



(11) **EP 4 299 820 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

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| (43) Date of publication:
03.01.2024 Bulletin 2024/01 | (51) International Patent Classification (IPC):
D06F 58/00 ^(2020.01) |
| (21) Application number: 22766182.4 | (52) Cooperative Patent Classification (CPC):
D06F 39/008; D06F 58/00; D06F 39/12 |
| (22) Date of filing: 28.02.2022 | (86) International application number:
PCT/CN2022/078418 |
| | (87) International publication number:
WO 2022/188656 (15.09.2022 Gazette 2022/37) |

(84) Designated Contracting States: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR Designated Extension States: BA ME Designated Validation States: KH MA MD TN (30) Priority: 12.03.2021 CN 202110272574 12.03.2021 CN 202120529059 U (71) Applicant: Wuxi Little Swan Electric Co., Ltd. Wuxi, Jiangsu 214028 (CN)	(72) Inventors: • ZHANG, Tuanjie Wuxi, Jiangsu 214028 (CN) • ZHOU, Chunhao Wuxi, Jiangsu 214028 (CN) • XIANG, Weicheng Wuxi, Jiangsu 214028 (CN) • WANG, Huizhong Wuxi, Jiangsu 214028 (CN) (74) Representative: Whitlock, Holly Elizabeth Ann et al Maucher Jenkins Seventh Floor Offices Artillery House 11-19 Artillery Row London SW1P 1RT (GB)
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(54) **LAUNDRY TREATMENT DEVICE**

(57) A laundry treatment device (100), comprising a housing (2), a mounting plate (3) and a steam generator assembly (1). The mounting plate (3) is detachably connected to the housing (2), and the steam generator assembly (1) is mounted in the housing (2) by means of the mounting plate (3).

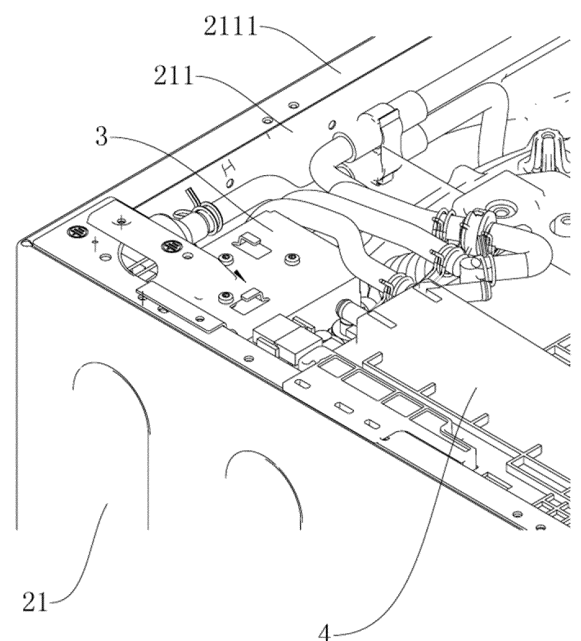


FIG. 3

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Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application is based on and claims priority to Chinese Patent Applications No. 202110272574.4 and No. 202120529059.5, both filed on March 12, 2021, the entire disclosures of which are incorporated herein by reference.

FIELD

[0002] The present disclosure relates to the technical field of laundry treatment devices, and more particularly, to a laundry treatment device.

BACKGROUND

[0003] In the related art, a steam generator assembly of a laundry treatment device needs to be mounted in a casing, which has a complex mounting structure and high cost.

SUMMARY

[0004] The present disclosure aims to solve at least one of the technical problems existing in the related art. To this end, an object of the present disclosure is to provide a laundry treatment device, which facilitates modular mounting of a steam generator assembly and has a simple structure and high mounting efficiency.

[0005] A laundry treatment device according to an embodiment of the present disclosure includes a casing, a mounting plate detachably connected to the casing, and a steam generator assembly mounted in the casing through the mounting plate.

[0006] With the laundry treatment device according to the embodiment of the present disclosure, the mounting plate is detachably connected to the casing, and the steam generator assembly is mounted in the casing through the mounting plate. Therefore, the steam generator assembly is detachable relative to the casing, which results in easy disassembly and assembly of the steam generator assembly, thereby facilitating maintenance and replacement of the steam generator assembly. In addition, it is possible to mount the steam generator assembly in the casing by using the mounting plate, resulting in a simple structure, low cost, and easy operation.

[0007] According to some embodiments of the present disclosure, the casing includes a casing body having a side opened to form an opening, and a cover body removably covering the opening.

[0008] According to some embodiments of the present disclosure, a peripheral wall of the opening is provided with a flange extending towards a center of the opening, and the cover body is detachably engaged with the flange.

[0009] According to some embodiments of the present disclosure, the mounting plate includes a main plate body connected to the steam generator assembly, and a mounting portion connected to the main plate body and extending between the flange and the cover body. The mounting portion is detachably connected to at least one of the flange and the cover body.

[0010] According to some embodiments of the present disclosure, the mounting portion includes a first mounting portion. The first mounting portion and the steam generator assembly are located at two sides of the main plate body in a thickness direction of the main plate body, respectively. The first mounting portion has an end connected to the main plate body, and another end extending beyond an outer peripheral wall of the main plate body towards the flange. The other end of the first mounting portion is detachably connected to the flange.

[0011] According to some embodiments of the present disclosure, the mounting portion includes a second mounting portion having an end connected to the outer peripheral wall of the main plate body and another end detachably connected to the flange. The other end of the second mounting portion extends away from the steam generator assembly and then is bent towards the flange, and is spaced apart from the other end of the first mounting portion in a peripheral direction of the casing.

[0012] According to some embodiments of the present disclosure, the mounting plate is provided with a first positioning portion, and the casing is provided with a second positioning portion engaged with the first positioning portion to pre-position the mounting plate and the casing.

[0013] According to some embodiments of the present disclosure, the first positioning portion is constructed as a rib, and the second positioning portion is constructed as a recess.

[0014] According to some embodiments of the present disclosure, the mounting plate is an integrated piece.

[0015] According to some embodiments of the present disclosure, the steam generator assembly includes a protective shell having a first aperture and a second aperture, and a steam generator located in the protective shell and having a housing with a water inlet and a steam outlet. The water inlet corresponds to the first aperture, and the steam outlet corresponds to the second aperture.

[0016] According to some embodiments of the present disclosure, the protective shell is internally provided with a heat insulation housing. The steam generator is located in the heat insulation housing. The heat insulation housing has a first through hole and a second through hole. The first through hole and the water inlet correspond to the first aperture, and the second through hole and the steam outlet correspond to the second aperture.

[0017] According to some embodiments of the present disclosure, the steam generator assembly is detachably connected to the mounting plate.

[0018] According to some embodiments of the present disclosure, the housing of the steam generator has a first fastening hole, the mounting plate has a second fasten-

ing hole, and the protective shell has an avoidance hole. The first fastening hole, the avoidance hole, and the second fastening hole correspond to each other. The laundry treatment device includes a fastener sequentially passing through the first fastening hole, the avoidance hole, and the second fastening hole.

[0019] Additional aspects and advantages of the present disclosure will be provided at least in part in the following description, or will become apparent at least in part from the following description, or can be learned from practicing of the present disclosure.

BRIEF DESCRIPTION OF DRAWINGS

[0020] The above and/or additional aspects and advantages of the present disclosure will become more apparent and more understandable from the following description of embodiments taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a schematic structural view of a laundry treatment device according to some embodiments of the present disclosure, in which a cover body is not shown.

FIG. 2 is a top view of the laundry treatment device shown in FIG. 1, in which the cover body is not shown.

FIG. 3 is a schematic partial structural view of a laundry treatment device according to some embodiments of the present disclosure.

FIG. 4 is a schematic view of a steam generator assembly and a mounting plate according to some embodiments of the present disclosure.

FIG. 5 is a schematic view of a steam generator system according to some embodiments of the present disclosure.

FIG. 6 is a cross-sectional view taken along line A-A shown in FIG. 5.

FIG. 7 is an enlarged view of a part C shown in FIG. 6.

FIG. 8 is an enlarged view of a part B shown in FIG. 5.

FIG. 9 is a schematic view of a connection between a steam generator assembly and a mounting plate according to some embodiments of the present disclosure.

FIG. 10 is a schematic exploded view of a steam generator assembly and a mounting plate according to some embodiments of the present disclosure.

FIG. 11 is a schematic exploded view of a steam generator according to some embodiments of the present disclosure.

FIG. 12 is a schematic structural view of a top cover according to some embodiments of the present disclosure.

Reference Signs:

[0021]

laundry treatment device 100;
steam generator assembly 1; steam generator 11;
housing 111; stud 1111; first fastening hole 11111;
water inlet 1112; steam outlet 1113; partition 112;
first chamber a; second chamber b; communication
channel c; bottom housing 114; positioning rib 1141;
top cover 115; abutting rib 1151; accommodation
cavity d; filtration component 116; baffle 117; protective shell 12; avoidance hole 123; heat insulation housing 13; first through hole 131; second through hole 132;
casing 2; casing body 21; opening 211; flange 2111; mounting plate 3; main plate body 31; second fastening hole 311; wire buckle 312; mounting portion 32; first mounting portion 321; second mounting portion 322; first positioning portion 33;
laundry treatment agent box 4;
pressure adjustment member 5; communication pipe 51; pressure relief hole 52; connection pipe 53; water supply valve 54; flexible pipe 55.

DESCRIPTION OF EMBODIMENTS

[0022] The embodiments of the present disclosure will be described in detail below with reference to examples thereof as illustrated in the accompanying drawings, throughout which same or similar elements, or elements having same or similar functions, are denoted by same or similar reference signs. The embodiments described below with reference to the drawings are illustrative only, and are intended to explain, rather than limiting, the present disclosure.

[0023] A steam generator 11, a steam generator assembly 1, a steam generator system, and a laundry treatment device 100 according to an embodiment of the present disclosure will be described below with reference to the drawings.

[0024] Mounting of the steam generator assembly 1 in the laundry treatment device 100 will be first described below.

[0025] As illustrated in FIG. 1 and FIG. 2, the laundry treatment device 100 according to an embodiment of the present disclosure may include a steam generator system, a casing 2, and a mounting plate 3. The steam generator system includes a steam generator assembly 1.

[0026] The mounting plate 3 is detachably connected to the casing 2, and the steam generator assembly 1 is mounted in the casing 2 through the mounting plate 3. Therefore, the steam generator assembly 1 is detachable relative to the casing 2. As a result, disassembly and assembly of the steam generator assembly 1 are easy, thereby facilitating maintenance and replacement of the steam generator assembly 1. Moreover, it is possible to mount the steam generator assembly 1 in the casing 2 by using the mounting plate 3, resulting in a simple structure, low cost, and easy operation.

[0027] With the laundry treatment device 100 according to embodiments of the present disclosure, the mount-

ing plate 3 is detachably connected to the casing 2, and the steam generator assembly 1 is mounted in the casing 2 through the mounting plate 3. Therefore, the steam generator assembly 1 is detachable relative to the casing 2. As a result, the disassembly and assembly of the steam generator assembly 1 are easy, thereby facilitating the maintenance and replacement of the steam generator assembly 1. Moreover, it is possible to mount the steam generator assembly 1 in the casing 2 by using the mounting plate 3, resulting in the simple structure, low cost, and easy operation.

[0028] According to some implementations of the present disclosure, as illustrated in FIG. 3, the casing 2 includes a casing body 21 and a cover body (not shown). The casing body 21 has a side opened to form an opening 211, and the cover body removably covers the opening 211. Specifically, for example, as illustrated in FIG. 3, a top of the casing body 21 is opened to form the opening 211, and the cover body removably covers the opening 211. Therefore, the cover body is removably arranged relative to the casing body 21, thereby facilitating disassembly, maintenance, and replacement of components inside the casing 2 such as the steam generator system.

[0029] In some embodiments of the present disclosure, as illustrated in FIG. 3, a peripheral wall of the opening 211 is provided with a flange 2111 extending towards a center of the opening 211, and the cover body is detachably engaged with the flange 2111. For example, the cover body is detachably engaged with the flange 2111 through a fastener. Therefore, by providing the flange 2111, on the one hand, the flange 2111 can enhance a strength of the casing body 21, and on the other hand, the flange 2111 may be provided with a connection structure connected to the cover body, which is convenient to realize a detachable connection between the cover body and the casing body 21.

[0030] In some embodiments of the present disclosure, the flange 2111 and the casing body 21 may be integrally formed. Therefore, the integrated structure not only can ensure structure and performance stability of the flange 2111 and the casing body 21, but also is convenient to be formed and easy to be manufactured. Further, redundant assembly parts and connection steps may be removed, which greatly improves assembly efficiency of the flange 2111 and the casing body 21 and ensures reliability of a connection between the flange 2111 and the casing body 21. Further, the integrated structure is high in overall strength and stability, more convenient to be assembled, and long in service life.

[0031] In some embodiments of the present disclosure, as illustrated in FIG. 4, the mounting plate 3 includes a main plate body 31 and a mounting portion 32 connected to the main plate body 31. The main plate body 31 is connected to the steam generator assembly 1. The mounting portion 32 extends between the flange 2111 and the cover body. The mounting portion 32 is detachably connected to at least one of the flange 2111 and the cover body. That is, an end of the mounting portion 32

is located between the flange 2111 and the cover body and is detachably connected to at least one of the flange 2111 and the cover body, and the other end of the mounting portion 32 is connected to the main plate body 31.

[0032] Here, it can be understood that the expression "the mounting portion 32 is detachably connected to at least one of the flange 2111 and the cover body" means that the mounting portion 32 is detachably connected to the cover body or the flange 2111, or the mounting portion 32 is detachably connected to both the cover body and the flange 2111.

[0033] In some embodiments of the present disclosure, as illustrated in FIG. 4, the main plate body 31 is provided with a wire buckle 312. The wire buckle 312 is configured to position wirings of an electric device such as the steam generator 11 of the laundry treatment device 100 and/or of a heating element in a drying channel, thereby avoiding tangled wires.

[0034] In some embodiments of the present disclosure, the flange 2111 has a first screw hole passing through the flange 2111, and the mounting portion 32 has a second screw hole passing through the mounting portion 32. A first screw may pass through the first screw hole and the second screw hole, to detachably connect the mounting plate 3 to the casing 2.

[0035] In some embodiments of the present disclosure, as illustrated in FIG. 3, the mounting portion 32 includes a first mounting portion 321. The first mounting portion 321 and the steam generator assembly 1 are located at two sides of the main plate body 31 in a thickness direction of the main plate body 31, respectively. The first mounting portion 321 has an end connected to the main plate body 31, and another end extending beyond an outer peripheral wall of the main plate body 31 towards the flange 2111. The other end of the first mounting portion 321 is detachably connected to the flange 2111. For example, the main plate body 31 is horizontally arranged. In this case, the steam generator assembly 1 is located below the main plate body 31 and connected to the main plate body 31, and the first mounting portion 321 is located above the main plate body 31. In addition, the end of the first mounting portion 321 is connected to an upper surface of the main plate body 31, and the other end of the first mounting portion 321 extends horizontally towards the flange 2111 and connected to the flange 2111 by means of the first screw. By extending the other end of the first mounting portion 321 beyond the main plate body 31 towards the flange 2111 to be connected to the flange 2111, positioning the steam generator assembly 1 below the main plate body 31, and positioning the first mounting portion 321 above the main plate body 31, an avoidance space may be formed below the first mounting portion 321. As a result, when the first mounting portion 321 is fixed to the flange 2111, the steam generator assembly 1 may be suspended in the casing 2. Therefore, only a space having a same volume as a volume of the steam generator needs to be occupied. Compared with the related art, such a mounting manner of the steam

generator is more space-saving, more reliable, and firmer.

[0036] In some embodiments of the present disclosure, the mounting portion 32 includes a second mounting portion 322. The second mounting portion 322 has an end connected to the outer peripheral wall of the main plate body 31 and another end detachably connected to the flange 2111. The other end of the second mounting portion 322 extends away from the steam generator assembly 1 and then is bent towards the flange 2111. Further, the other end of the second mounting portion 322 is spaced apart from the other end of the first mounting portion 321 in a peripheral direction of the casing 2.

[0037] Specifically, as illustrated in FIG. 4 and FIG. 9, the main plate body 31 is formed in a horizontal rectangular shape. The first mounting portion 321 is arranged adjacent to a long side of the main plate body 31. The second mounting portion 322 is located at a short side of the main plate body 31, and the end of the second mounting portion 322 is connected to the outer peripheral wall of the main plate body 31. Moreover, the other end of the second mounting portion 322 extends upwards and then is bent towards the flange 2111. Further, the other end of the second mounting portion 322 is detachably connected to the flange 2111. Furthermore, the other end of the second mounting portion 322 is spaced apart from the other end of the first mounting portion 321 in the peripheral direction of the casing 2. Moreover, the steam generator assembly 1 is located below the main plate body 31. Therefore, reliability of the connection between the mounting plate 3 and the casing 2 can be improved.

[0038] In some embodiments of the present disclosure, as illustrated in FIG. 4, the mounting plate 3 is provided with a first positioning portion 33, and the casing 2 is provided with a second positioning portion. The first positioning portion 33 is engaged with the second positioning portion 33 to pre-position the mounting plate 3 and the casing 2. Specifically, for example, as illustrated in FIG. 3 and FIG. 4, the outer peripheral wall of the main plate body 31 is provided with the first positioning portion 33, and the flange 2111 as described above is provided with the second positioning portion. Moreover, the first positioning portion 33 is located between the first mounting portion 321 and the second mounting portion 322 in a peripheral direction of the main plate body 31. Therefore, through the engagement between the first positioning portion 33 and the second positioning portion, the mounting plate 3 and the casing body 21 can be pre-positioned, to further facilitate realizing the connection between the mounting plate 3 and the casing 2.

[0039] In some embodiments of the present disclosure, as illustrated in FIG. 4, the first positioning portion 33 is constructed as a rib, and the second positioning portion is constructed as a recess. Therefore, through an engagement between the rib and the recess, positioning can be realized through only a plug-in action, resulting in simple mounting. However, the present disclosure is

not limited in this regard. In other embodiments, the first positioning portion 33 may be the recess, and the second positioning portion may be the rib.

[0040] In some embodiments of the present disclosure, the mounting plate 3 is an integrated piece. Therefore, the integrated structure not only can ensure structure and performance stability of the mounting plate 3, but also is convenient to be formed and easy to be manufactured. Further, redundant assembly parts and connection steps may be removed, which greatly improves assembly efficiency of the mounting plate 3 and ensures reliability of a connection of the mounting plate 3. Further, the integrated structure is high in overall strength and stability, more convenient to be assembled, and long in service life.

[0041] In some embodiments of the present disclosure, the rib and the mounting plate 3 are integrally formed. Therefore, the integrated structure not only can ensure structure and performance stability of the rib and the mounting plate 3, but also is convenient to be formed and easy to be manufactured. Further, redundant assembly parts and connection steps can be removed, which greatly improves assembly efficiency of the rib and the mounting plate 3 and ensures reliability of a connection between the ribs and the mounting plate 3. Further, the integrated structure is high in overall strength and stability, more convenient to be assembled, and long in service life.

[0042] In some embodiments of the present disclosure, as illustrated in FIG. 10, the steam generator assembly 1 includes a protective shell 12 and a steam generator 11. Specifically, the protective shell 12 has a first aperture (not shown) and a second aperture (not shown). The steam generator 11 is located in the protective shell 12 and has a housing 111 with a water inlet 1112 and a steam outlet 1113. The water inlet 1112 corresponds to the first aperture, and the steam outlet 1113 corresponds to the second aperture. Therefore, by providing the protective shell 12, a protective effect on the steam generator 11 can be enhanced. In addition, the arrangement of the first aperture may be used to avoid the water inlet 1112 to facilitate communication between the water inlet 1112 and a pipeline, and the arrangement of the second aperture may be used to avoid the steam outlet 1113 to facilitate communication between the steam outlet 1113 and the pipeline.

[0043] In some embodiments of the present disclosure, as illustrated in FIG. 10, the protective shell 12 is internally provided with a heat insulation housing 13. The steam generator 11 is located in the heat insulation housing 13. The heat insulation housing 13 has a first through hole 131 and a second through hole 132. The first through hole 131 and the water inlet 1112 correspond to the first aperture, and the second through hole 132 and the steam outlet 1113 correspond to the second aperture. Therefore, by providing the heat insulation housing 13, a heat insulation effect on the steam generator 11 can be enhanced.

[0044] In some specific examples of the present disclosure, the heat insulation housing 13 is formed by assembling two sub-housings. Therefore, the structure is simple, facilitating the mounting.

[0045] In some implementations of the present disclosure, the heat insulation housing 13 is a foam member. Thus, the cost is low.

[0046] In some embodiments of the present disclosure, the steam generator assembly 1 is detachably connected to the mounting plate 3. Therefore, the structure is simple, which is convenient for disassembly and assembly.

[0047] In some embodiments of the present disclosure, as illustrated in FIG. 10, the housing 111 has a first fastening hole 11111. The mounting plate 3 has a second fastening hole 311. The protective shell 12 has an avoidance hole 123. The first fastening hole 11111, the avoidance hole 123, and the second fastening hole 311 correspond to each other. The laundry treatment device 100 includes a fastener sequentially passing through the first fastening hole 11111, the avoidance hole 123, and the second fastening hole 311. Therefore, it is possible to realize a detachable connection between the steam generator assembly 1 and the mounting plate 3.

[0048] For example, the mounting plate 3 has a plurality of second fastening holes 311. A top wall of the housing 111 is provided with a plurality of studs 1111, and each of the plurality of studs 1111 has the first fastening hole 11111. The protective shell 12 has a plurality of avoidance holes 123 arranged at intervals. The heat insulation housing 13 has a plurality of avoidance apertures. The plurality of fasteners such as screws, the plurality of first fastening holes 11111, the plurality of second fastening holes 311, the plurality of avoidance apertures, and the plurality of avoidance holes 123 correspond to each other. The fasteners sequentially pass through the corresponding first fastening holes 11111, the avoidance apertures, the avoidance holes 123, and the second fastening holes 311, thereby achieving the connection between the steam generator assembly 1 and the mounting plate 3. Further, reliability of the connection between the steam generator assembly 1 and the mounting plate 3 can be improved.

[0049] A specific structure of the steam generator 11 according to an embodiment of the present disclosure will be described below.

[0050] A laundry treatment device 100 includes a steam generator assembly 1. The steam generator assembly 1 includes a steam generator 11, and the steam generator 11 may include a housing 111, a partition 112, and a heating element (not shown).

[0051] Specifically, as illustrated in FIG. 11 and FIG. 12, the housing 111 has a water inlet 1112 and a steam outlet 1113. The partition 112 is disposed in the housing 111 to divide the housing 111 into a first chamber a and a second chamber b. The water inlet 1112 is in communication with the first chamber a. The steam outlet 1113 is in communication with the second chamber b. The first

chamber a is in communication with the second chamber b through a communication channel c. The heating element is disposed in the housing 111 to at least heat the first chamber a. In this way, external water may enter the first chamber a through the water inlet 1112, and the heating element can heat the water entering the first chamber a to form steam. Moreover, the steam may enter the second chamber b through the communication channel c. The steam entering the second chamber b may further flow in the second chamber b and be discharged through the steam outlet 1113, and then discharged into an inner tub of the laundry treatment device 100, to achieve micro-dry cleaning of the laundry.

[0052] Specifically, an angle is formed between a plane where an inlet end of the steam outlet 1113 is located and a plane where an outlet end of the communication channel c is located. That is, the plane where the inlet end of the steam outlet 1113 is located is angled to the plane where the outlet end of the communication channel c is located, rather than being parallel to the plane where the outlet end of the communication channel c is located. With such an arrangement, it is possible to prolong a flow path of the steam in the second chamber b. Moreover, during a flow of the steam from the communication channel c to the steam outlet 1113, the airflow will be diverted, and thus water drops of large particles can be removed from the diverted airflow by means of the gravity and inertia. Therefore, dryness of the steam discharged through the steam outlet 1113 can be ensured, and thus it is possible to prevent water carried by the steam from being sprayed out of the steam outlet 1113.

[0053] For the steam generator 11 of the laundry treatment device 100 according to the embodiments of the present disclosure, the predetermined angle is formed between the plane where the inlet end of the steam outlet 1113 is located and the plane where the outlet end of the communication channel c is located. With this arrangement, it is beneficial to prolong the flow path of the steam in the second chamber b. Moreover, during the flow of the steam from the communication channel c to the steam outlet 1113, the airflow will be diverted, and thus water drops of large particles can be removed from the diverted airflow by means of the gravity and inertia. Therefore, the dryness of the steam discharged from the steam outlet 1113 can be ensured, and thus it is possible to prevent water carried by the steam from being sprayed of the steam outlet 1113.

[0054] In some embodiments of the present disclosure, referring to FIG. 11, the first chamber a and the second chamber b are arranged in an up-down direction. The first chamber a is located below the second chamber b, and the water inlet 1112 is located at a peripheral wall or a bottom wall of the first chamber a. Specifically, the partition 112 is horizontally arranged in the housing 111 to divide the housing 111 into an upper second chamber b and a lower first chamber a. With this arrangement, the structure is simple, facilitating the mounting of the partition 112.

[0055] However, the present disclosure is not limited in this regard. In other implementations, the partition 112 may also be arranged at a predetermined angle with a horizontal direction. For example, an angle between the partition 112 and the horizontal direction ranges between 0 to 45°. Specifically, the angle between the partition 112 and the horizontal direction is 10°, 15°, 20°, or 25°.

[0056] In some embodiments of the present disclosure, the steam outlet 1113 is formed at a peripheral wall of the second chamber b. Specifically, as illustrated in FIG. 11, the partition 112 is horizontally arranged in the housing 111 to divide the housing 111 into the upper second chamber b and the lower first chamber a. The communication channel c is formed at the partition 112, and the steam outlet 1113 is formed at the peripheral wall of the second chamber b. With such an arrangement, a plane where an air inlet end of the steam outlet 1113 is located is perpendicular to a plane where an air outlet end of the communication channel c is located. In this way, the steam will be diverted by a large angle when flowing from the communication channel c towards the steam outlet 1113, and thus water drops of large particles can be removed from the diverted airflow by means of the gravity and inertia. Therefore, dryness of the steam discharged through the steam outlet 1113 can be increased, and thus it is possible to prevent water carried by the steam from being sprayed out of the steam outlet 1113.

[0057] However, the present disclosure is not limited in this regard. In other implementations, the outer peripheral wall of the housing 111 is provided with a connection portion having a communication channel in communication with the first chamber a and the second chamber b.

[0058] In some embodiments of the present disclosure, as illustrated in FIG. 11, one communication channel c is provided and is formed at an end of the partition 112 in a length direction of the partition 112. Moreover, the steam outlet 1113 is formed adjacent to the other end of the partition 112 in the length direction of the partition 112. Specifically, in a horizontal plane, the communication channel c and the steam outlet 1113 are respectively located at two sides of a symmetric line of the partition 112 in a width direction of the partition 112. In this way, it is advantageous to prolong a flow path of the steam from the communication channel c to the steam outlet 1113. Therefore, the water drops of the large particles can be greatly removed from the diverted steam by means of the gravity and inertia. Therefore, it is possible to increase the dryness of the steam and prevent the water carried in the steam from being sprayed out of the steam outlet 1113.

[0059] In some embodiments of the present disclosure, as illustrated in FIG. 11, the housing 111 includes a bottom housing 114 and a top cover 115. A top of the bottom housing 114 is opened, and the top cover 115 removably covers the top of the bottom housing 114. Therefore, by arranging the bottom housing 114 to be detachably connected to the top cover 115, components

in the housing 111 such as the partition 112 can be conveniently mounted and replaced.

[0060] In some embodiments of the present disclosure, the heating element may be disposed in the bottom housing 114. For example, the heating element is integrally disposed within the bottom housing 114. Therefore, the integrated structure not only can ensure structure and performance stability of the heating element and the bottom housing 114, but also is convenient to be formed and easy to be manufactured. Further, redundant assembly parts and connection steps can be removed, which greatly improves assembly efficiency of the heating element and the bottom housing 114 and ensures reliability of a connection between the heating element and the bottom housing 114. Furthermore, the integrated structure is high in overall strength and stability, more convenient to be assembled, and long in service life.

[0061] In some embodiments of the present disclosure, the partition 112 is disposed in the bottom housing 114. An inner peripheral wall of the bottom housing 114 is provided with a positioning rib 1141. The top cover 115 is provided with an abutting rib 1151. The partition 112 is supported on a top wall of the positioning rib 1141 and abuts with the abutting rib 1151. Specifically, for example, as illustrated in FIG. 11 and FIG. 12, the inner peripheral wall of the bottom housing 114 is provided with a plurality of positioning ribs 1141, and the plurality of positioning ribs 1141 is arranged at intervals in a peripheral direction of the bottom housing 114. The top cover 115 is provided with a plurality of abutting ribs 1151, and the plurality of abutting ribs 1151 is arranged at intervals in the peripheral direction of the bottom housing 114. A lower surface of the partition 112 is supported on the plurality of positioning ribs 1141. In this way, each of the abutting ribs 1151 on the top cover 115 abuts with an upper surface of the partition 112 when the bottom housing 114 is connected to the top cover 115, to fix the partition 112. With this arrangement, the assembly is simple. Moreover, the arrangement of the abutting ribs 1151 on the top cover 115 is also beneficial to improving structural strength of the top cover 115, and the arrangement of the positioning ribs 1141 at the inner peripheral wall of the bottom housing 114 is also advantageous to improving structural strength of the bottom housing 114.

[0062] In some embodiments of the present disclosure, the bottom housing 114 and the positioning rib 1141 are integrally formed. Therefore, the integrated structure not only can ensure structure and performance stability of the bottom housing 114 and the positioning rib 1141, but also is convenient to be formed and easy to be manufactured. Further, redundant assembly parts and connection steps can be removed, which greatly improves assembly efficiency of the bottom housing 114 and the positioning rib 1141 and ensures reliability of a connection between the bottom housing 114 and the positioning rib 1141. Furthermore, the integrated structure is high in overall strength and stability, more convenient to be assembled, and long in service life.

[0063] In some embodiments of the present disclosure, the top cover 115 and the abutting rib 1151 are integrally formed. Therefore, the integrated structure not only can ensure structure and performance stability of the top cover 115 and the abutting rib 1151, but also is convenient to be formed and easy to be manufactured. Further, redundant assembly parts and connection steps can be removed, which greatly improves assembly efficiency of the top cover 115 and the abutting rib 1151 and ensures reliability of a connection between the top cover 115 and the abutting rib 1151. Furthermore, the integrated structure is high in overall strength and stability, more convenient to be assembled, and long in service life.

[0064] In some embodiments of the present disclosure, as illustrated in FIG. 12, the top cover 115 has an accommodation cavity d with an open bottom, and an end surface of an open end of the top cover 115 is provided with the abutting rib 1151. In this way, the second chamber b is defined by the accommodation cavity d, a space of the bottom housing 114 located at the partition 112 and adjacent to the accommodation cavity d, and the partition 112 together, and the steam outlet 1113 is formed at a peripheral wall of the top cover 115. This arrangement not only ensures simplicity in structure, but also results in a more reasonable structural layout.

[0065] In some embodiments of the present disclosure, as illustrated in FIG. 11, the steam generator 11 includes a filtration component 116 disposed in the second chamber b. In a flow direction of the airflow, the filtration component 116 is located between the communication channel c and the steam outlet 1113. Therefore, during the flow of the airflow in the second chamber b, the airflow necessarily flows through the filtration component 116. The filtration component 116 can filter the steam, allowing droplets of water in the steam to flow along the filtration component 116 due to gravity, to allow small droplets of water to be filtered out. With this arrangement, the dryness of the airflow discharged through the steam outlet 1113 can be further increased, and thus it is possible to prevent the water carried in the steam from being sprayed out of the steam outlet 1113.

[0066] In some embodiments of the present disclosure, the filtration component 116 is arranged parallel to the air inlet end of the steam outlet 1113, or the filtration component 116 is parallel to the air outlet end of the communication channel c. Therefore, the structure is simple, facilitating processing and manufacturing. Moreover, filtering effect can be enhanced.

[0067] In some embodiments of the present disclosure, as illustrated in FIG. 12, the steam generator 11 includes a baffle 117. The baffle 117 is disposed in the housing 111 and directly faces towards the steam outlet 1113. Therefore, by providing the baffle 117, when the airflow flows towards the steam outlet 1113, the airflow necessarily collides with the baffle 117, and then enters the steam outlet 1113 through a gap between a surface of the baffle 117 adjacent to the steam outlet 1113 and an inner wall of the housing 111, thereby further filtering

the water droplets from the steam through the blocking of the baffle 117, to ensure that dry steam can be sprayed out of the steam outlet 1113.

[0068] In some embodiments of the present disclosure, the baffle 117 may be provided at the top cover 115, and the baffle 117 and the top cover 115 may be integrally formed. Therefore, the integrated structure not only can ensure structure and performance stability of the baffle 117 and the top cover 115, but also is convenient to be formed and easy to be manufactured. Further, redundant assembly parts and connection steps can be removed, which greatly improves assembly efficiency of the baffle 117 and the top cover 115 and ensures reliability of a connection between the baffle 117 and the top cover 115. Furthermore, the integrated structure is high in overall strength and stability, more convenient to be assembled, and long in service life.

[0069] For the steam generator assembly 1 according to the embodiments of the present disclosure, by providing the steam generator 11, the angle is formed between the plane where the inlet end of the steam outlet 1113 is located and the plane where the outlet end of the communication channel c is located. With this arrangement, it is beneficial to prolong the flow path of the steam in the second chamber b. Moreover, during the flow of the steam from the communication channel c to the steam outlet 1113, the airflow will be diverted, and the water drops of the large particles can be removed from the diverted steam by means of the gravity and inertia. Therefore, the dryness of the steam discharged through the steam outlet 1113 can be ensured, and thus it is possible to prevent the water carried in the steam from being sprayed out of the steam outlet 1113.

[0070] For the laundry treatment device according to the embodiments of the present disclosure, by providing the steam generator assembly 1 as described above, the angle is formed between the plane where the inlet end of the steam outlet 1113 is located and the plane where the outlet end of the communication channel c is located. With this arrangement, it is beneficial to prolong the flow path of the steam in the second chamber b. Moreover, during the flow of the steam from the communication channel c to the steam outlet 1113, the airflow will be diverted, and the water drops of the large particles can be removed from the diverted steam by means of the gravity and inertia. Therefore, the dryness of the steam discharged through the steam outlet 1113 can be ensured, and thus it is possible to prevent the water carried in the steam from being sprayed out of the steam outlet 1113.

[0071] The steam generator system according to an embodiment of the present disclosure will be described below.

[0072] As illustrated in FIG. 5 to FIG. 8, a steam generator system according to an embodiment of the present disclosure may include a steam generator 11 and a pressure adjustment member 5.

[0073] As illustrated in FIG. 7 and FIG. 8, the pressure

adjustment member 5 includes a communication pipe 51 and a pressure adjustment portion. The pressure adjustment portion is disposed at a wall of the communication pipe 51 and is configured to adjust pressure in the communication pipe 51. One of the water inlet 1112 and the steam outlet 1113 is in communication with the communication pipe 51 of the pressure adjustment member 5, or the water inlet 1112 and the steam outlet 1113 are in communication with the communication pipes 51 of different pressure adjustment members 5, respectively.

[0074] Specifically, since the communication pipe 51 is connected to the steam generator 11, an adjustment on a pressure in the housing 111 of the steam generator 11 can be achieved by adjusting the pressure in the communication pipe 51. In this way, when the pressure in the housing 111 of the steam generator 11 is abnormal, for example, when the pressure is increased due to an abnormal temperature rise of the heating element, the pressure in the communication pipe 51 can be relieved through the pressure adjustment portion, which in turn relieves the pressure of the steam generator 11. Therefore, it is advantageous to improve reliability of operation of the steam generator 11. Moreover, the structure is simple, eliminating the need for an additional safety valve at the steam generator 11. Therefore, the structure of the steam generator 11 can be simplified, thereby removing steps of re-checking safety of the steam generator 11 after an abnormal pressure occurs on the safety valve.

[0075] For the steam generator system according to the embodiments of the present disclosure, since the communication pipe 51 is connected to the steam generator 11, the adjustment on the pressure in the housing 111 of the steam generator 11 can be realized by adjusting the pressure in the communication pipe 51. In this way, when the pressure in the housing 111 of the steam generator 11 is abnormal, for example, when the pressure is increased due to the abnormal temperature rise of the heating element, the pressure in the communication pipe 51 can be relieved through the pressure adjustment portion, which in turn relieves the pressure of the steam generator 11. Therefore, it is advantageous to improve reliability of operation of the steam generator 11. Moreover, the structure is simple, eliminating the need for the additional safety valve at the steam generator 11. Therefore, the structure of the steam generator 11 can be simplified, thereby removing steps of re-checking safety of the steam generator 11 after an abnormal pressure occurs on the safety valve.

[0076] In some embodiments of the present disclosure, the pressure adjustment portion is constructed as a pressure relief hole 52 penetrating the pipe wall of the communication pipe 51. Moreover, a cross-sectional area of the pressure relief hole 52 is smaller than a cross-sectional area of the communication pipe 51. As a result, the structure is simple, and it is also convenient for manufacturing and processing. Meanwhile, pressure relief effect can be improved.

[0077] In some embodiments of the present disclosure,

an equivalent diameter of the pressure relief hole 52 is smaller than or equal to 1.5 mm. For example, the pressure relief hole 52 has an equivalent diameter of 1.3 mm, 1.2 mm, 1.1 mm, 1 mm, 0.8 mm, 0.5 mm, or 0.2 mm. Therefore, by setting the equivalent diameter of the pressure relief hole 52 smaller than or equal to 1.5 mm, both the pressure relief effect and normal flow of the fluid between the communication pipe 51 and the steam generator 11 can be ensured, preventing the fluid in the communication pipe 51 from being used for pressure relief and discharged due to an overlarge size of the pressure relief hole 52, rather than normally flowing into the steam generator 11, or preventing the fluid of the steam generator 11 from being used for pressure relief and discharged through the pressure relief hole 52, rather than being delivered into the inner tub through the communication pipe 51.

[0078] In some embodiments of the present disclosure, the steam generator system includes a storage box. The pressure relief hole 52 is adapted to be in communication with the storage box. Therefore, the fluid discharged through the pressure relief hole 52 can be discharged into the storage box, thereby preventing water from flowing onto the electrical device, which may result in damage to the electrical device.

[0079] In some embodiments of the present disclosure, the storage box is a laundry treatment agent box 4. Therefore, the existing laundry treatment agent box 4 of the laundry treatment device 100 can be used as the storage box for receiving the fluid discharged through the pressure relief hole 52 without providing an additional storage box. Therefore, the structure is more compact, thereby facilitating cost saving.

[0080] In some embodiments of the present disclosure, the storage box and the pressure adjustment member 5 are integrally formed. Therefore, the integrated structure not only can ensure structure and performance stability of the storage box and the pressure adjustment member 5, but also is convenient to be formed and easy to be manufactured. Further, redundant assembly parts and connection steps can be removed, which greatly improves assembly efficiency of the storage box and the pressure adjustment member 5 and ensures reliability of a connection between the storage box and the pressure adjustment member 5. Furthermore, the integrated structure is high in overall strength and stability, more convenient to be assembled, and long in service life.

[0081] In some embodiments of the present disclosure, as illustrated in FIG. 7, the pressure adjustment member 5 includes a connection pipe 53. The connection pipe 53 has an end connected to an outer circumferential wall of the communication pipe 51 and another end inserted into the storage box. The connection pipe 53 is arranged around the pressure relief hole 52. Therefore, the structure is simple, and the arrangement of the connection pipe 53 also facilitates guiding of the fluid discharged through the pressure relief hole 52. Therefore, it is possible to ensure that the fluid flowing out of the

pressure relief hole 52 can reliably flow into the storage box.

[0082] In some embodiments of the present disclosure, as illustrated in FIG. 7, a wall thickness m of a part of the pipe wall of the communication pipe 51 located between an inner circumferential wall of the pressure relief hole 52 and an inner circumferential wall of the connection pipe 53 is smaller than wall thicknesses of other parts of the communication pipe 51. Therefore, when there is an excessive pressure in the housing 111 of the steam generator 11 and water continuously enters the housing 111 from the communication pipe 51, the excessive pressure in the communication pipe 51 causes the part of the pipe wall of the communication pipe 51 between the inner circumferential wall of the pressure relief hole 52 and the inner circumferential wall of the connection pipe 53 to be broken, thereby allowing the water in the communication pipe 51 to enter the storage box through the connection pipe 53, greatly relieving the pressure in the communication pipe 51. Therefore, it is possible to prevent the steam generator 11 from being damaged.

[0083] In some embodiments of the present disclosure, as illustrated in FIG. 7, the wall thickness m of the part of the pipe wall of the communication pipe 51 located between the inner circumferential wall of the pressure relief hole 52 and the inner circumferential wall of the connection pipe 53 is smaller than or equal to 1 mm. For example, the wall thickness m of the part of the pipe wall of the communication pipe 51 located between the inner circumferential wall of the pressure relief hole 52 and the inner circumferential wall of the connection pipe 53 is 0.3 mm, 0.5 mm, 0.7 mm, or 0.8 mm. By setting the wall thickness of the part of the pipe wall of the communication pipe 51 located between the inner circumferential wall of the pressure relief hole 52 and the inner circumferential wall of the connection pipe 53 smaller than or equal to 1 mm, when there is the excessive pressure in the housing 111 of the steam generator 11 and the water continuously enters the housing 111 from the communication pipe 51, the excessive pressure in the communication pipe 51 causes the part to be broken, thereby allowing the water in the communication pipe 51 to enter the storage box through the connection pipe 53, greatly relieving the pressure in the communication pipe 51. Therefore, it is possible to prevent the steam generator 11 from being damaged.

[0084] In some embodiments of the present disclosure, the laundry treatment device 100 includes a water supply valve 54. For example, the water supply valve 54 is a solenoid valve and is in communication with the water inlet 1112 through the communication pipe 51. Therefore, by providing the water supply valve 54, the water supply of the laundry treatment device 100 can be more intelligent.

[0085] In some embodiments of the present disclosure, as illustrated in FIG. 8, the water supply valve 54 is in communication with the communication pipe 51

through a flexible pipe 55, and/or the communication pipe 51 is in communication with the water inlet 1112 through a flexible pipe 55. That is, a communication between the water supply valve 54 and the communication pipe 51 may be realized through the flexible pipe 55, or a communication between the communication pipe 51 and the water inlet 1112 may be realized through the flexible pipe 55, or the communication between the water supply valve 54 and the communication pipe 51 as well as the communication between the communication pipe 51 and the water inlet 1112 are both realized through the flexible pipe 55. Since the flexible pipe 55 can be freely bent, the arrangement of the flexible pipe 55 would not occupy more mounting space, allowing for more compact structure of the steam generator system.

[0086] In some specific examples of the present disclosure, the flexible pipe 55 may be a corrugated pipe, a rubber pipe, a silicone pipe, or a plastic pipe. Thus, the cost is low.

[0087] For the laundry treatment device 100 according to the embodiments of the present disclosure, by providing the steam generator system as described above, since the communication pipe 51 is connected to the steam generator 11, the adjustment on the pressure in the housing 111 of the steam generator 11 can be realized by adjusting the pressure in the communication pipe 51. In this way, when the pressure in the housing 111 of the steam generator 11 is abnormal, for example, when the pressure is increased due to the abnormal temperature rise of the heating element, the pressure in the communication pipe 51 can be relieved through the pressure adjustment portion, which in turn relieves the pressure of the steam generator 11. Therefore, it is advantageous to improve the reliability of the operation of the steam generator 11. Moreover, the structure is simple, eliminating the need for an additional safety valve at the steam generator 11. Therefore, the structure of the steam generator 11 can be simplified, thereby removing the step of re-checking the safety of the steam generator 11 after the abnormal pressure occurs on the safety valve.

[0088] In the description of the present disclosure, it should be understood that the orientation or position relationship indicated by the terms "center", "longitudinal", "transverse", "length", "width", "thickness", "upper", "lower", "front", "rear", "left", "right", "vertical", "horizontal", "top", "bottom", "inner", "outer", "clockwise", "counterclockwise", "axial", "radial", "circumferential", etc., is based on the orientation or position relationship shown in the drawings, and is only for the convenience of describing the present disclosure and simplifying the description, rather than indicating or implying that the associated device or element must have a specific orientation, or be constructed and operated in a specific orientation, and therefore cannot be understood as a limitation of the present disclosure. In addition, the features associated with "first" and "second" may explicitly or implicitly include at least one of the features. In the description of the present disclosure, "a plurality of" means at

least two, unless otherwise defined. In the present disclosure, the first feature "on", or "under" the second feature may mean that the first feature is in direct contact with the second feature, or the first and second features are in indirect contact through another feature between the first and second features. Moreover, the first feature "above" or "over" the second feature may mean that the first feature is directly above or obliquely above the second feature, or simply mean that the level of the first feature is higher than that of the second feature.

[0089] In the description of this specification, descriptions with reference to the terms "an embodiment", "some embodiments", "illustrative embodiments", "examples", "specific examples", or "some examples" etc. mean that specific features, structure, materials or characteristics described in conjunction with the embodiment or example are included in at least one embodiment or example of the present disclosure. In this specification, the schematic representations of the above terms do not necessarily refer to the same embodiment or example. Moreover, the described specific features, structures, materials or characteristics may be combined in any one or more embodiments or examples in a suitable manner.

[0090] Although embodiments of the present disclosure have been illustrated and described, it is conceivable for those of ordinary skill in the art that various changes, modifications, replacements, and variations can be made to these embodiments without departing from the principles and spirit of the present disclosure. The scope of the present disclosure shall be defined by the claims as appended and their equivalents.

Claims

1. A laundry treatment device, comprising: a casing; a mounting plate detachably connected to the casing; and a steam generator assembly mounted in the casing through the mounting plate.
2. The laundry treatment device according to claim 1, wherein the casing comprises: a casing body having a side opened to form an opening; and a cover body removably covering the opening.
3. The laundry treatment device according to claim 2, wherein a peripheral wall of the opening is provided with a flange extending towards a center of the opening, and the cover body is detachably engaged with the flange.
4. The laundry treatment device according to claim 3, wherein the mounting plate comprises: a main plate body connected to the steam generator assembly; and a mounting portion connected to the main plate body and extending between the flange and the cover body, the mounting portion being detachably connected to at least one of the flange and the cover

body.

5. The laundry treatment device according to claim 4, wherein the mounting portion comprises a first mounting portion, wherein: the first mounting portion and the steam generator assembly are respectively located at two sides of the main plate body in a thickness direction of the main plate body; the first mounting portion has an end connected to the main plate body, and another end extending beyond an outer peripheral wall of the main plate body towards the flange and detachably connected to the flange.
6. The laundry treatment device according to claim 5, wherein the mounting portion comprises a second mounting portion having an end connected to the outer peripheral wall of the main plate body and another end detachably connected to the flange, the other end of the second mounting portion extending away from the steam generator assembly and then being bent towards the flange, and being spaced apart from the other end of the first mounting portion in a peripheral direction of the casing.
7. The laundry treatment device according to any one of claims 1 to 6, wherein: the mounting plate is provided with a first positioning portion; and the casing is provided with a second positioning portion engaged with the first positioning portion to pre-position the mounting plate and the casing.
8. The laundry treatment device according to claim 7, wherein: the first positioning portion is constructed as a rib; and the second positioning portion is constructed as a recess.
9. The laundry treatment device according to any one of claims 1 to 8, wherein the mounting plate is an integrated piece.
10. The laundry treatment device according to any one of claims 1 to 9, wherein the steam generator assembly comprises: a protective shell having a first aperture and a second aperture; and a steam generator located in the protective shell and having a housing with a water inlet and a steam outlet, the water inlet corresponding to the first aperture, and the steam outlet corresponding to the second aperture.
11. The laundry treatment device according to claim 10, wherein the protective shell is internally provided with a heat insulation housing, the steam generator being located in the heat insulation housing, the heat insulation housing having a first through hole and a second through hole, the first through hole and the water inlet corresponding to the first aperture, and the second through hole and the steam outlet corre-

sponding to the second aperture.

12. The laundry treatment device according to claim 10 or 11, wherein the steam generator assembly is detachably connected to the mounting plate. 5
13. The laundry treatment device according to claim 12, wherein: the housing of the steam generator has a first fastening hole; the mounting plate has a second fastening hole; the protective shell has an avoidance hole, the first fastening hole, the avoidance hole, and the second fastening hole corresponding to each other; the laundry treatment device comprises a fastener sequentially passing through the first fastening hole, the avoidance hole, and the second fastening hole. 10 15

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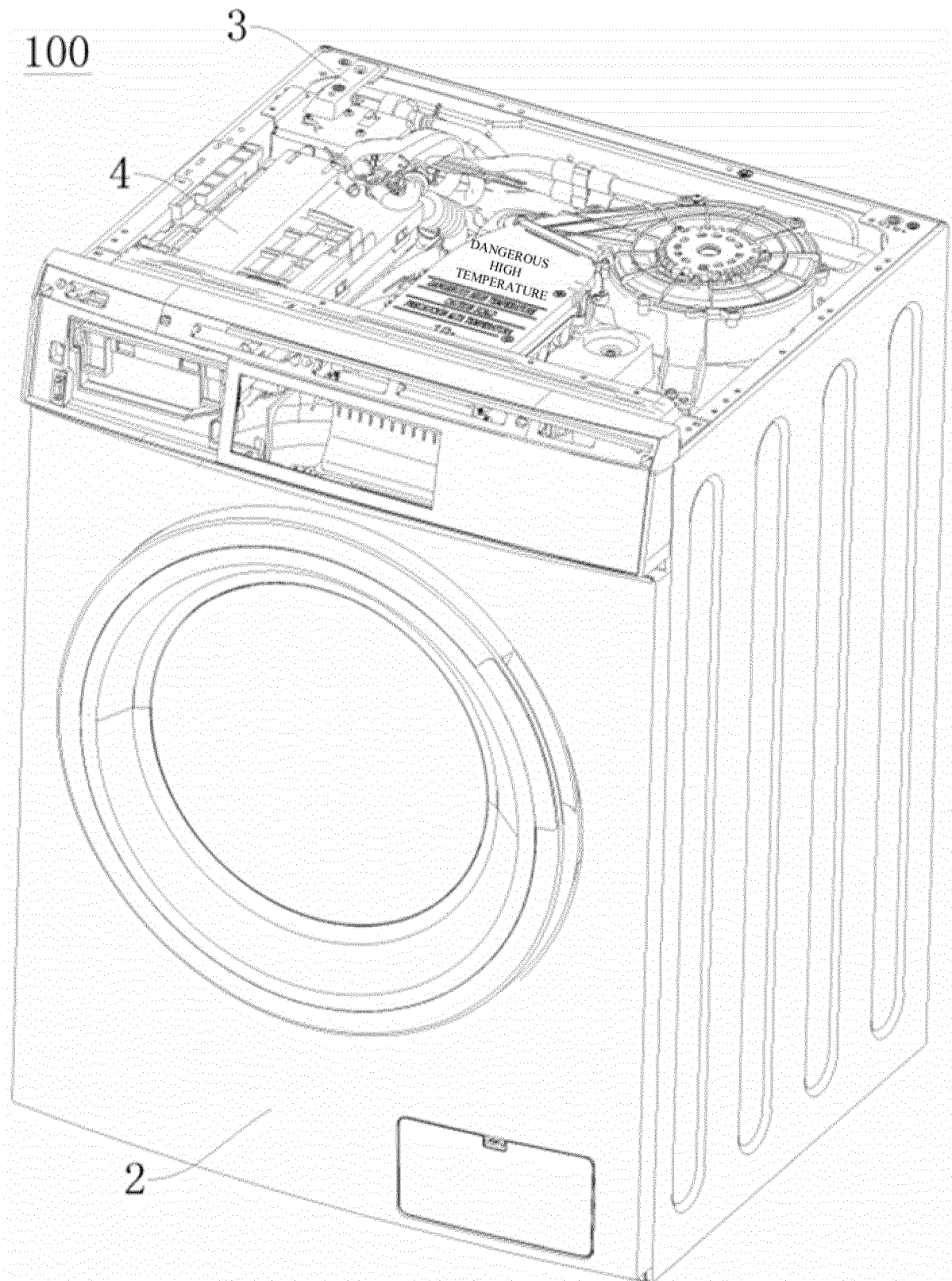


FIG. 1

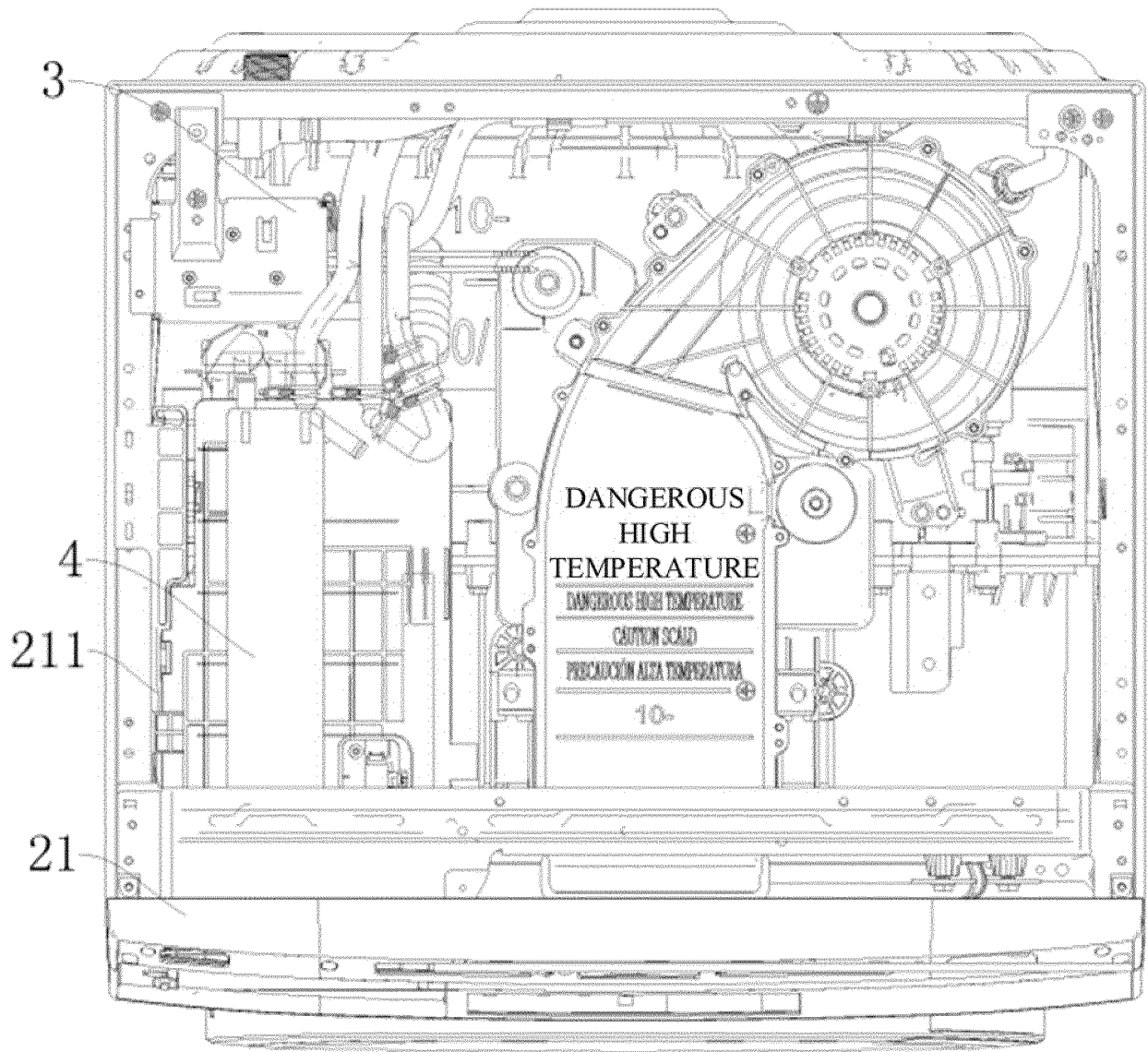


FIG. 2

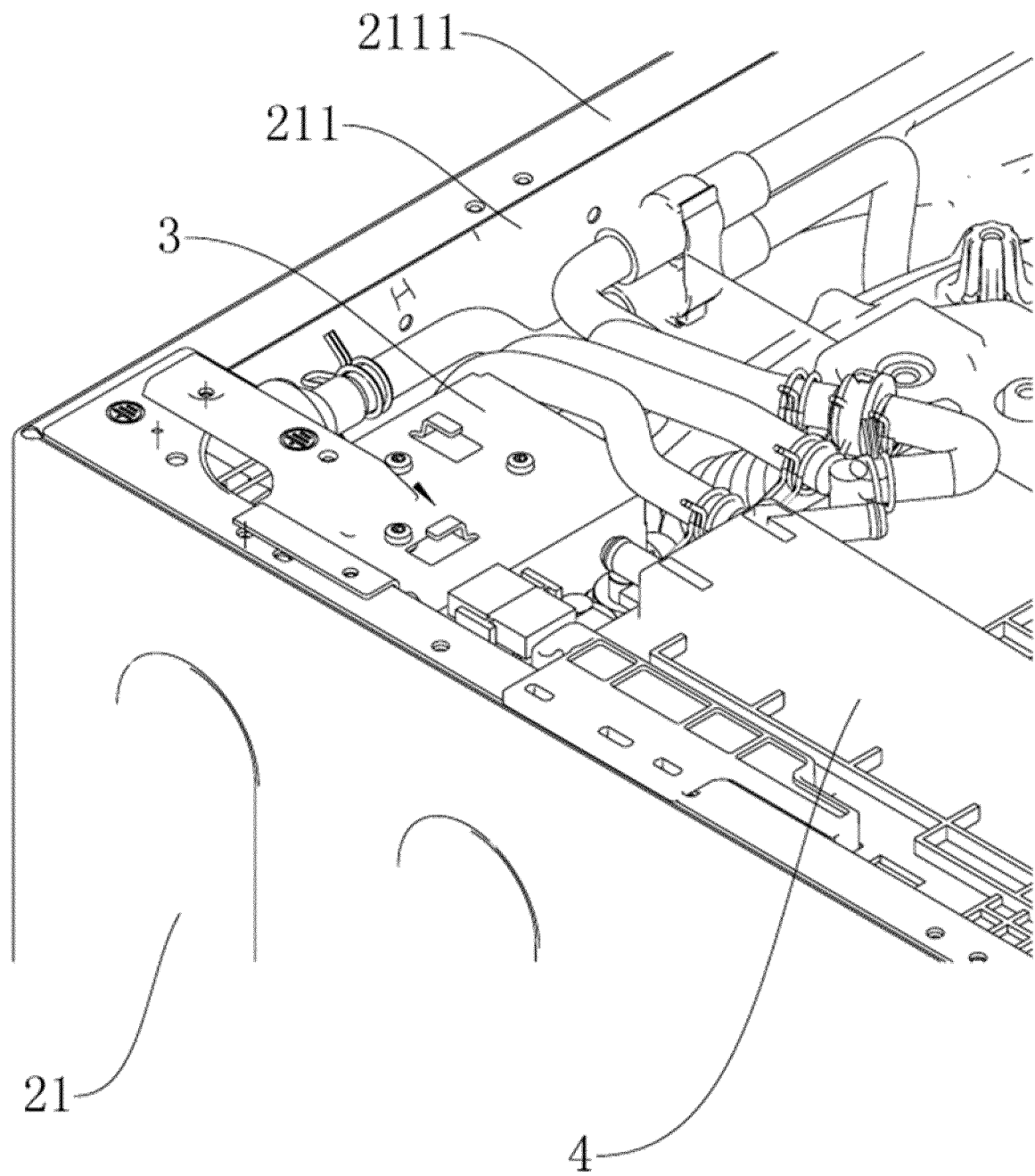


FIG. 3

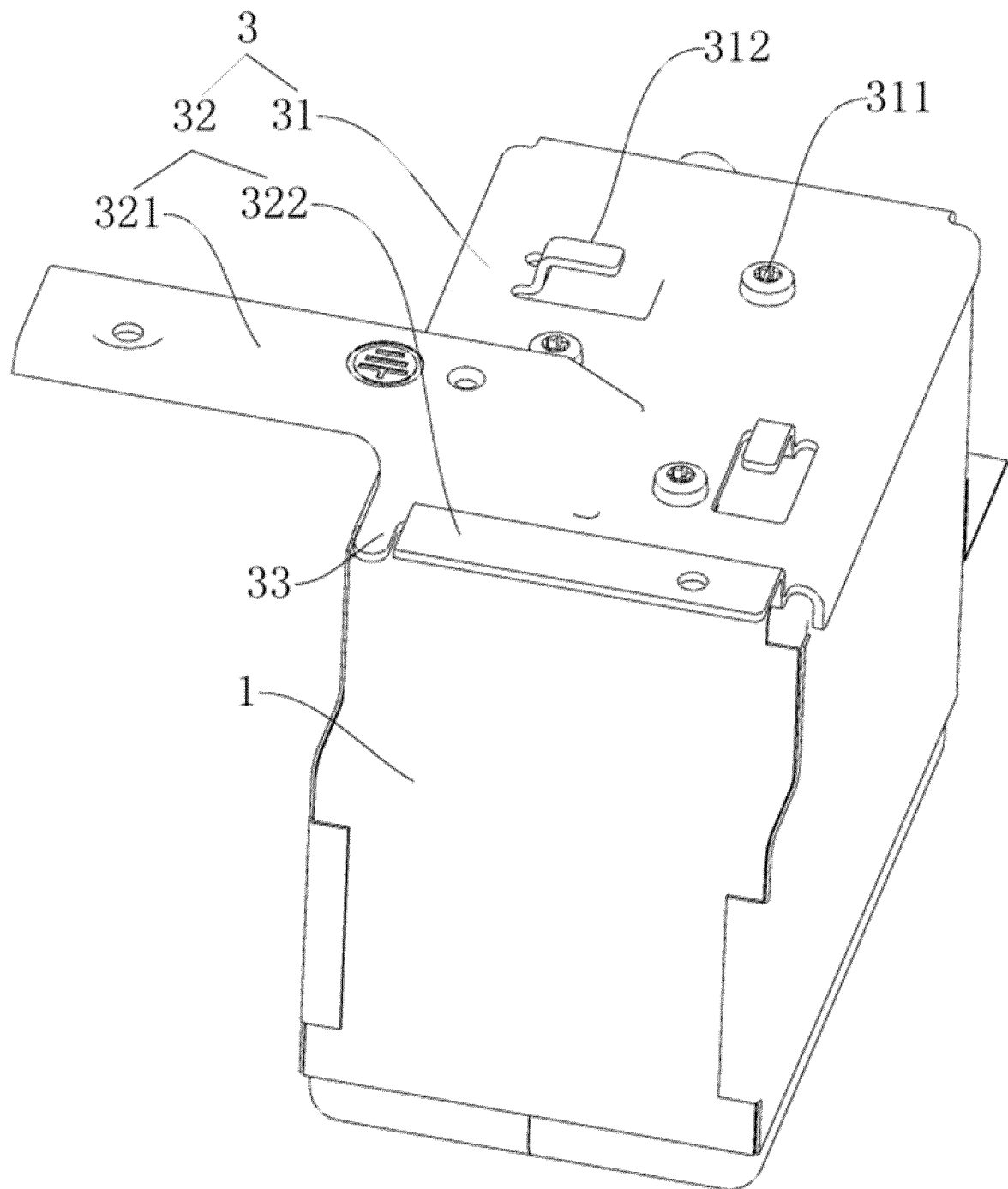


FIG. 4

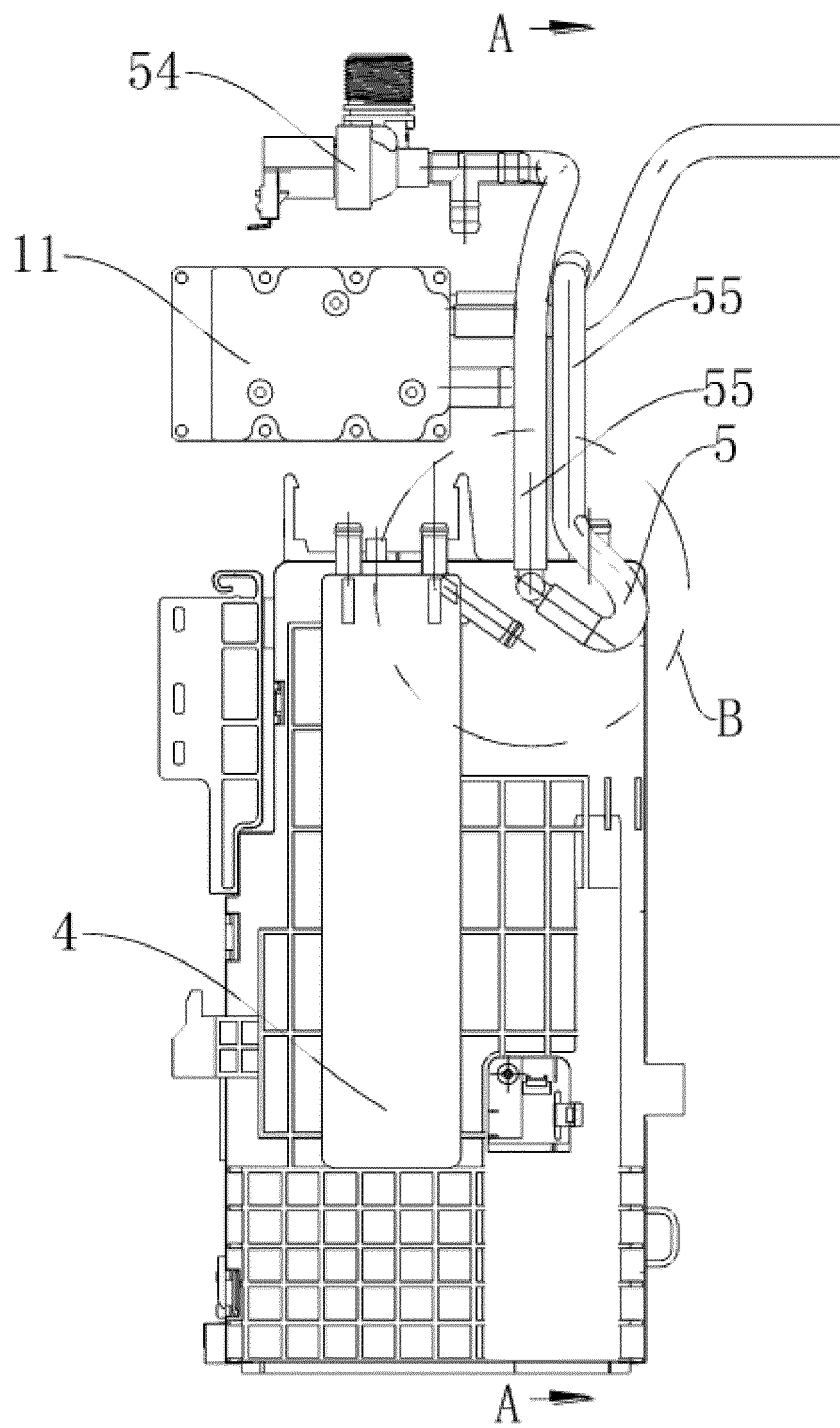


FIG. 5

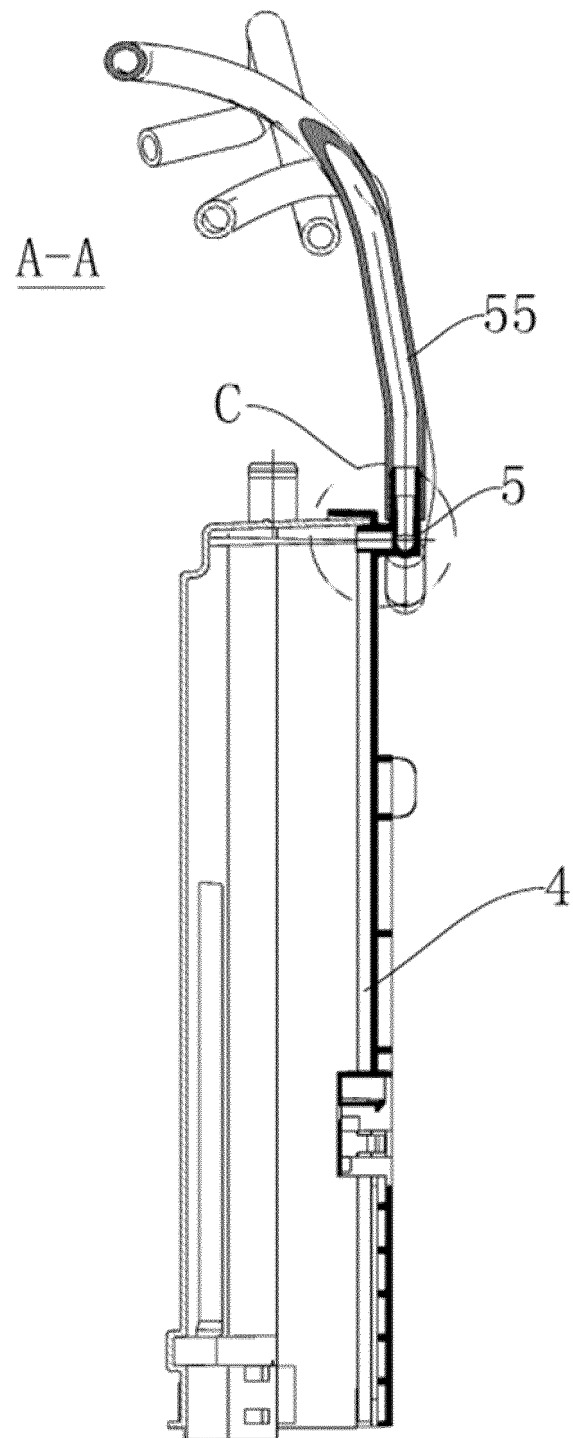


FIG. 6

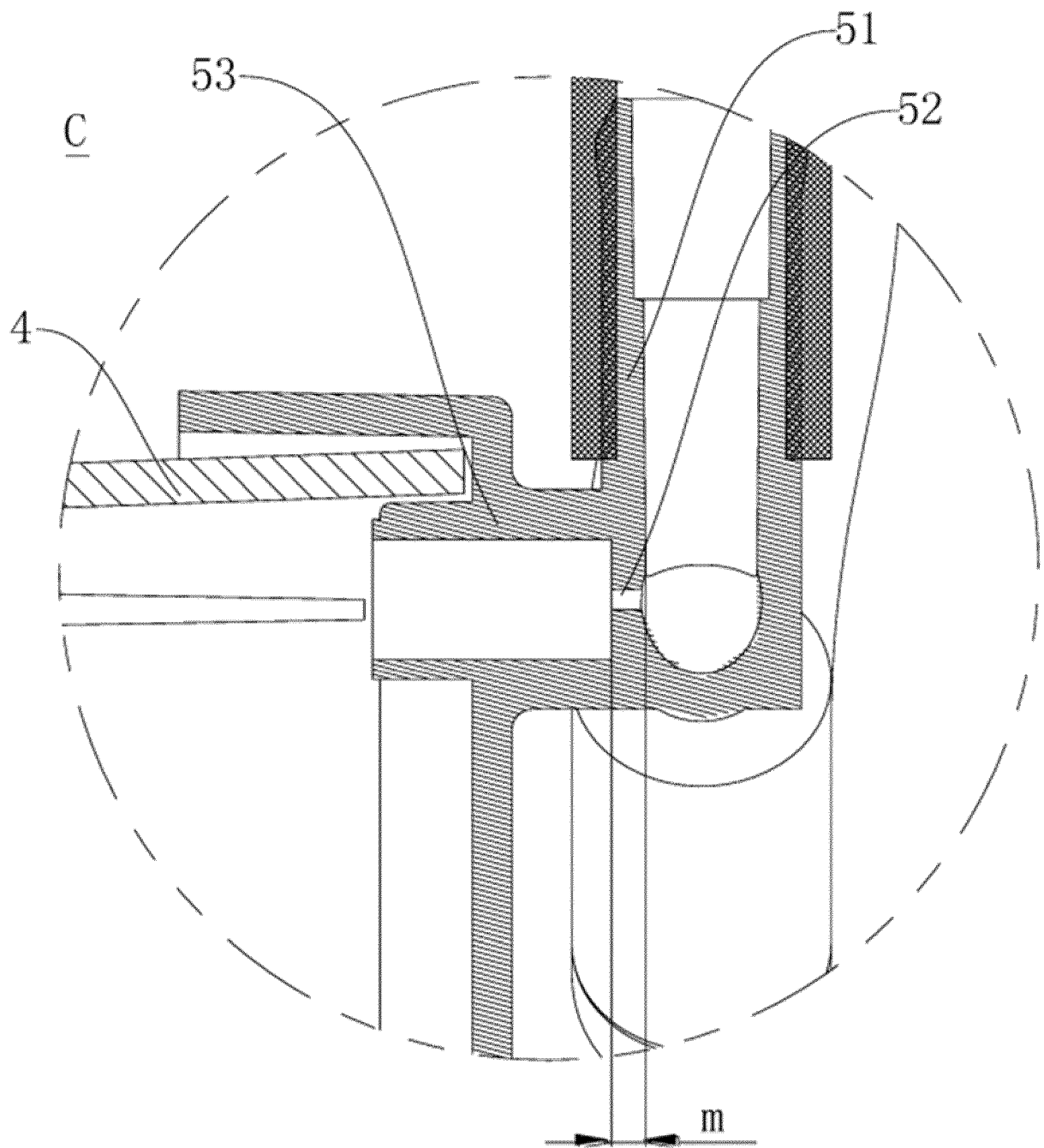


FIG. 7

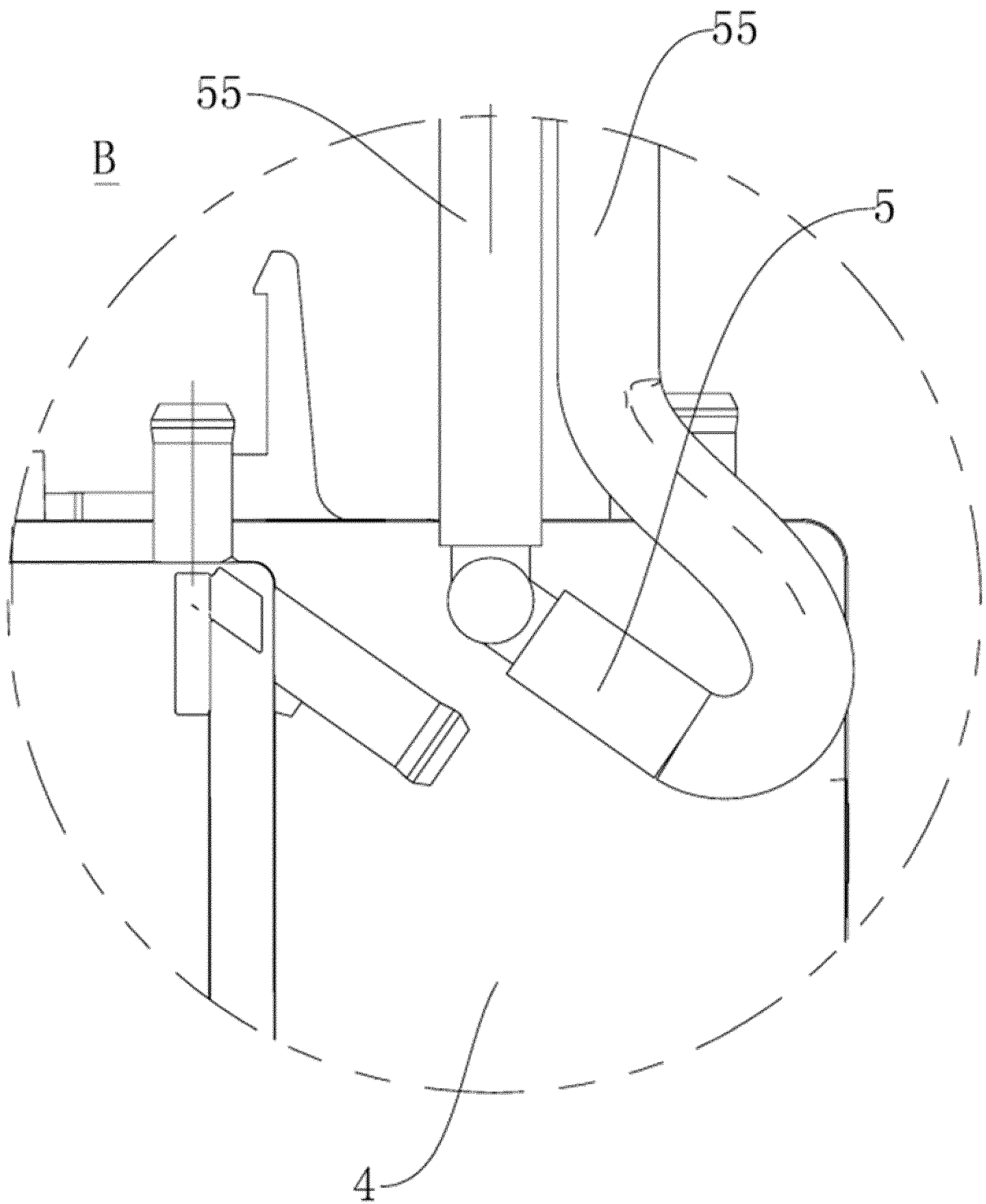


FIG. 8

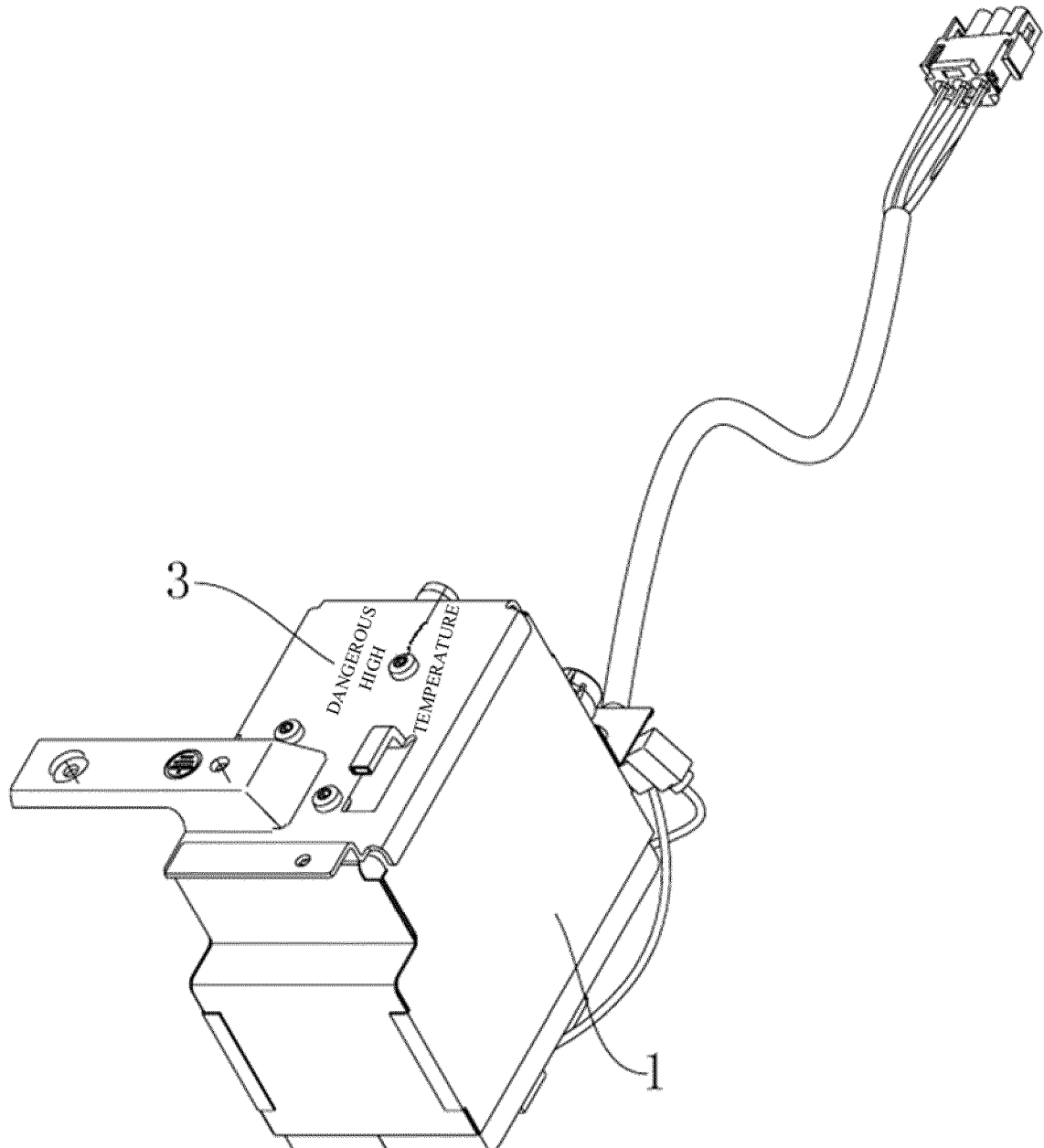


FIG. 9

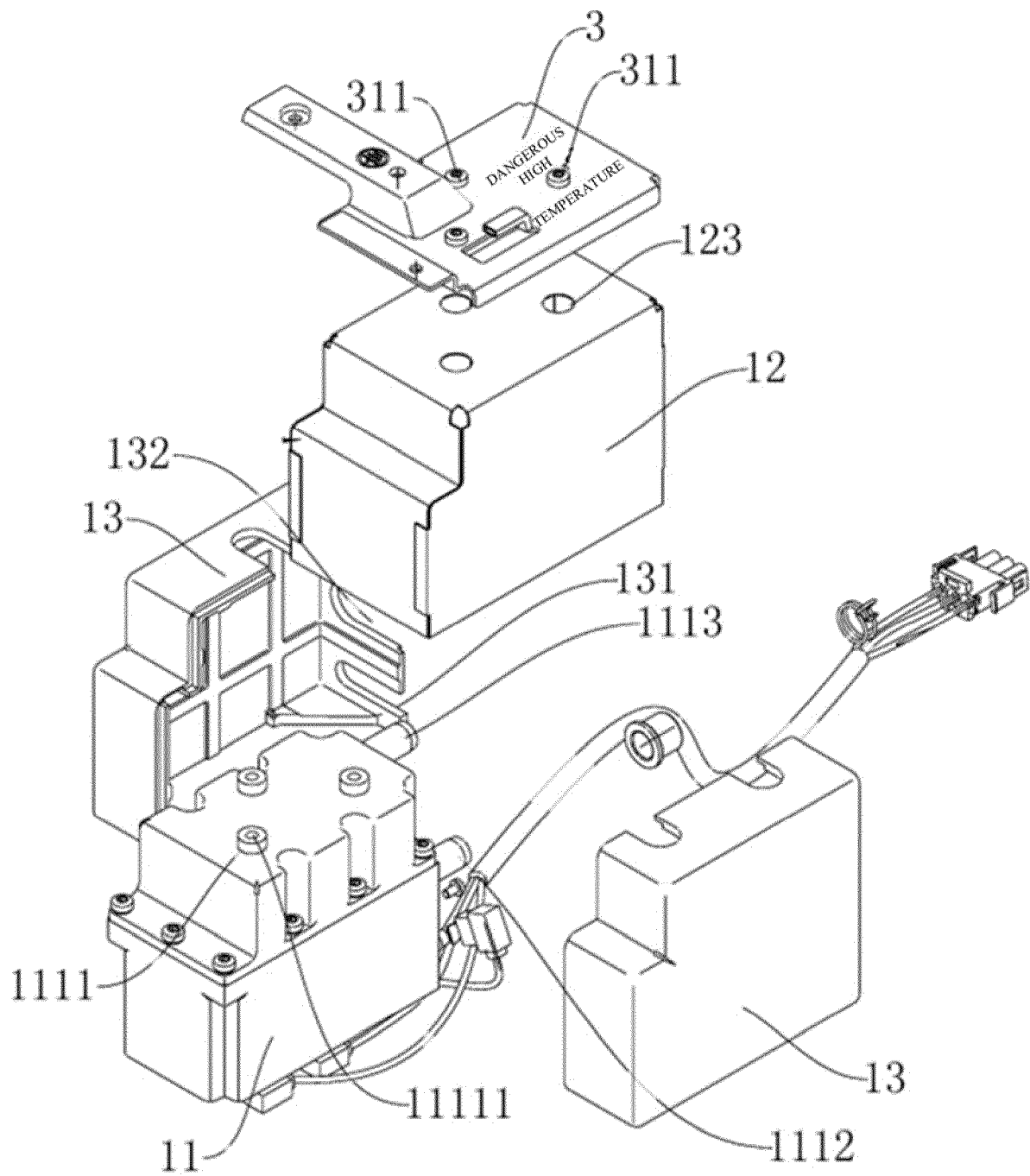


FIG. 10

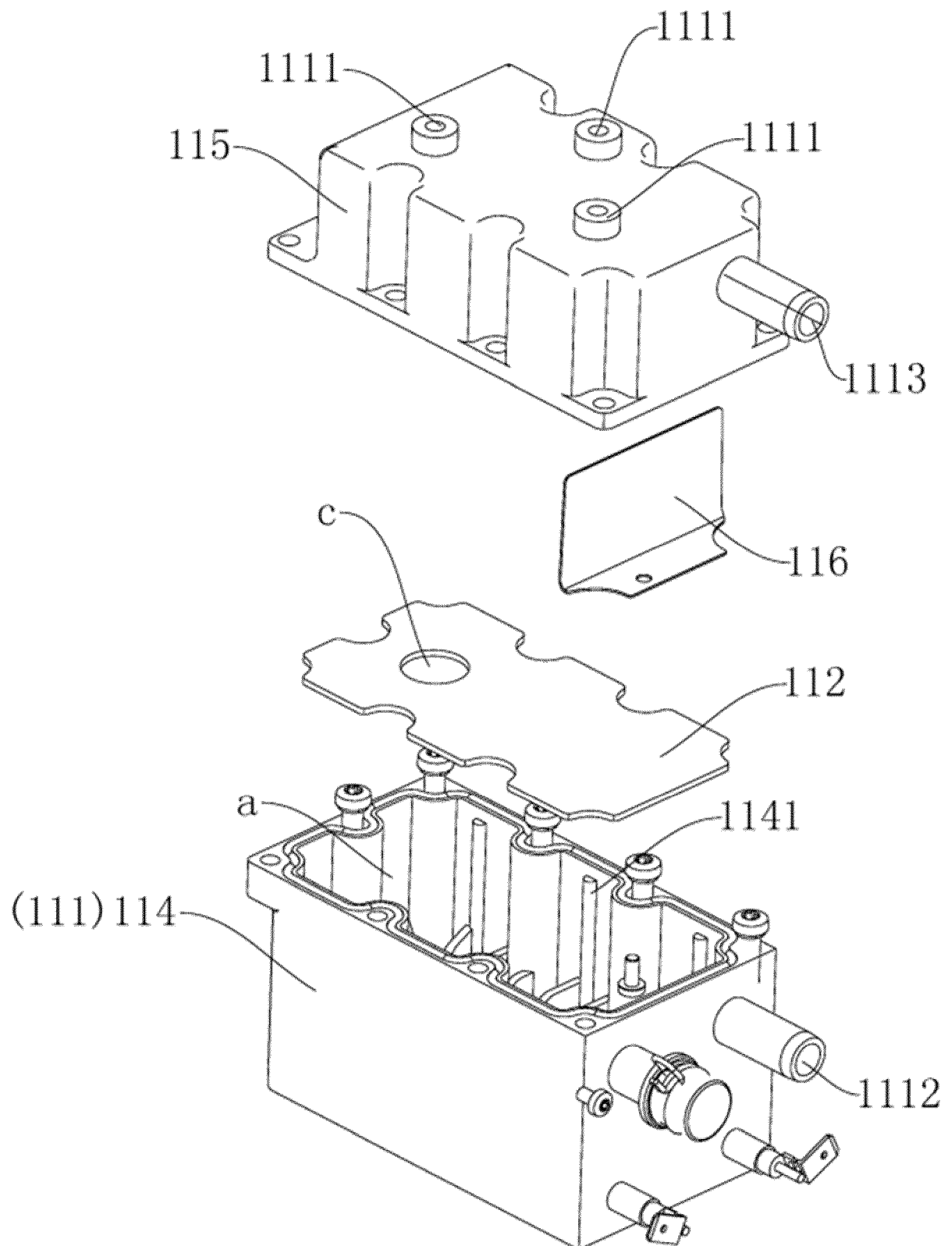


FIG. 11

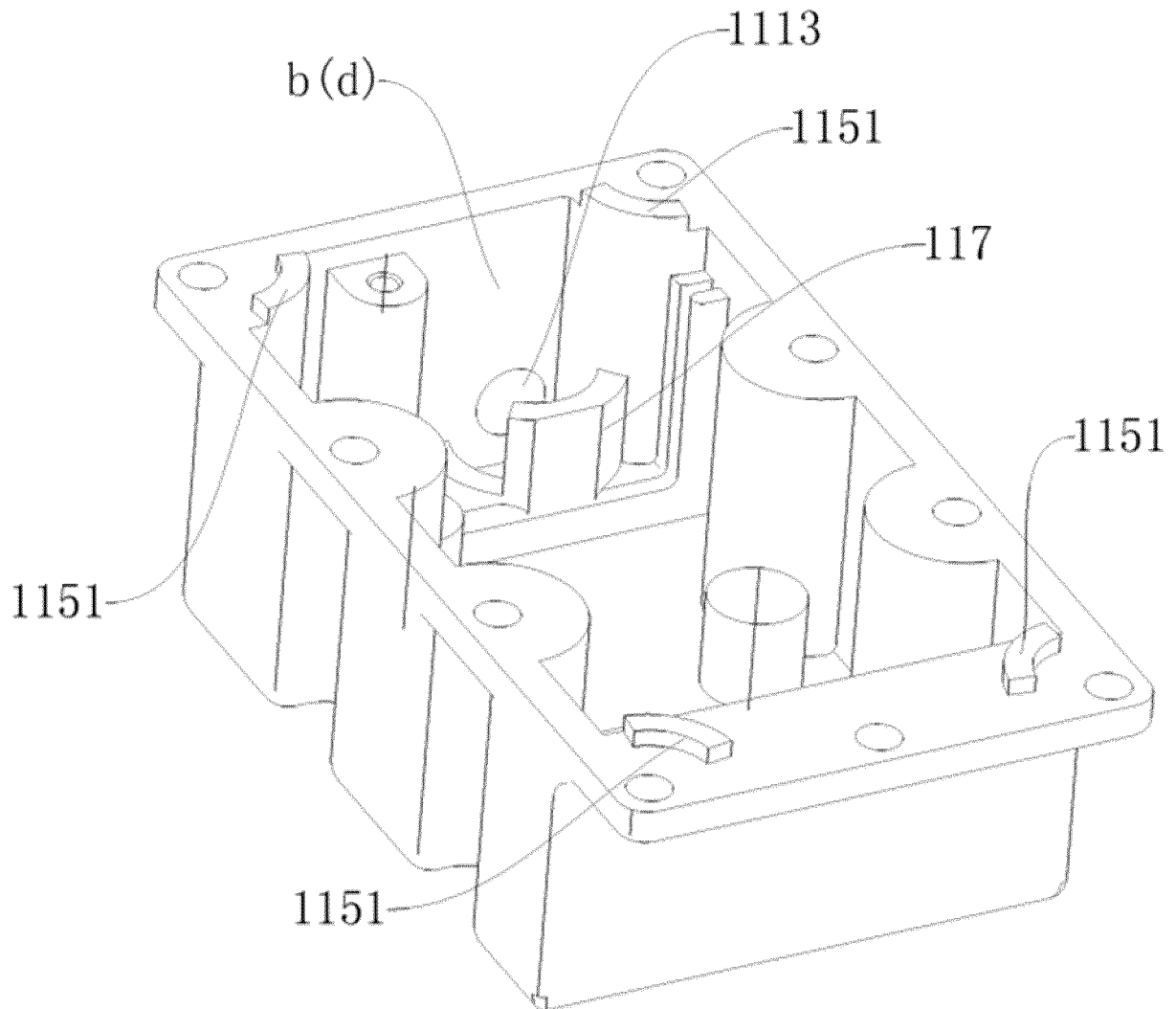


FIG. 12

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/078418

A. CLASSIFICATION OF SUBJECT MATTER D06F 58/00(2020.01)i According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) D06F		
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) CNKI; CNABS; CNTXT; DWPI; SIPOABS: 蒸汽发生, 锅炉, 蒸汽产生, 蒸气发生, 蒸气产生, 机壳, 壳体, 外壳, 箱体, 外箱, 盖, 顶板, 顶盖, 盖板, 上板, 上盖, 机壳, 壳体, 外壳, 箱体, 主体, 外箱, 干衣, 干燥, 洗干, 烘干, 洗衣, 翻边, 边缘, 肋, 法兰, 拆卸, 安装件, 安装部, 固定部, 固定板, 安装, 固定, steam, vapor, vapor, generat???, casing, case, cabinet, lid, board, panel, cover, mount???, lib, frange		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 214782715 U (WUXI LITTLE SWAN ELECTRIC APPLIANCE CO., LTD.) 19 November 2021 (2021-11-19) claims 1-13	1-13
PX	CN 214033036 U (YUNMI INTERNET TECHNOLOGY (GUANGDONG) CO., LTD.) 24 August 2021 (2021-08-24) description, paragraphs [0040]-[0065], and figures 1-6	1-13
PX	CN 213113969 U (YUNMI INTERNET TECHNOLOGY (GUANGDONG) CO., LTD.) 04 May 2021 (2021-05-04) description, paragraph [0079], and figures 1-7	1-13
PX	CN 214300822 U (YUNMI INTERNET TECHNOLOGY (GUANGDONG) CO., LTD.) 28 September 2021 (2021-09-28) description, paragraph [0047], and figures 1-6	1-13
X	CN 212533452 U (YUNMI INTERNET TECHNOLOGY (GUANGDONG) CO., LTD.) 12 February 2021 (2021-02-12) description, paragraph [0091], and figures 1-10	1-13
☒ 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 23 March 2022	Date of mailing of the international search report 21 April 2022	
Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China Facsimile No. (86-10)62019451	Authorized officer Telephone No.	

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

INTERNATIONAL SEARCH REPORT

International application No.

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Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	CN 211947610 U (NANJING CHUANGWEI HOUSEHOLD ELECTRONIC APPLIANCES LIMITED) 17 November 2020 (2020-11-17) entire document	1-13
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Information on patent family members

International application No.

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CN 213113969 U	04 May 2021	None	
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