second snap-fit element 62 is a snap-fit protrusion. During installation, the snap-fit plate passes through the through opening 5a and exposes the snap-fit opening so that the snap-fit opening is snap-fitted with the snap-fit protrusion. Of course, the first snap-fit element 61 and the second snap-fit element 62 can also use other snap-fit methods. Of course, in the above, the snap-fit member can also directly snap-fit the box body 11 with the box cover 12 without mating with the second sealing member 5.

[0061] Preferably, as shown in FIGS. 9 and 10, a water containing chamber 1c and an electrical chamber 1d isolated from each other are formed inside the water

box 1. Both the feeding port 1b and the outlet 1a are communicated with the water containing chamber 1c, and the electrical chamber 1d is used to accommodate a wire harness 7 connected with the atomization sheet 4. Specifically, the electrical chamber 1d and the water containing chamber 1c can be separated by a partition structure 1e. The partition structure 1e, the box cover 12 and the feeding cover 2 ensure the closure of the water containing chamber 1c. The outlet 1a is formed on the partition structure 1e, and the electrical chamber 1d can be closed or non-closed. In the structure shown in FIG. 9, a lower part of the electrical chamber 1d is closed by a decorative shell 8, and the electrical chamber 1d can accommodate the wire harness 7 connected with the atomization sheet 4, thereby achieving power supply and control of the atomization sheet 4. More preferably, an accommodation groove is formed on an outer side of the partition structure 1e, and the wire harness 7 can be partially accommodated in the accommodation groove, thereby positioning the wire harness 7.

[0062] Preferably, the atomization device further includes a wireless charging assembly for supplying power to the atomization sheet 4; the wireless charging assembly is connected with the water box 1, and a part of the wireless charging assembly is located inside the electrical chamber 1d. The wireless charging assembly can adopt electromagnetic induction wireless charging method, or magnetic resonance wireless charging method; of course, other wireless charging methods can also be used. In a preferred case, as shown in FIG. 9, the wireless charging assembly includes a fixed member, an induction coil 10, an inductive element 20, a first circuit board 30, and a second circuit board 40; the fixed member is arranged on other apparatuses, and the fixed member is connected with the water box 1; the induction coil 10 and the inductive element 20 are both arranged on the fixed member, and the induction coil 10 is sleeved on an outer side of the inductive element 20; the first circuit board 30 is connected with the induction coil 10, and the second circuit board 40 is connected with the inductive element 20. The fixed member can be a fixed bracket, or a fixed plate, or another fixed structure. The induction coil 10 is connected to the atomization sheet 4 through the wire harness 7, or the first circuit board 30 is connected to the atomization sheet 4 through the wire harness 7. The second circuit board 40 is connected to a power source through a wire harness. The inductive element 20 generates a certain current in the induction coil 10 through electromagnetic induction based on a certain frequency of AC electricity, thereby transferring electrical energy from the inductive element 20 to the induction coil 10, and achieving power supply to the atomization sheet 4. By using this wireless charging method, the arrangement of wire harness between the inductive element 20 and the induction coil 10 is omitted. Of course, as an alternative, wired connection can also be used to provide power to the atomization sheet 4.

[0063] Preferably, as shown in FIG. 9, the fixed mem-

ber includes a fixed inner plate 50 and a fixed outer plate 60; the fixed inner plate 50 is connected with the water box 1, and the fixed outer plate 60 is fixed on other apparatuses; the fixed outer plate 60 is formed with a first hollow columnar structure 60a, and the fixed inner plate 50 is formed with a second hollow columnar structure 50a; the second hollow columnar structure 50a is sleeved on the first hollow columnar structure 60a, the induction coil 10 is sleeved on the second hollow columnar structure 50a, and the inductive element 20 is arranged in the first hollow columnar structure 60a; the first circuit board 30 is arranged on the fixed inner plate 50, and the second circuit board 40 is arranged on the fixed outer plate 60. The first hollow columnar structure 60a is formed on a side of the fixed outer plate 60 that is close to the fixed inner plate 50. The second hollow columnar structure 50a is formed on a side of the fixed inner plate 50 that is away from the fixed outer plate 60. A diameter of outer tube wall of the first hollow columnar structure 60a is preferably equal to a diameter of inner tube wall of the second hollow columnar structure 50a, so that the first hollow columnar structure 60a and the second hollow columnar structure 50a can be positioned with each other. The first hollow columnar structure 60a and the second hollow columnar structure 50a are made of insulative materials such as glass, plastic, or ceramics. Not using metals can avoid electromagnetic shielding. It should be noted that the end of the first hollow columnar structure 60a and the end of the second hollow columnar structure 50a are preferably both closed. Through such an arrangement, the fixed outer plate 60 can serve as an installation base for the fixed inner plate 50, and the fixed outer plate 60 can be fixed on other apparatuses. When it is necessary to add the solvent into the water box 1 or replace the solvent, the fixed inner plate 50 can be detached from the fixed outer plate 60. Then during installation, the fixed inner plate 50 can be installed on the fixed outer plate 60. The first hollow columnar structure 60a and the second hollow columnar structure 50a can play a role of positioning during installation. At the same time, the first hollow columnar structure 60a can accommodate the inductive element 20, and the induction coil 10 can be sleeved outside the second hollow columnar structure 50a, so that both the first hollow columnar structure 60a and the second hollow columnar structure 50a have multiple functions, thereby further improving the compactness of the atomization device. In addition, a magnetic adsorption structure can be arranged between the fixed inner plate 50 and the fixed outer plate 60. For example, a first permanent magnet is arranged on the fixed outer plate 60, and a second permanent magnet is arranged on the fixed inner plate 50. The magnetic properties of the first permanent magnet and the second permanent magnet are opposite, thereby achieving magnetic adsorption fixation of the fixed inner plate 50 by the fixed outer plate 60.

[0064] Preferably, an installation port is formed on the water box 1, an installation rib is formed on an inner wall of

the installation port, and an installation groove is formed at an edge of the fixed inner plate 50; the installation rib is arranged in the installation groove to fix the fixed inner plate 50 on the water box 1. The installation port can be a square port or a semi-circular port, as long as it can allow the fixed inner plate 50 to enter the installation port. For example, in the structure shown in FIG. 9, the installation port is a square port, a U-shaped installation rib 1f is formed on the inner wall of the square port, and the edge of the fixed inner plate 50 is formed with a U-shaped installation groove 50b. The fixed inner plate 50 is inserted into the installation port from one side of the installation port, and two sides of the U-shaped installation rib 1f are first engaged with two sides of the U-shaped installation groove 50b through insertion. When inserted in place, all three sides of the U-shaped installation rib 1f are engaged with three sides of the U-shaped installation groove 50b through insertion. When the decorative shell 8 is provided, the decorative shell 8 can abut against the bottom of the fixed inner plate 50. That is, during installation, the fixed inner plate 50 is first installed on the water box 1, and then the decorative shell 8 is snap-fitted on the water box 1. The decorative shell 8 can not only bear the bottom of the fixed inner plate 50, but also can seal the electrical chamber 1d.

[0065] The clothing treatment apparatus of the present disclosure includes a cabinet, a clothing treatment cylinder, and a door device; the clothing treatment cylinder is arranged in the cabinet, and a clothing throw-in port is formed on the cabinet; the door device is configured to open and close the clothing throw-in port, and the clothing throw-in port is connected with the clothing treatment cylinder through a connecting member; the clothing treatment apparatus further includes an atomization device accommodating a clothing treatment agent; the water box 1 of the atomization device is arranged on the clothing treatment cylinder, the door device and/or the connecting member, and the atomization device has at least one outlet 1a arranged toward an interior of the clothing treatment cylinder so that the atomization device can spray atomized gas into the clothing treatment cylinder. When the clothing treatment apparatus is a clothing dryer, the clothing treatment cylinder is a drying cylinder. When the drying cylinder is a single cylinder structure, the water box 1 of the atomization device is preferably arranged on the door device and/or the connecting member. At this time, the connecting member is a front support structure of the clothing dryer. A front end of the front support structure is connected with the clothing throw-in port of the cabinet, and a rear end of the front support structure is connected with a front end of the drying cylinder through a dynamic sealing structure. The front support structure not only supports the front end of the drying cylinder, but also does not affect the rotation of the drying cylinder. When the clothing treatment apparatus is a washing-drying integrated machine, the clothing treatment cylinder is a washing and drying cylinder, and the clothing treatment cylinder is a sleeve structure, that is,

the clothing treatment cylinder has an outer cylinder and an inner cylinder (also known as a drum) rotatably arranged in the outer cylinder. The water box 1 of the atomization device can be arranged on the outer cylinder, the door device and/or the connecting member. At this time, the connecting member is a window gasket. A front end of the window gasket is connected with the clothing throw-in port, and a rear end of the window gasket is connected with the outer cylinder. The window gasket is used to ensure sealing between the outer cylinder and the clothing throw-in port. In the present disclosure, the clothing treatment agent can be water, or detergent, softener, softening agent, fragrance enhancer, or another clothing treatment solvent, or a mixture of the aforementioned water and solvents. The atomized gas is droplets with a large number of small particles formed. Since it is not easy to observe each small droplet with the naked eye, a gas like structure is formed. The atomization device can disperse the clothing treatment agent and dispense it onto the clothing in the clothing treatment cylinder.

[0066] Hitherto, the technical solutions of the present disclosure have been described in connection with the preferred embodiments shown in the accompanying drawings, but it is easily understood by those skilled in the art that the scope of protection of the present disclosure is obviously not limited to these specific embodiments. Without departing from the principles of the present disclosure, those skilled in the art can make equivalent changes or replacements to relevant technical features, and all the technical solutions after these changes or replacements will fall within the scope of protection of the present disclosure.

Claims

1. An atomization device, wherein the atomization device comprises a box body, a box cover and an atomization sheet; an outlet is formed on the box body, and the atomization sheet is arranged at the outlet; an abutment member and a snap-fit member are arranged between the box cover and the box body; and when the box cover and the box body are installed, the box cover is first abutted onto the box body through the abutment member, and then the box cover and the box body are snap-fitted and fixed through the snap-fit member.
2. The atomization device according to claim 1, wherein the abutment member comprises an abutment rib formed on the box cover, the box body has a box opening that is matched with the box cover, and when assembly is completed, the abutment rib abuts to an inner side of the box opening.
3. The atomization device according to claim 2, wherein the abutment rib is an L-shaped abutment rib.

4. The atomization device according to claim 1, wherein a sealing member is arranged between the box body and the box cover, and a through opening is formed on the sealing member; the snap-fit member comprises a first snap-fit element arranged on the box cover and a second snap-fit element arranged on the box body, and the first snap-fit element passes through the through opening and is snap-fitted and fixed with the second snap-fit element. 5
5. The atomization device according to claim 4, wherein the first snap-fit element is a snap-fit plate with a snap-fit opening, and the second snap-fit element is a snap-fit protrusion; the snap-fit plate passes through the through opening and exposes the snap-fit opening, and the snap-fit protrusion is snap-fitted in the snap-fit opening. 10
6. The atomization device according to claim 4, wherein a positioning protrusion is formed on the sealing member, a positioning groove is formed on the box cover, and the positioning protrusion is mated with the positioning groove for positioning. 15
7. The atomization device according to claim 1, wherein the atomization device further comprises a feeding cover, and a feeding port is formed on the box cover; a first spiral groove is formed on the feeding cover, a second spiral groove is formed on the feeding port, and the feeding cover is screw-connected with the feeding port through the first spiral groove and the second spiral groove. 20
8. The atomization device according to claim 7, wherein a handle ring is rotatably connected with an outer surface of the feeding cover, and the handle ring can rotate in a non-pulling state and be accommodated in the feeding port. 25
9. The atomization device according to any one of claims 1 to 8, wherein a water containing chamber and an electrical chamber isolated from each other are formed inside the box body; the outlet is communicated with the water containing chamber, and the electrical chamber is used to accommodate a wire harness connected with the atomization sheet. 30
10. A clothing treatment apparatus, wherein the clothing treatment apparatus comprises the atomization device according to any one of claims 1 to 9; 35

the clothing treatment apparatus further comprises a cabinet, a clothing treatment cylinder, and a door device; the clothing treatment cylinder is arranged in the cabinet, and a clothing throw-in port is formed on the cabinet; the door device is configured to open and close the clothing throw-in port, and the clothing throw-in port is connected with the clothing treatment cylinder through a connecting member; and the box body is arranged on the clothing treatment cylinder, the door device and/or the connecting member, and the outlet is arranged toward an interior of the clothing treatment cylinder to spray atomized gas into the clothing treatment cylinder.
11. An atomization device, wherein the atomization device comprises a water box, a feeding cover, a handle ring and an atomization sheet; the water box is formed with a feeding port and an outlet, and the atomization sheet is arranged at the outlet; the handle ring is connected with the feeding cover, a first spiral groove is formed on the feeding cover, and a second spiral groove is formed on the feeding port; the feeding cover is screw-connected with the feeding port through the first spiral groove and the second spiral groove, and the handle ring is arranged to enable the feeding cover to screw in and out relative to the feeding port. 40
12. The atomization device according to claim 11, wherein the handle ring is rotatably connected with an outer surface of the feeding cover, and the handle ring can rotate in a non-pulling state and be accommodated in the feeding port. 45
13. The atomization device according to claim 11, wherein a first sealing member is arranged between the feeding cover and the feeding port. 50
14. The atomization device according to claim 11, wherein the water box comprises a box body and a box cover, the outlet is formed on the box body, and the feeding port is formed on the box cover; an abutment member and a snap-fit member are arranged between the box cover and the box body; and when the box cover and the box body are installed, the box cover is first abutted onto the box body through the abutment member, and then the box cover and the box body are snap-fitted and fixed through the snap-fit member. 55
15. The atomization device according to claim 14, wherein the abutment member comprises an abutment rib formed on the box cover, the box body has a box opening that is matched with the box cover, and when assembly is completed, the abutment rib abuts to an inner side of the box opening.
16. The atomization device according to claim 14, wherein a second sealing member is arranged between the box body and the box cover, and a through opening is formed on the second sealing member; the snap-fit member comprises a first snap-fit element arranged on the box cover and a second snap-

fit element arranged on the box body, and the first snap-fit element passes through the through opening and is snap-fitted and fixed with the second snap-fit element.

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17. The atomization device according to claim 16, wherein the first snap-fit element is a snap-fit plate with a snap-fit opening, and the second snap-fit element is a snap-fit protrusion; the snap-fit plate passes through the through opening and exposes the snap-fit opening, and the snap-fit protrusion is snap-fitted in the snap-fit opening.

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18. The atomization device according to claim 16, wherein a positioning protrusion is formed on the second sealing member, a positioning groove is formed on the box cover, and the positioning protrusion is mated with the positioning groove for positioning.

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19. The atomization device according to any one of claims 11 to 18, wherein a water containing chamber and an electrical chamber isolated from each other are formed inside the water box; the feeding port and the outlet are both communicated with the water containing chamber, and the electrical chamber is used to accommodate a wire harness connected with the atomization sheet.

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20. A clothing treatment apparatus, wherein the clothing treatment apparatus comprises the atomization device according to any one of claims 11 to 19;

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the clothing treatment apparatus further comprises a cabinet, a clothing treatment cylinder, and a door device; the clothing treatment cylinder is arranged in the cabinet, and a clothing throw-in port is formed on the cabinet; the door device is configured to open and close the clothing throw-in port, and the clothing throw-in port is connected with the clothing treatment cylinder through a connecting member; and the water box is arranged on the clothing treatment cylinder, the door device and/or the connecting member, and the outlet is arranged toward an interior of the clothing treatment cylinder to spray atomized gas into the clothing treatment cylinder.

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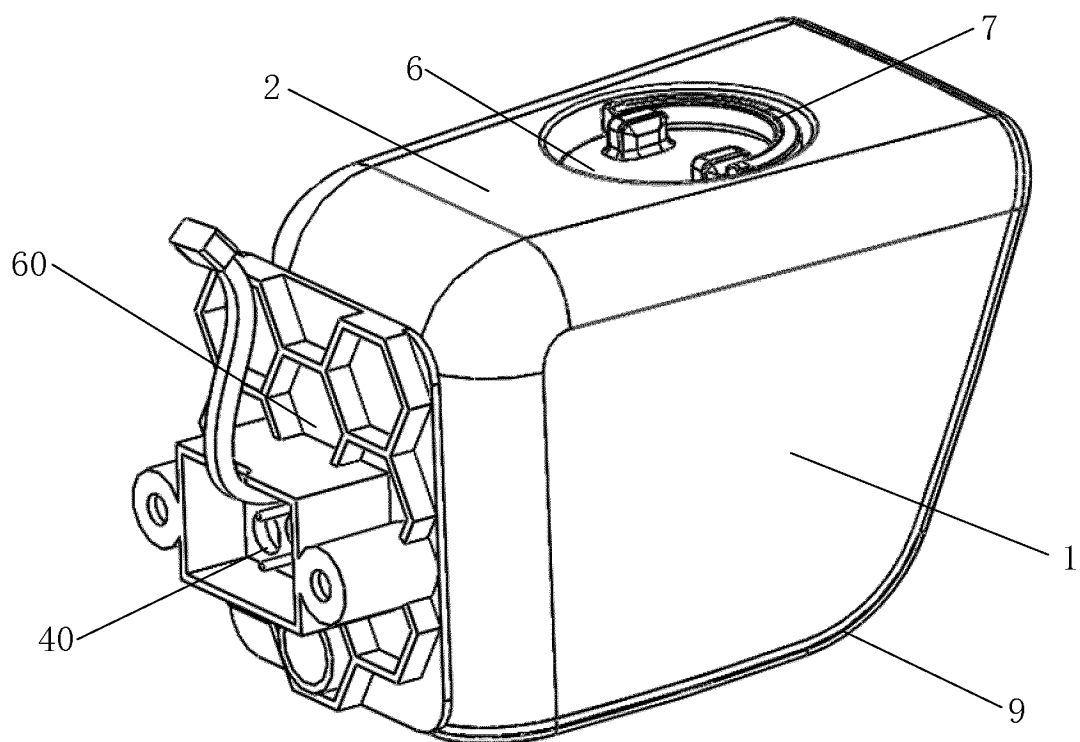


FIG.1

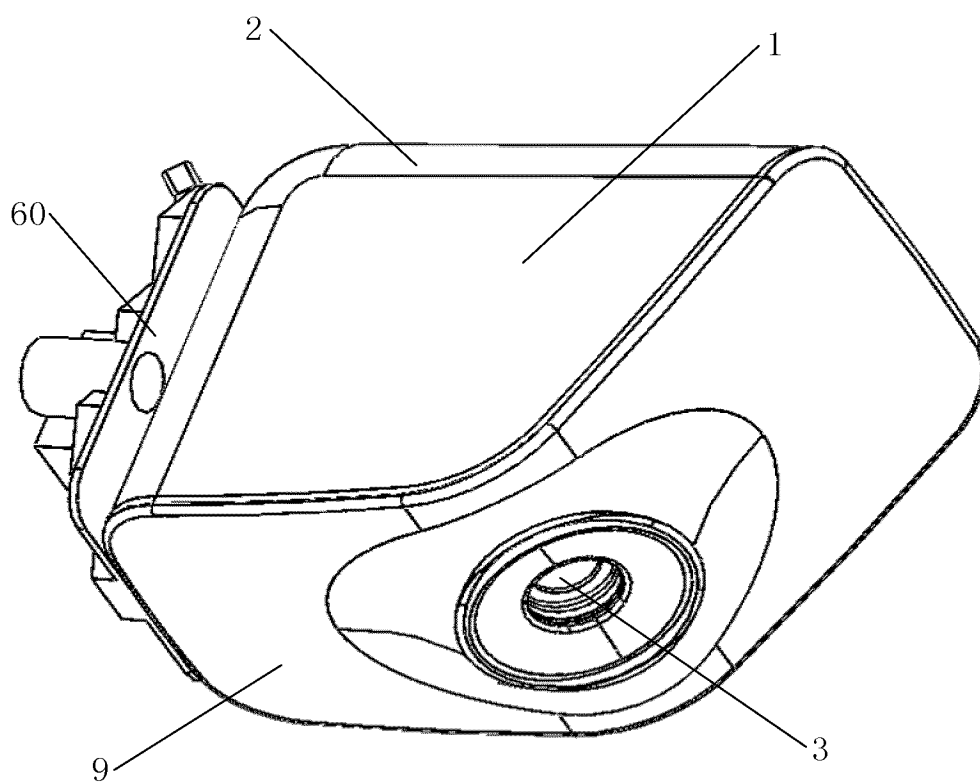


FIG.2

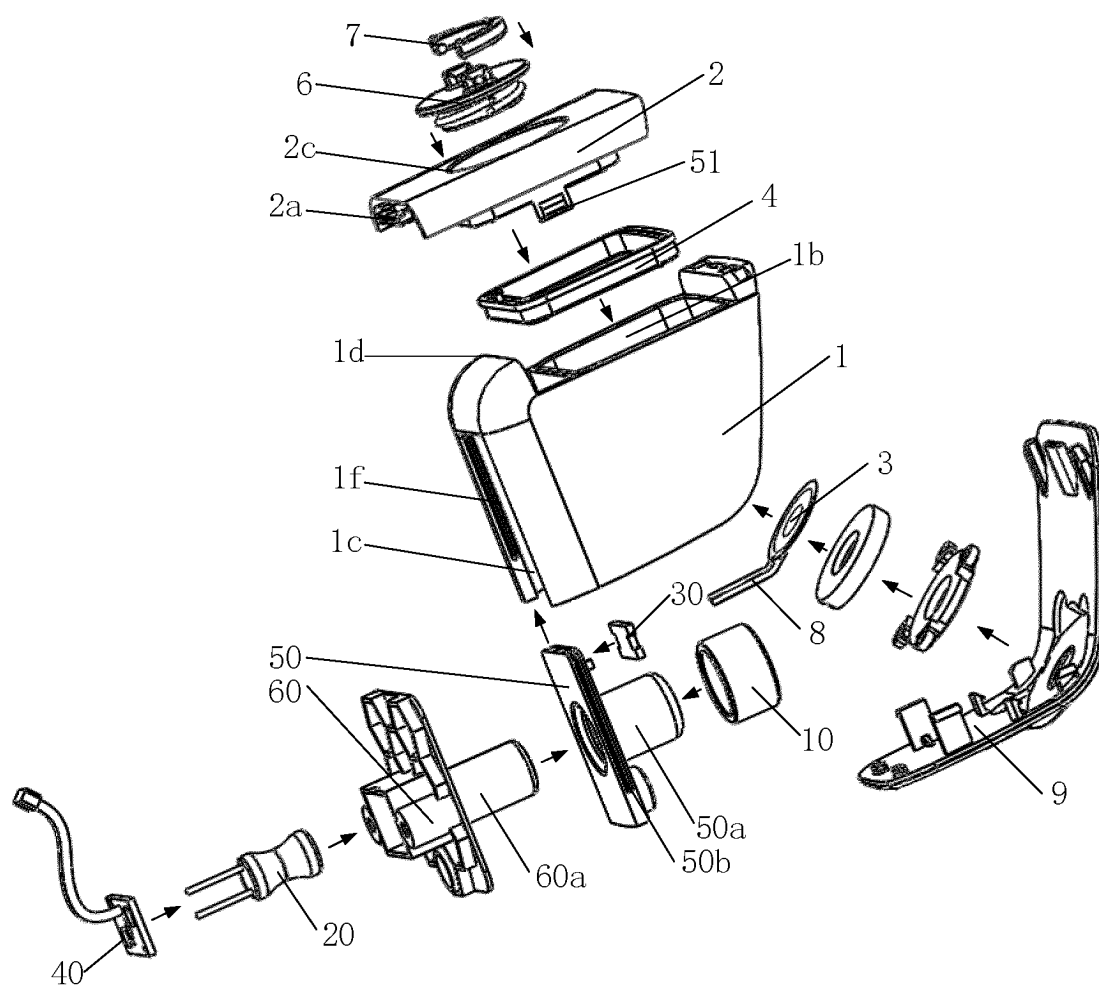


FIG.3

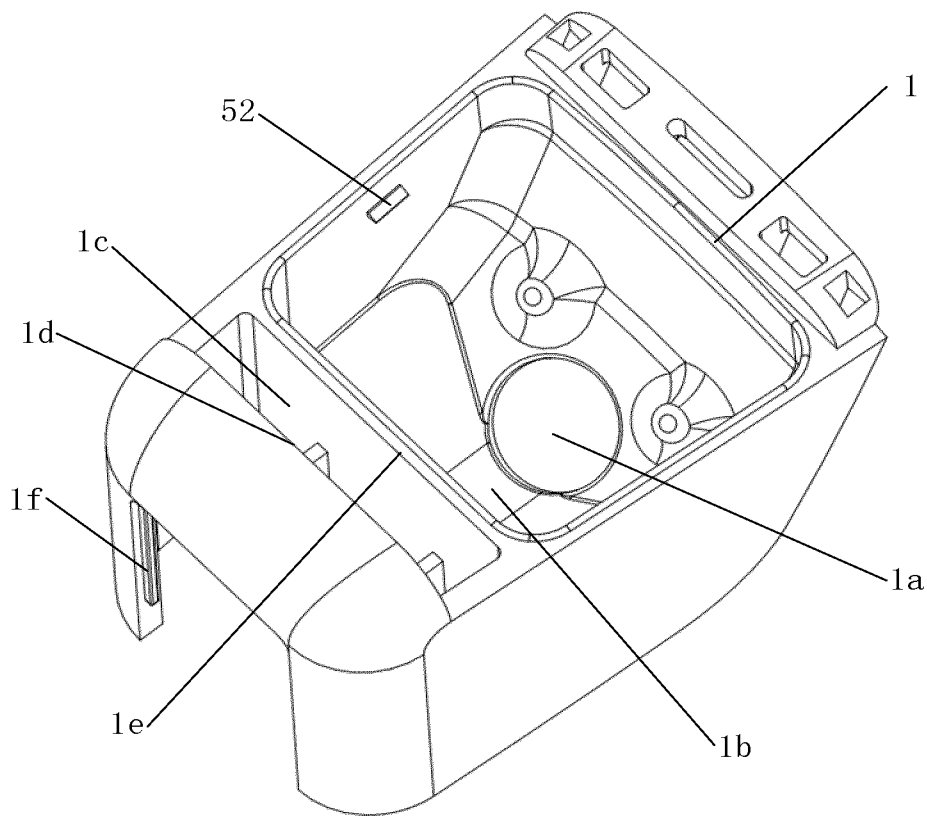


FIG.4

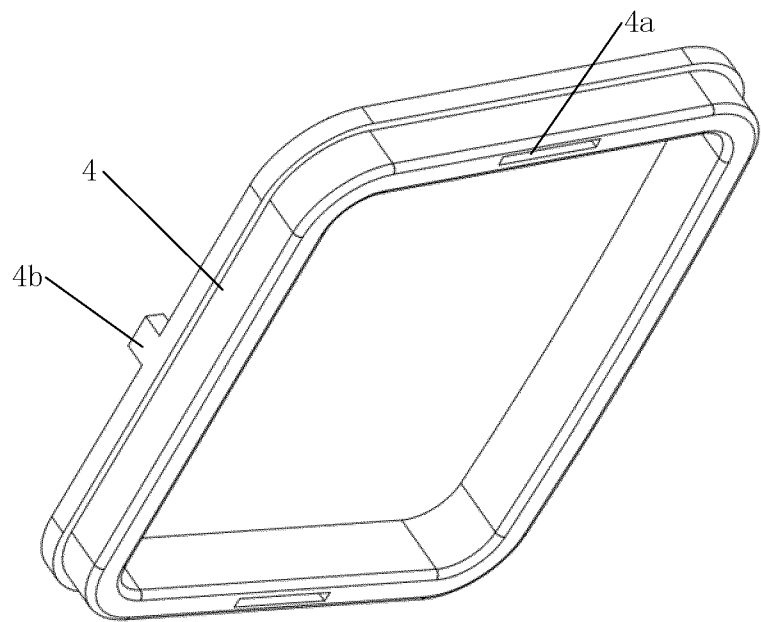


FIG.5

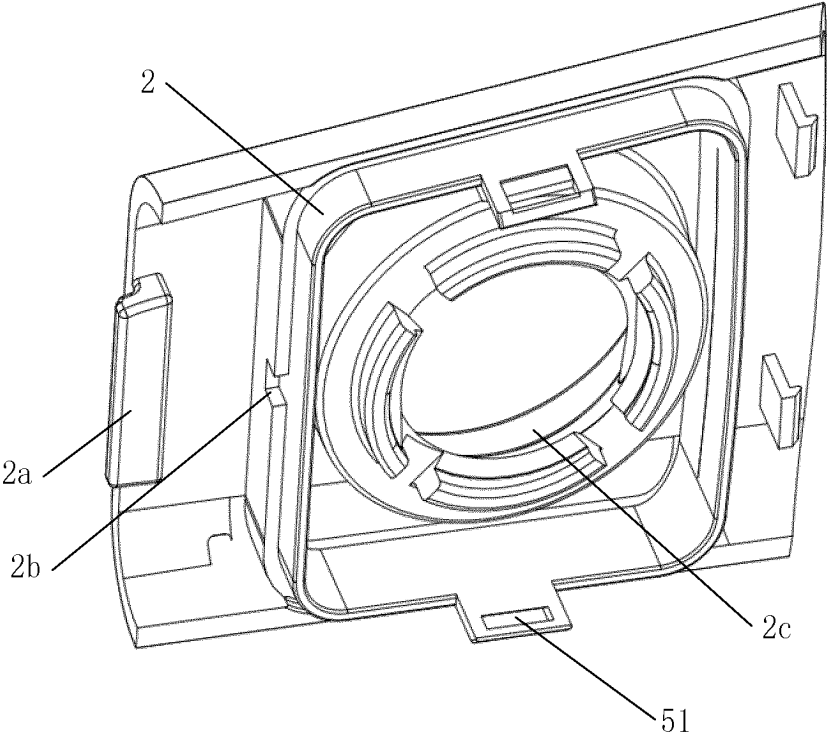


FIG. 6

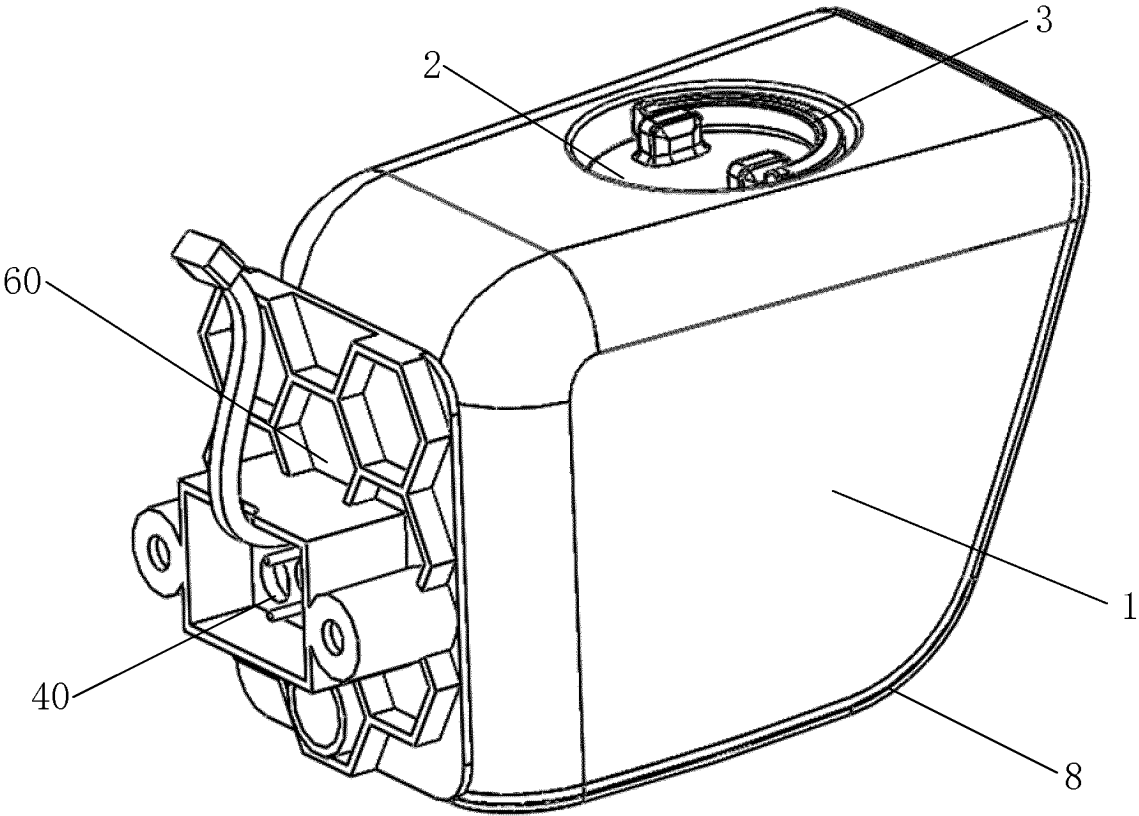


FIG. 7

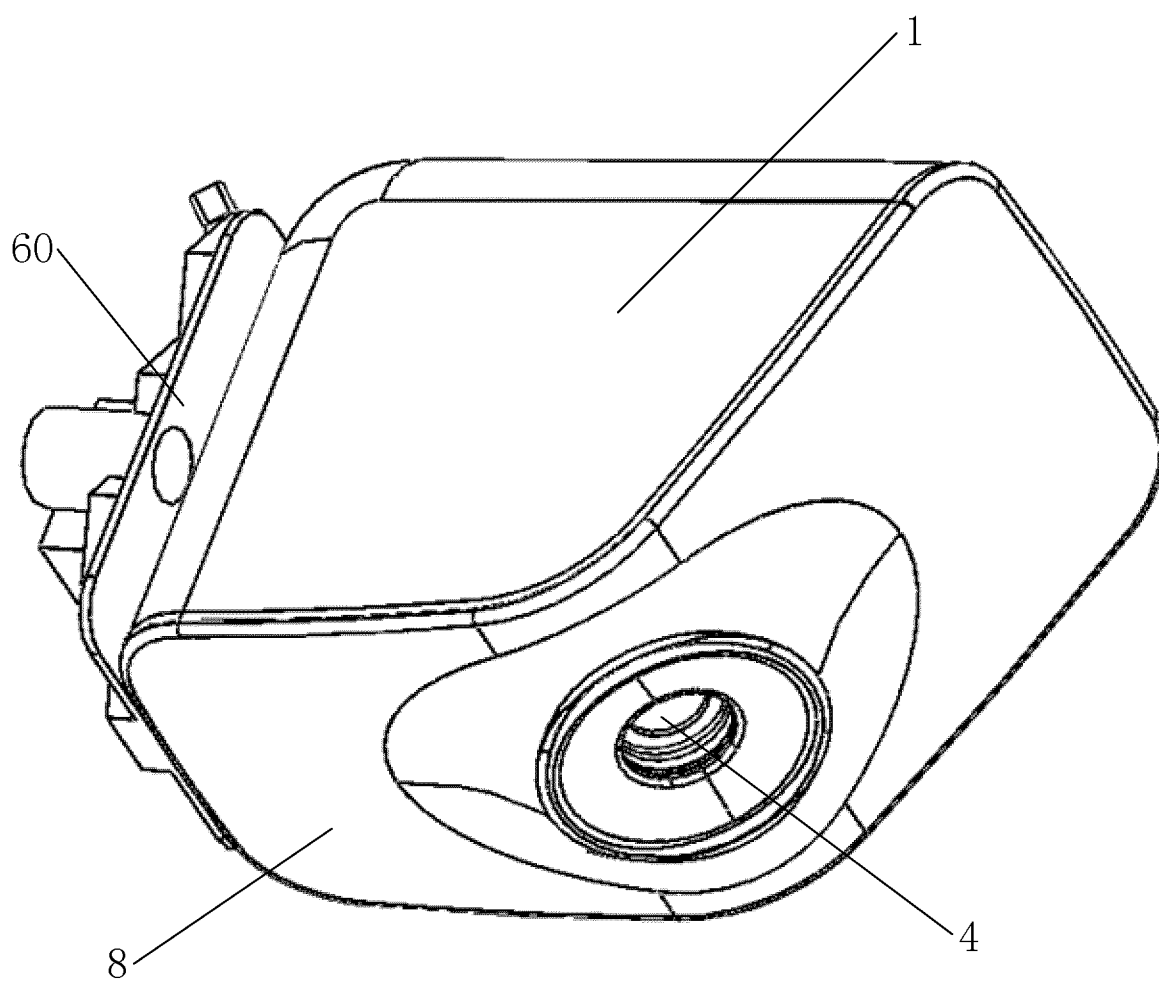


FIG.8

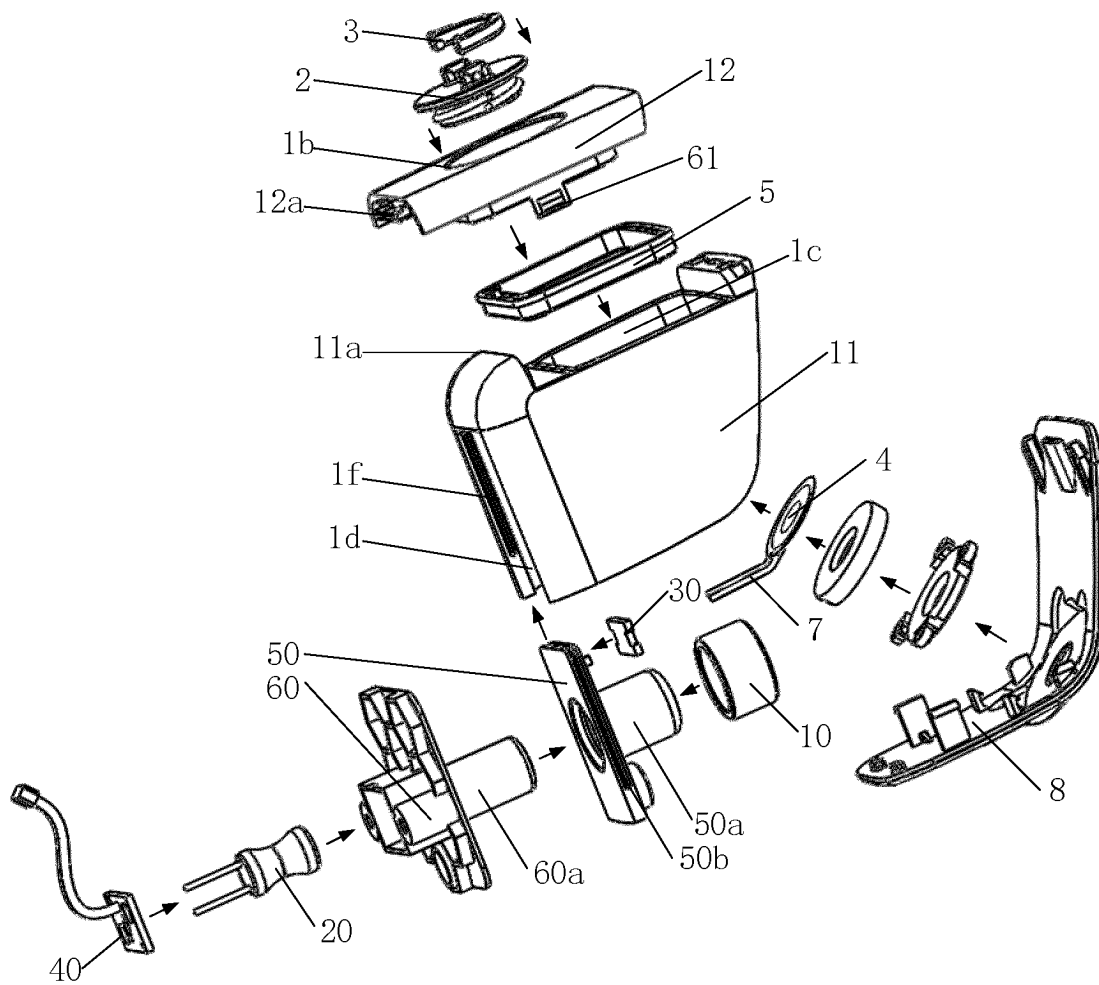


FIG.9

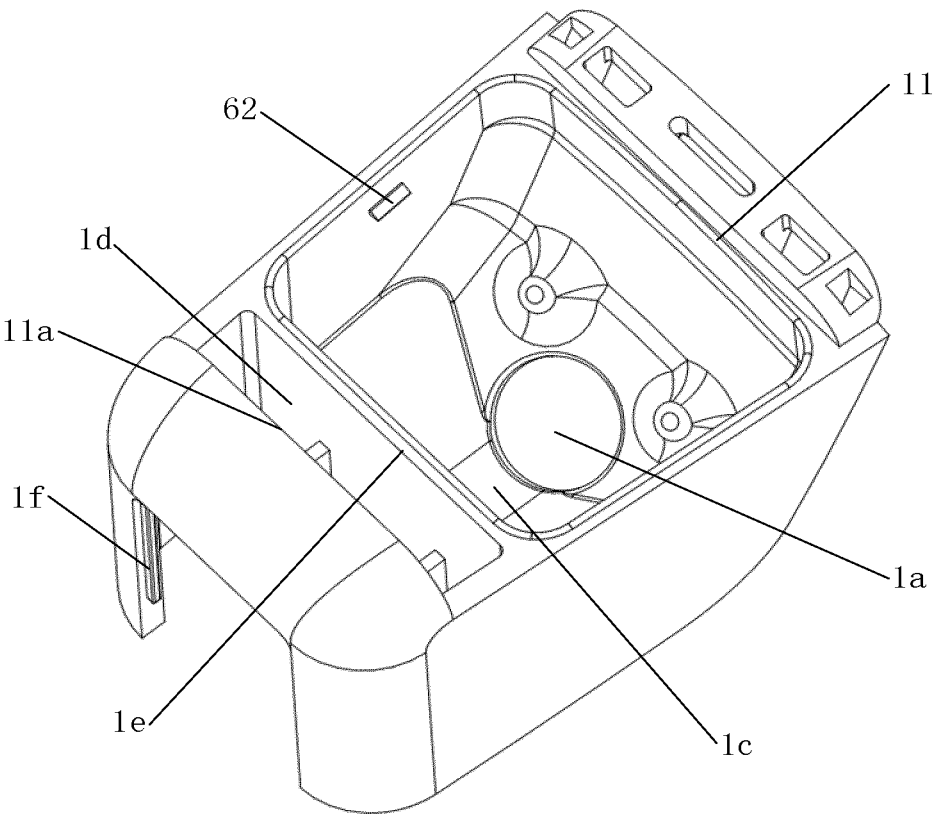


FIG.10

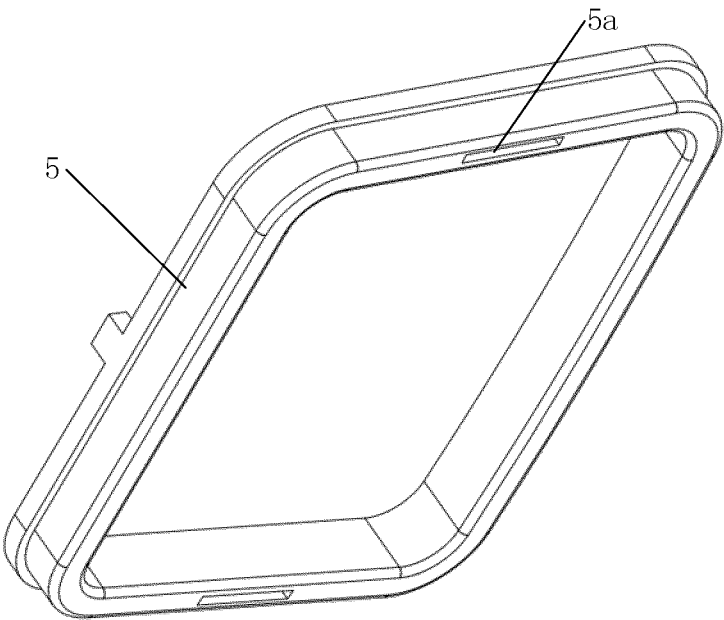


FIG.11

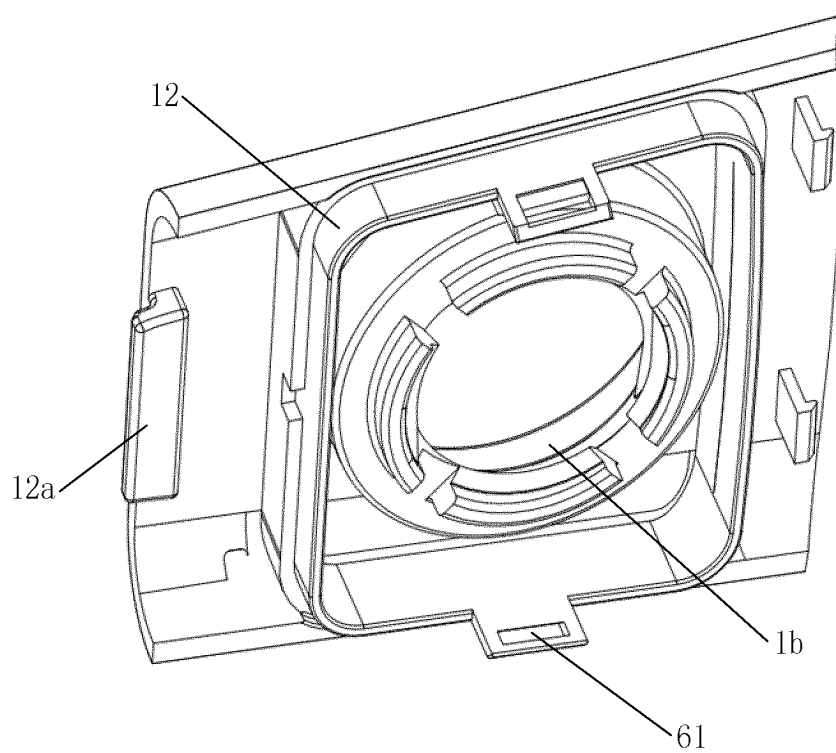


FIG.12

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/101712

A. CLASSIFICATION OF SUBJECT MATTER

D06F 39/02(2006.01)i; D06F 58/20(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)

D06F; F24F; B05B; B65D; A01M; A45D

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)

CNABS, CNTXT, CNKI, 读秀, DUXIU, 万方, WANFANG: 雾化器, 雾化, 雾化片, 盒, 盖, 卡扣, 卡接, 旋, 螺纹, 拉环, 提环, 洗衣, 干衣; VEN, ENTXT, WOTXT, JPTXT: atomize, spray, cover, clamp, buckle, rotary, thread, ring, wash, dry, laundry.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 210020700 U (ZHOU, Hongliang) 07 February 2020 (2020-02-07) description, paragraphs 20-21, and figures 1-2	1-6, 9
Y	CN 210020700 U (ZHOU, Hongliang) 07 February 2020 (2020-02-07) description, paragraphs 20-21, and figures 1-2	7-10, 14-20
X	CN 214181366 U (ZHONGSHAN LANWANG INTERNET OF THINGS TECHNOLOGY CO., LTD.) 14 September 2021 (2021-09-14) description, paragraphs 21-33, and figures 1-6	1-6, 9
X	CN 209475303 U (SICHUAN AI-CHANCE TEC CO., LTD.) 11 October 2019 (2019-10-11) description, paragraphs 3-28, and figures 1-2	1-6
Y	CN 111334964 A (QINGDAO HAIER DRUM WASHING MACHINE CO., LTD.) 26 June 2020 (2020-06-26) description, paragraphs 26-47, and figures 1-2	10, 20
Y	CN 208104822 U (LIU, Xuyang) 16 November 2018 (2018-11-16) description, paragraphs 20-29, and figures 1-3	10, 20
X	CN 108679765 A (SHENZHEN XIN HUACHANG TECHNOLOGY CO., LTD.) 19 October 2018 (2018-10-19) description, paragraphs 19-23, and figures 1-3	11-13, 19

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

* Special categories of cited documents:

“A” document defining the general state of the art which is not considered to be of particular relevance

“E” earlier application or patent but published on or after the international filing date

“L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

“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

19 August 2022

Date of mailing of the international search report

07 September 2022

Name and mailing address of the ISA/CN

China National Intellectual Property Administration (ISA/
CN)
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100088, China

Authorized officer

Facsimile No. (86-10)62019451

Telephone No.

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

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2022/101712

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 108679765 A (SHENZHEN XIN HUACHANG TECHNOLOGY CO., LTD.) 19 October 2018 (2018-10-19) description, paragraphs 19-23, and figures 1-3	7-10, 14-20
X	CN 207653770 U (BEAR ELECTRIC APPLIANCE CO., LTD.) 27 July 2018 (2018-07-27) description, paragraphs 30-36, and figures 1-7	11-13, 19
A	EP 2175065 A1 (CANDY S.P.A.) 14 April 2010 (2010-04-14) entire document	1-20

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/101712

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

- [1] Claims 1-10 relate to an atomization device having a box body and a box cover that are capable of being snap fitted, and a laundry treatment apparatus comprising the atomization device.
- [2] Claims 11-20 relate to an atomization device rotatably connected to a feeding cover and a feeding port, and a laundry treatment apparatus comprising the atomization device.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☒ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2022/101712

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 210020700 U	07 February 2020	None	
CN 214181366 U	14 September 2021	None	
CN 209475303 U	11 October 2019	None	
CN 111334964 A	26 June 2020	CN 209703096 U	29 November 2019
		CN 209703097 U	29 November 2019
		CN 209703101 U	29 November 2019
		CN 209703103 U	29 November 2019
		WO 2020125612 A1	26 June 2020
		CN 111334965 A	26 June 2020
		CN 111334978 A	26 June 2020
		CN 111334981 A	26 June 2020
		CN 111334988 A	26 June 2020
		EP 3901350 A1	27 October 2021
		US 2022074105 A1	10 March 2022
CN 208104822 U	16 November 2018	None	
CN 108679765 A	19 October 2018	None	
CN 207653770 U	27 July 2018	None	
EP 2175065 A1	14 April 2010	EP 2175065 B1	15 January 2014

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