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(54) **LAUNDRY TREATMENT DEVICE**

(57) Provided is a laundry treatment device (100). The laundry treatment device (100) includes a drum assembly (10), a cooling assembly, and a flow guide member (30). The drum assembly (10) includes an overflow structure. The cooling assembly has a liquid outlet (226). The flow guide member (30) includes a liquid flow channel (33), a first liquid inlet structure (34), and a second liquid inlet structure (36). The overflow structure is in communication with the liquid flow channel (33) via the first liquid inlet structure (34), and the liquid outlet (226) is in communication with the liquid flow channel (33) via the second liquid inlet structure (36). In the laundry treatment device (100), the

liquid flow channel (33), the first liquid inlet structure (34), and the second liquid inlet structure (36) are separately integrated at the flow guide member (30); the first liquid inlet structure (34) is in communication with the overflow structure, and the second liquid inlet structure (36) is in communication with the liquid outlet (226). In this way, the overflow structure and the liquid outlet (226) can perform discharging through one flow guide member (30), reducing use of rubber hoses. Thus, a problem of water leakage caused by loosening or wear of the rubber hoses is reduced. In this way, reliability of the laundry treatment device (100) is effectively improved.

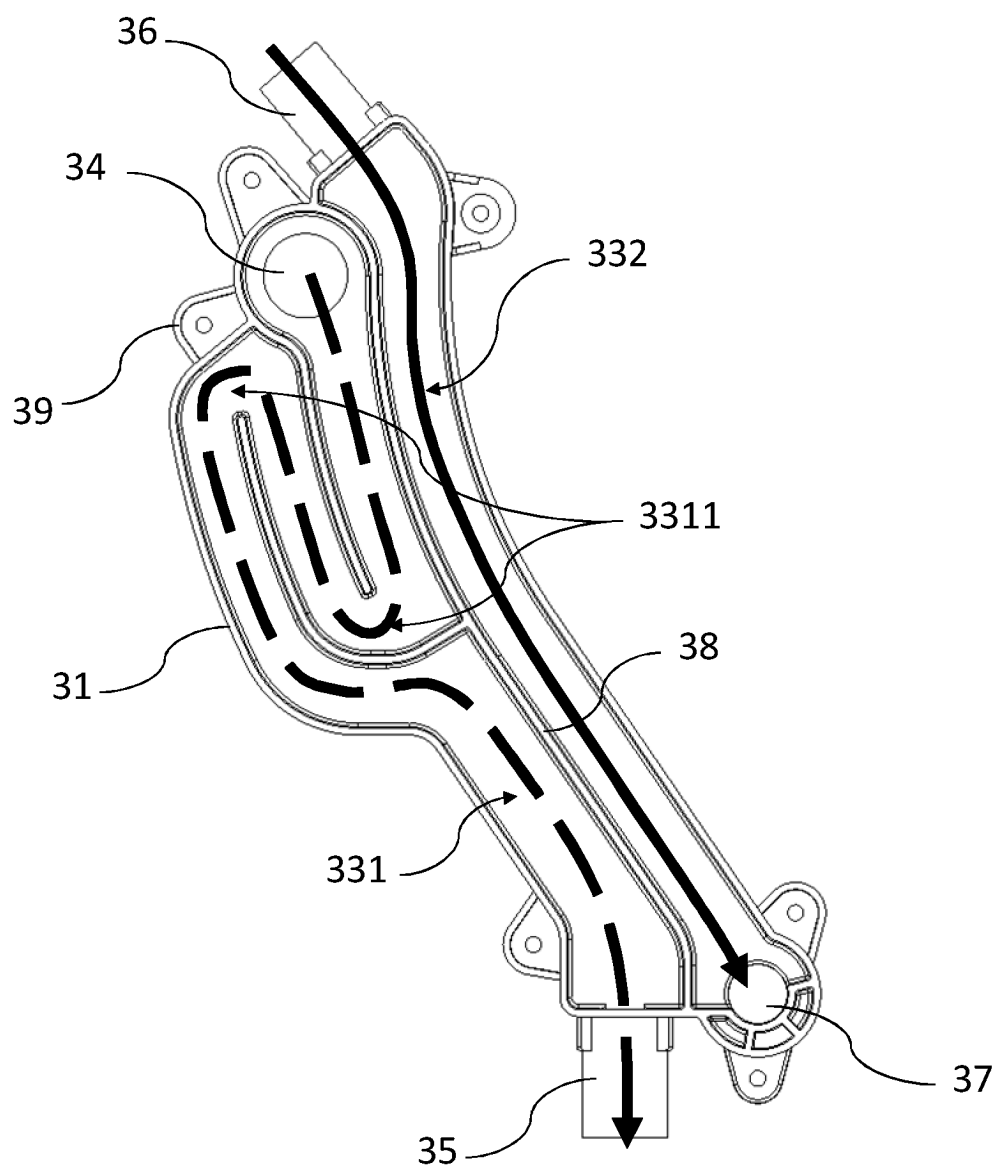


FIG. 6

Description

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority and benefits of Chinese Patent Application No. 202311871629.9, entitled "LAUNDRY TREATMENT DEVICE", and filed with China National Intellectual Property Administration on December 28, 2023, the entire disclosure of which is incorporated herein by reference.

FIELD

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

BACKGROUND

[0003] This section provides merely background information related to the present disclosure, which does not necessarily constitute the related art.

[0004] A laundry treatment device with both washing and drying functions typically comprises a drum assembly and a drying assembly. The drum assembly has a laundry treatment chamber. The drying assembly has an air duct in communication with the laundry treatment chamber. The drum assembly is provided with an overflow pipe configured to drain excess water from the laundry treatment chamber. A condenser of the drying assembly is provided with a water guide pipe configured to guide cooling water in the condenser into the laundry treatment chamber.

[0005] In the related art, the overflow pipe and the water guide pipe are both rubber hoses and fixed at an outer side of the drum assembly. During operation of the laundry treatment device, the drum assembly moves, resulting in loosening or wear of the overflow pipe and the water guide pipe, thereby easily giving rise to water leakage.

SUMMARY

[0006] An object of the present disclosure is to at least solve a problem of reducing water leakage caused by loosening or wear of an overflow pipe and a water guide pipe. This object is achieved by the following technical solutions.

[0007] The present disclosure provides a laundry treatment device. The laundry treatment device comprises a drum assembly, a cooling assembly, and a flow guide member. The drum assembly comprises an overflow structure. The cooling assembly has a liquid outlet. The flow guide member comprises a liquid flow channel, a first liquid inlet structure, and a second liquid inlet structure. The overflow structure is in communication with the liquid flow channel via the first liquid inlet structure; and the liquid outlet is in communication with the

liquid flow channel via the second liquid inlet structure.

[0008] In the laundry treatment device according to the present disclosure, the liquid flow channel, the first liquid inlet structure, and the second liquid inlet structure are separately integrated in the flow guide member; the first liquid inlet structure is in communication with the overflow structure, and the second liquid inlet structure is in communication with the liquid outlet. In this way, the overflow structure and the liquid outlet perform discharging through the flow guide member. Compared to the related art, use of rubber hoses is reduced, thereby reducing a problem of water leakage caused by loosening or wear of the rubber hoses. As a result, reliability of the laundry treatment device has been effectively improved.

[0009] In addition, the laundry treatment device according to the present disclosure can further provide the following additional technical features:

In some embodiments of the present disclosure, the liquid flow channel further comprises a first channel portion and a second channel portion. The overflow structure is in communication with the first channel portion via the first liquid inlet structure, and the liquid outlet is in communication with the second channel portion via the second liquid inlet structure.

[0010] In some embodiments of the present disclosure, the flow guide member further comprises a first liquid outlet structure; and the laundry treatment device further comprises a drainage assembly. The first channel portion is in communication with the drainage assembly via the first liquid outlet structure.

[0011] In some embodiments of the present disclosure, the first liquid inlet structure is in communication with an end of the first channel portion; and the first liquid outlet structure is in communication with an other end of the first channel portion and located below the first liquid inlet structure.

[0012] In some embodiments of the present disclosure, the first channel portion comprises at least one U-shaped bend disposed between the first liquid inlet structure and the first liquid outlet structure.

[0013] In some embodiments of the present disclosure, the flow guide member further comprises a second liquid outlet structure; and the drum assembly further comprises a water return structure. The second channel portion is in communication with the water return structure via the second liquid outlet structure.

[0014] In some embodiments of the present disclosure, the flow guide member further comprises a plurality of rib plates arranged inside the flow guide member and configured to define the first channel portion and the second channel portion within the flow guide member.

[0015] In some embodiments of the present disclosure, the flow guide member comprises: a first body and a second body. The first body and/or the second body are provided with the plurality of rib plates. The first body, the second body, and the plurality of rib

plates together define the first channel portion and the second channel portion.

[0016] In some embodiments of the present disclosure, the first body is engaged with the second body through welding, bonding, riveting, snap-fit, or screw connection; and/or the flow guide member is provided with at least one connection structure fixedly connected to an outer drum of the drum assembly.

[0017] In some embodiments of the present disclosure, the cooling assembly further comprises a condenser. The condenser comprises a fluid channel, an air inlet, an air outlet, a liquid inlet, and the liquid outlet. An air flow path is formed by the air inlet, the fluid channel, and the air outlet. A coolant flow path is formed by the liquid inlet, the fluid channel, and the liquid outlet. The coolant flow path at least partially intersects the air flow path.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] Various other advantages and benefits will become apparent to those skilled in the art after reading the detailed description of preferred embodiments given below. The accompanying drawings are used for a purpose of illustrating the preferred embodiments only, rather than limiting the present disclosure. Moreover, throughout the accompanying drawings, same elements are denoted by same reference numerals.

FIG. 1 schematically shows a structural view of a laundry treatment device according to some embodiments of the present disclosure.

FIG. 2 schematically shows a structural view of a laundry treatment device according to some embodiments of the present disclosure (in which at a flow guide member, a thick black solid arrow line represents a flow direction of a coolant, and a thick black dashed arrow line represents a flow direction of overflow water);

FIG. 3 schematically shows a structural view of a flow guide member according to some embodiments of the present disclosure.

FIG. 4 is a schematic structural view of the flow guide member shown in FIG. 3 from another perspective.

FIG. 5 is a schematic exploded structural view of the flow guide member shown in FIG. 3.

FIG. 6 is a schematic structural view of a first body of the flow guide member shown in FIG. 5.

FIG. 7 is a schematic structural view of a second body of the flow guide member shown in FIG. 5.

FIG. 8 schematically shows a structural view of a condenser according to some embodiments of the present disclosure.

FIG. 9 is a schematic structural view of the condenser shown in FIG. 8 from another perspective.

FIG. 10 is a schematic structural view of the condenser shown in FIG. 8 from another perspective.

FIG. 11 is a sectional view taken along line A-A of the condenser shown in FIG. 10.

FIG. 12 is a schematic structural view of a shell body of the condenser shown in FIG. 8.

FIG. 13 is a schematic structural view of the shell body shown in FIG. 12 from another perspective (in which a black dashed arrow line represents a flow direction of a coolant, and a black solid arrow line represents a flow direction of a hot air flow).

[0019] Reference numbers:

100, laundry treatment device;
10, drum assembly;
11, outer drum;
20, drying system;
21, fan;
22, condenser;
221, shell; 2211, cover plate; 2212, shell body;
222, fluid channel; 2221, top wall; 22211, first top wall; 22212, second top wall; 22213, third top wall; 2222, bottom wall; 22221, first bottom wall; 22221a, first portion; 22221b, second portion; 22221c, third portion; 22222, second bottom wall; 2223, first side wall, 2224, first end wall; 2225, second end wall; 2226, second side wall, 223, air inlet, 224, air outlet; 225 liquid inlet, 226, liquid outlet, 227, blocking structure, 2271, first rib portion, 2272, second rib portion; 2273, third rib portion; 228, water baffle; 229, flow guide plate;
30, flow guide member;
31, first body; 32, second body; 33, liquid flow channel; 331, first channel portion; 3311, U-shaped bend; 332, second channel portion; 34, first liquid inlet structure; 35, first liquid outlet structure; 36, second liquid inlet structure; 37, second liquid outlet structure; 38, rib plate; 39, connection structure; 40, connection pipe;
50, drainage pipe;
a, central axis of air outlet.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0020] Exemplary implementations of the present disclosure will be described in detail below with reference to the accompanying drawings. Although the exemplary embodiments of the present disclosure are illustrated in the accompanying drawings, it should be understood that the present disclosure may be embodied in various forms and should not be construed as limited to the embodiments described herein. Instead, these embodiments are provided for a thorough understanding of the present disclosure, and can fully convey the scope of the present disclosure to those skilled in the art.

[0021] It should be understood that terms used herein are intended to describe particular exemplary embodiments only and are not intended to be limited thereto.

Unless the context clearly indicates, otherwise singular forms of "a", "one", and "said" as used herein can also be interpreted as comprising plural forms. Terms "comprise", "contain", and "have" are inclusive and therefore specify the presence of stated features, steps, operations, elements, and/or components, but do not preclude the presence or an addition of one or more other features, steps, operations, elements, components, and/or a combination thereof. The method steps, processes, and operations described herein are not to be construed as necessitating that they be performed in a particular order described or illustrated, unless the order of performance is clearly indicated. It should also be understood that additional or alternative steps may be used.

[0022] Although terms "first", "second", "third", etc. may be used herein to describe multiple elements, components, regions, layers, and/or sections, these elements, components, regions, layers, and/or sections should not be limited by these terms. These terms may only be used to distinguish one element, component, region, layer, or section from another region, layer, or section. The terms such as "first", "second", or the like do not imply a sequence or an order when used herein, unless specified otherwise. Therefore, a first element, component, region, layer, or section discussed below may be represented as a second element, component, region, layer, or section, without departing from the teachings of exemplary implementations.

[0023] For ease of description, spatially relative terms, such as "internal," "external," "inside," "outside," "under," "below," "on," and "above," may be used herein to describe a relation of one element or feature illustrated in the figures to another element or feature illustrated in the figures. These spatially relative terms are intended to comprise different orientations of devices in use or operation other than those depicted in the figures. For example, if a device in the figure is flipped over, an element described as "under other elements or features" or "below other elements or features" will then be oriented as "on other elements or features" or "above other elements or features". Thus, the example term "below..." may comprise orientations of above and below. The device may be otherwise oriented (rotated by 90 degrees or at other orientations), and spatially relative descriptors used herein shall be interpreted accordingly.

[0024] As shown in FIGS. 1 to 13, according to embodiments of the present disclosure, there is provided a laundry treatment device 100. The laundry treatment device 100 comprises a drum assembly 10, a cooling assembly, and a flow guide member 30. The drum assembly 10 comprises an overflow structure. The cooling assembly has a liquid outlet 226. The flow guide member 30 comprises a liquid flow channel 33, a first liquid inlet structure 34, and a second liquid inlet structure 36. The overflow structure is in communication with the liquid flow channel 33 via the first liquid inlet

structure 34, and the liquid outlet 226 is in communication with the liquid flow channel 33 via the second liquid inlet structure 36.

[0025] When the laundry treatment device 100 performs a washing operation on laundry, as water in a laundry treatment chamber in the drum assembly 10 reaches the highest water level, the water in the laundry treatment chamber overflows through the overflow structure, and water overflowing through the overflow structure enters the liquid flow channel 33 through the first liquid inlet structure 34. Meanwhile, when a drying system 20 of the laundry treatment device 100 performs a drying operation on the laundry, airflow is heated and fed into the laundry treatment chamber, in which the hot airflow exchanges heat with the laundry to realize the drying operation on the laundry. The heat-exchanged airflow flows into the cooling assembly and is cooled by a coolant in the cooling assembly. The cooled coolant flows into the liquid channel through the liquid outlet 226 and the second liquid inlet structure 36.

[0026] It should be understood that in the present disclosure, the overflow structure of the drum assembly 10 refers to a structure such as an overflow port or an overflow connector formed on the drum assembly 10 of the laundry treatment device 100. The overflow structure is in communication with a position of the highest water level of the laundry treatment device 100. When a water level in the laundry treatment chamber in the drum assembly 10 reaches the highest water level, if water is continued to be fed into the laundry treatment chamber, water in the laundry treatment chamber overflows through an overflow position. The overflow structure can reduce inoperability of the laundry treatment device 100 or water overflow to an outer side of the laundry treatment device 100 caused by an excessively high water level in the laundry treatment chamber.

[0027] In the related art, the overflow structure of the drum assembly 10 is connected to an overflow pipe, and the water outlet of the cooling assembly is connected to a water guide pipe. The overflow pipe and the water guide pipe are separately formed, and the water guide pipe is a rubber hose. Due to limited space, the water guide pipe is not independently fixed, but is instead fixed by an additional structure such as a buckle provided at the overflow pipe. When the laundry treatment device 100 operates, and the drum assembly 10 moves (when an inner drum of the drum assembly 10 rotates relative to an outer drum 11 of the drum assembly 10, the outer drum 11 shakes or vibrates with the movement of the inner drum), the drum assembly 10, the overflow pipe, and the water guide pipe move out of synchronism, which tends to cause loosening at a connection position between the overflow pipe and the drum assembly 10 and a connection position between the water guide pipe and the drum assembly 10. Meanwhile, friction occurs between the vibrating overflow pipe and water guide pipe, or the shaking overflow

pipe and water guide pipe rub against other structural components (such as a belt pulley). Such friction leads to wear of the overflow pipe and the water guide pipe, thereby causing water leakage.

[0028] In the laundry treatment device 100 of the present disclosure, the flow guide member 30 integrates the overflow pipe and the water guide pipe in the related art. When the flow guide member 30 integrating the two functions is applied in the laundry treatment device 100, the flow guide member 30 is fixed at an outer side of the drum assembly 10. When the drum assembly 10 operates and moves, the flow guide member 30 fixed at the outer side of the drum assembly 10 vibrates synchronously with the drum assembly 10, thereby avoiding loosening at the connection positions caused by an asynchronous movement between the overflow pipe and the water guide pipe in the related art, and reducing the wear caused by the asynchronous movement between the overflow pipe and the water guide pipe. As a result, reliability of the laundry treatment device 100 can be effectively improved.

[0029] In addition, in the laundry treatment device 100 of the present disclosure, the use of the flow guide member 30 can reduce use of rubber hoses. In this way, mounting convenience can be improved, effectively enhancing mounting efficiency. Furthermore, in-place mounting can be facilitated, effectively enhancing mounting accuracy.

[0030] In the present disclosure, the connection manner between the first liquid inlet structure 34 and the overflow structure comprises, but is not limited to, insertion, snap-fit, welding, or bonding.

[0031] The insertion is taken as an example of the connection manner between the first liquid inlet structure 34 and the overflow structure. One of the first liquid inlet structure 34 and the overflow structure is a connector structure, and another one of the first liquid inlet structure 34 and the overflow structure is an interface structure. The connector structure is inserted into and engaged with the interface structure (a seal structure is disposed between the connector structure and the interface structure and configured for sealing between the connector structure and the interface structure to reduce water leakage; the seal structure comprises, but is not limited to, a seal ring or a sealant), and the assembling method of insertion and engagement facilitates implementation of an assembling process, which can effectively improve assembling efficiency and thus effectively lower manufacturing cost.

[0032] Meanwhile, the connection method between the second liquid inlet structure 36 and the liquid outlet 226 is the same as the connection method between the first liquid inlet structure 34 and the overflow structure. For details, reference can be made to the embodiments of the connection between the first liquid inlet structure 34 and the overflow structure, which is not described in detail herein.

[0033] In some embodiments of the present disclosure,

as shown in FIGS. 5 and 6, the liquid flow channel 33 comprises a first channel portion 331 and a second channel portion 332. The overflow structure is in communication with the first channel portion 331 via the first liquid inlet structure 34, and the liquid outlet 226 is in communication with the second channel portion 332 via the second liquid inlet structure 36.

[0034] Specifically, the liquid channel comprises a first channel portion 331 and a second channel portion 332. The first channel portion 331 is in communication with the overflow structure of the drum assembly 10 via the first liquid inlet structure 34, and the second channel portion 332 is in communication with the liquid outlet 226 of the cooling assembly via the second liquid inlet structure 36. A first liquid flow path is formed by the first liquid inlet structure 34 and the first channel portion 331 and configured to guide overflow water of the drum assembly 10. A second liquid flow path is formed by the second liquid inlet structure 36 and the second channel portion 332 and configured to guide a coolant of the cooling assembly.

[0035] By providing the first channel portion 331 and the second channel portion 332, the overflow water of the drum assembly 10 and the coolant of the cooling assembly can be guided separately, thereby reducing backflow of the coolant through the first liquid inlet structure 34 and backflow of the overflow water through the second liquid inlet structure 36. Thus, a guide effect of the overflow water and the coolant can be improved, thereby reducing a malfunction of the laundry treatment device 100 due to a failure of effectively discharging the overflow water or the coolant.

[0036] It should be noted that in the present disclosure, the first channel portion 331 and the second channel portion 332 are in no communication with each other. The first channel portion 331 and the second channel portion 332 are two completely independent channels, which may be formed by partitioning the liquid channel through a structural part.

[0037] In addition, a shape of a flow cross-section of the first channel portion 331 comprises, but is not limited to, a circle, a square, a triangle, a pentagon, a hexagon, a rhombus, or an ellipse. Similarly, a shape of a flow cross-section of the second channel portion 332 also comprises, but is not limited to, a circle, a square, a triangle, a pentagon, a hexagon, a rhombus, or an ellipse. The shape of the flow cross-section of the first channel portion 331 and the shape of the flow cross-section of the second channel portion 332 may be the same or different and may be set according to specific applications and manufacturing requirements.

[0038] In some embodiments of the present disclosure, as shown in FIGS. 2 to 6, the flow guide member 30 further comprises a first liquid outlet structure 35. The laundry treatment device 100 further comprises a drainage assembly. The first channel portion 331 is in communication with the drainage assembly via the first liquid outlet structure 35.

[0039] Specifically, the flow guide member 30 is fixedly mounted at the outer side of the drum assembly 10, and each of the first liquid inlet structure 34 and the first liquid outlet structure 35 is disposed at the flow guide member 30. The first channel portion 331 of the flow guide member 30 is in communication with the overflow structure of the drum assembly 10 via the first liquid inlet structure 34, and the first channel portion 331 is in communication with the drainage assembly via the first liquid outlet structure 35. When the water level in the laundry treatment chamber of the drum assembly 10 reaches the highest level, the water in the laundry treatment chamber enters the first channel portion 331 through the overflow structure and the first liquid inlet structure 34, and then flows into the drainage assembly through the first liquid outlet structure 35 to be discharged, thereby reducing overflowing of the water in the laundry treatment chamber to an external environment. As a result, user experience can be effectively improved.

[0040] It should be noted that in the present disclosure, the drainage assembly comprises a drainage pipe 50. The drainage pipe 50 has an end in communication with the first liquid outlet structure 35 and another end in communication with a sewer. The drainage pipe 50 is configured to discharge the overflow water discharged from the first liquid outlet structure 35 to the sewer to effectively treat the overflow water, thereby reducing a degradation in the user experience caused by the overflow water overflowing to a floor and other positions. The first liquid outlet structure 35 is a connector structure, and the drainage pipe 50 is fitted over the first liquid outlet structure 35 and fixed to the first liquid outlet structure 35 by a fastener such as a clamp to reduce disengagement of the drainage pipe 50. Meanwhile, a position where the first liquid outlet structure 35 is connected to the drainage pipe 50 can be sealed.

[0041] In some embodiments of the present disclosure, as shown in FIGS. 5 and 6, the first liquid inlet structure 34 is in communication with an end of the first channel portion 331, the first liquid outlet structure 35 is in communication with another end of the first channel portion 331 and located below the first liquid inlet structure 34.

[0042] Specifically, the first liquid inlet structure 34 is in communication with the overflow structure of the drum assembly 10, and the first liquid outlet structure 35 is in communication with the drainage assembly. By disposing the first liquid outlet structure 35 below the first liquid inlet structure 34, the overflow water entering the laundry treatment chamber can enter the first channel portion 331 through the first liquid inlet structure 34, and then the overflow water can naturally flow to the first liquid outlet structure 35 under the action of gravity, and flows into the drainage assembly through the first liquid outlet structure 35 to realize natural outflowing of the overflow water. Therefore, there is no need to provide a power component (such as a water pump) for

driving the overflow water to be discharged. Thus, the number of components is reduced. As a result, the manufacturing cost of the laundry treatment device 100 can be effectively lowered.

[0043] It should be understood that the expression "the first liquid outlet structure 35 is located below the first liquid inlet structure 34" mean that the first liquid outlet structure 35 may be located directly below the first liquid inlet structure 34, or the first liquid outlet structure 35 may be located diagonally below the first liquid inlet structure 34.

[0044] In some embodiments of the present disclosure, as shown in FIGS. 5 and 6, the first channel portion 331 comprises at least one U-shaped bend 3311 disposed between the first liquid inlet structure 34 and the first liquid outlet structure 35.

[0045] Specifically, the flow guide member 30 is fixedly mounted at the outer side of the drum assembly 10, and the first liquid outlet structure 35 is located below the first liquid inlet structure 34. The first liquid inlet structure 34 is in communication with the overflow structure of the drum assembly 10, and the first liquid outlet structure 35 is in communication with the drainage assembly of the laundry treatment device 100. When the water level in the laundry treatment chamber of the drum assembly 10 reaches the highest level, the water in the laundry treatment chamber enters an interior of the first channel portion 331 through the overflow structure and the first liquid inlet structure 34, and flows to the first liquid outlet structure 35 through the first channel portion 331, and then flows into the drainage assembly through the first liquid outlet structure 35 to be discharged to the sewer.

[0046] The at least one U-shaped bend 3311 is disposed in a region where the first channel portion 331 is located, between the first liquid inlet structure 34 and the first liquid outlet structure 35. A water seal structure is formed by the principle of communicating vessels of the U-shaped bend 3311, thereby reducing odor backflow from the sewer. As a result, the user experience during use can be improved.

[0047] It should be understood that in the present disclosure, the U-shaped bend 3311 is an upright U-shaped bend 3311 or an inverted U-shaped bend 3311.

[0048] It should be noted that in the present disclosure, the number of the U-shaped bends 3311 may be one, two, three, four, or five, etc.

[0049] As shown in FIGS. 5 and 6, when a plurality of U-shaped bends 3311 are provided, the plurality of U-shaped bends 3311 may be in sequential communication to form a serpentine structure (the upright U-shaped bends 3311 and the inverted U-shaped bends 3311 are alternately arranged). Thus, a water sealing effect can be further improved.

[0050] In some embodiments of the present disclosure, as shown in FIGS. 5 and 6, the flow guide member 30 further comprises a second liquid outlet structure 37. The drum assembly 10 further comprises a

water return structure. The second channel portion 332 is in communication with the water return structure via the second liquid outlet structure 37.

[0051] Specifically, the flow guide member 30 is fixedly mounted at the outer side of the drum assembly 10, and each of the second liquid inlet structure 36 and the second liquid outlet structure 37 is disposed at the flow guide member 30. The second channel portion 332 of the flow guide member 30 is in communication with the liquid outlet 226 of the cooling assembly via the second liquid inlet structure 36. The second channel portion 332 is in communication with the water return structure of the drum assembly 10 via the second liquid outlet structure 37. When the laundry treatment device 100 performs a drying operation on laundry, airflow is heated by the drying system 20 of the laundry treatment device 100. The heated airflow enters the laundry treatment chamber and exchanges heat with the laundry to dry the laundry. The heat-exchanged airflow enters the cooling assembly and exchanges heat with the coolant in the cooling assembly, to cool the airflow. The heat-exchanged coolant also enters the second channel portion 332 through the second liquid inlet structure 36, and the coolant entering the second channel portion 332 flows into an interior of the drum assembly 10 through the second liquid outlet structure 37 and the water return structure, to realize unified treatment of the coolant.

[0052] It should be noted that in the present disclosure, the water return structure is connected to the outer drum 11 of the drum assembly 10, and the outer drum 11 is in communication with the inner drum via the water return structure. The coolant enters a space between the outer drum 11 and the inner drum through the water return structure, and is discharged together with washing water at a washing water discharge position, to realize the unified treatment of the coolant.

[0053] In addition, a corresponding temperature detection element (such as a temperature sensor) may be set at the water return structure. A return water temperature of the coolant is detected by using the temperature detection element. A cooling effect of the cooling assembly is indirectly determined by using the return water temperature.

[0054] In addition, in the present disclosure, the connection method between the second liquid outlet structure 37 and the water return structure comprises, but is not limited to, insertion, snap-fit, welding, or bonding.

[0055] The insertion is taken as an example of the connection method between the second liquid outlet structure 37 and the water return structure. One of the second liquid outlet structure 37 and the water return structure is a connector structure, and another one of the second liquid outlet structure 37 and the water return structure is an interface structure. The connector structure is inserted into and engaged with the interface structure (a seal structure is disposed between the connector structure and the interface structure and config-

ured for sealing between the connector structure and the interface structure to reduce water leakage; the seal structure comprises, but is not limited to, a seal ring or a sealant), and the assembling method of insertion and engagement facilitates implementation of an assembling process, which can effectively improve the assembling efficiency. As a result, the manufacturing cost can be effectively lowered.

[0056] In some embodiments of the present disclosure, as shown in FIGS. 5 and 6, the flow guide member 30 further comprises a plurality of rib plates 38 arranged inside the flow guide member 30 and configured to define the first channel portion 331 and the second channel portion 332 within the flow guide member 30.

[0057] Specifically, the liquid channel is disposed inside the flow guide member 30, and the plurality of rib plates 38 are arranged in the liquid channel. The plurality of rib plates 38 partition the liquid channel into the first channel portion 331 and the second channel portion 332. Each of the first liquid inlet structure 34 and the first liquid outlet structure 35 is in communication with the first channel portion 331, and each of the second liquid inlet structure 36 and the second liquid outlet structure 37 is in communication with the second channel portion 332.

[0058] The rib plate 38 is used to partition the liquid channel to allow the first channel portion 331 and the second channel portion 332 to be integrated inside the flow guide member 30, thereby optimizing the structure, reducing an overall volume, and also effectively lowering the manufacturing cost.

[0059] In the present disclosure, the flow guide member 30 is of an integrated structure. When the flow guide member 30 is of an integrated structure, it may be processed and manufactured through casting; or it may be processed and manufactured through injection molding followed by assembling.

[0060] In addition, the plurality of rib plates 38 defining the first channel portion 331 are provided. At the U-shaped bend 3311 of the first channel portion 331, adjacent rib plates 38 are staggered, and therefore the first channel portion 331 is formed into the U-shaped bend 3311. Meanwhile, when a plurality of U-shaped bends 3311 are provided, adjacent rib plates 38 are staggered to form a sequentially connected labyrinth structure, to reduce the odor backflow.

[0061] In some embodiments of the present disclosure, as shown in FIGS. 3 to 5, the flow guide member 30 comprises a first body 31 and a second body 32. The first body 31 and/or the second body 32 is provided with the plurality of rib plates 38. The first body 31, the second body 32, and the plurality of rib plates 38 together define the first channel portion 331 and the second channel portion 332.

[0062] Specifically, the plurality of rib plates 38 for defining the first channel portion 331 and the second channel portion 332 may all be arranged at the first

body 31 or the second body 32; or part of them may be arranged at the first body 31, and another part of them may be arranged at the second body 32. When the first body 31 and the second body 32 are engaged with each other, the first body 31 and the second body 32 together define a chamber structure, and the plurality of rib plates 38 are located inside the chamber structure and configured for partitioning the chamber structure to form the first channel portion 331 and the second channel portion 332.

[0063] The engagement manner between the first body 31 and the second body 32 comprises, but is not limited to, welding, bonding, riveting, snap-fit, or screw connection.

[0064] In some embodiments of the present disclosure, as shown in FIGS. 3 to 5, the flow guide member 30 is provided with at least one connection structure 39 fixedly connected to an outer drum 11 of the drum assembly 10.

[0065] Specifically, the flow guide member 30 is fixedly mounted at the outer side of the drum assembly 10 by the connection structure 39. By providing the connection structure 39, assembling of the flow guide member 30 is facilitated, thereby effectively improving the assembling efficiency. As a result, the manufacturing cost can be lowered.

[0066] It should be noted that in the present disclosure, the connection structure 39 comprises, but is not limited to, a buckle or a connection hole. For example, the connection structure 39 is a connection hole. When the flow guide member 30 is fixedly connected to the outer drum 11 of the drum assembly 10, a screw can be used to pass through the connection hole to connect and fix the flow guide member 30 to the outer drum 11.

[0067] In some embodiments of the present disclosure, as shown in FIGS. 1, 2, and 8 to 13, the cooling assembly further comprises a condenser 22. The condenser 22 comprises a shell 221, an air inlet 223, an air outlet 224, a liquid inlet 225, and a liquid outlet 226, and a blocking structure 227. The fluid channel 222 is defined in the shell 221. The air inlet 223, the fluid channel 222, and the air outlet 224 are in communication with each other to form an air flow path. The liquid inlet 225, the fluid channel 222, and the liquid outlet 226 are in communication with each other to form a liquid flow path. The blocking structure 227 is located inside the fluid channel 222 and located in the air flow path.

[0068] It should be understood that in the present disclosure, the air inlet 223, the air outlet 224, the liquid inlet 225, and the liquid outlet 226 are arranged at intervals at the shell 221. Each of the air inlet 223, the air outlet 224, the liquid inlet 225, and the liquid outlet 226 is connected to the fluid channel 222 inside the shell 221. The liquid inlet 225 is configured to receive a coolant to allow the coolant to enter the fluid channel 222. The liquid outlet 226 is configured to discharge the coolant from the fluid channel 222. The air inlet 223 is

configured to receive airflow to be cooled. The air outlet 224 is configured to discharge the cooled airflow from the fluid channel 222.

[0069] In the present disclosure, the air flow path refers to a path for air flowing on the condenser 22. Specifically, the air enters the fluid channel 222 through the air inlet 223, and the air entering the fluid channel 222 flows towards the air outlet 224 in the fluid channel 222 and is discharged out of the condenser 22 through the air outlet 224.

[0070] The liquid flow path refers to a path for liquid flowing on the condenser 22. Specifically, the coolant enters the fluid channel 222 through the liquid inlet 225. The coolant entering the fluid channel 222 flows towards the liquid outlet 226 in the fluid channel 222 and is discharged out of the condenser 22 through the liquid outlet 226.

[0071] When the condenser 22 operates, the coolant enters the fluid channel 222 through the liquid inlet 225. The coolant entering the fluid channel 222 flows along the liquid flow path. Airflow after completion of heat exchange between the drying system 20 and the laundry is introduced into the fluid channel 222 through the air inlet 223. The airflow entering the fluid channel 222 flows along the air flow path. Air flowing along the air flow path exchanges heat with the coolant flowing along the liquid flow path, to cool the air. The cooled air returns to the drying system 20 through the air outlet 224 to exchange heat with the laundry again. The heat-exchanged coolant flows out through the liquid outlet 226.

[0072] In the fluid channel 222, during the heat exchange between the coolant and the airflow, the coolant tends to flow along the air flow path along with the airflow. In the present disclosure, the blocking structure 227 is disposed in the air flow path, and the coolant is blocked by the blocking structure 227. In this way, the flowing of the coolant along the air flow path is reduced. Thus, the flowing of the coolant along with the airflow through the air outlet 224 can be reduced. As a result, a malfunction of the drying system 20 caused by the coolant flowing into the drying system 20 is reduced.

[0073] It should be noted that in the present disclosure, the coolant flow path and the air flow path at least partially intersect in the fluid channel 222. By intersecting the coolant flow path with the air flow path, the air needs to pass through the coolant during the flowing. Therefore, the air can be in full contact with the coolant. Thus, an effect of the heat exchange between the coolant and the airflow can be improved, thereby improving a cooling effect on the air.

[0074] In addition, the liquid outlet 226 of the condenser 22 is in communication with the second liquid inlet structure 36 of the flow guide member via a connection pipe.

[0075] In addition, the drying system 20 of the laundry treatment device 100 comprises an air duct assembly. A fan 21 of the air duct assembly is in communica-

tion with the air outlet 224 of the condenser 22. Under a suction action of the fan 21, the air in the fluid channel 222 is drawn out through the air outlet 224.

[0076] In some embodiments of the present disclosure, as shown in FIGS. 12 and 13, the blocking structure 227 is located between the liquid inlet 225 and the air outlet 224.

[0077] In some embodiments of the present disclosure, each of the air inlet 223, the air outlet 224, the liquid inlet 225, and the liquid outlet 226 is disposed at the shell 221 and in communication with the fluid channel 222 inside the shell 221. The coolant enters the fluid channel 222 through the liquid inlet 225 and flows along the liquid flow path, and is finally discharged out of the fluid channel 222 through the liquid outlet 226, and the air enters the fluid channel 222 through the air inlet 223 and flows along the air flow path, and is finally discharged through the air outlet 224.

[0078] The blocking structure 227 is disposed between the liquid inlet 225 and the air outlet 224, which reduces the situation where the coolant, during the process of entering the fluid channel 222 through the liquid inlet 225, is carried out of the fluid channel 222 along with the air through the air outlet 224, further reduces the outflowing of the coolant through the air outlet 224. Thus, the malfunction of the drying system 20 caused by the coolant flowing into the drying system 20 is further alleviated.

[0079] In some embodiments of the present disclosure, as shown in FIGS. 11 to 13, the shell 221 comprises a top wall 2221, a bottom wall 2222, a first side wall 2223, a second side wall 2226, a first end wall 2224, and a second end wall 2225. The top wall 2221, the bottom wall 2222, the first side wall 2223, the second side wall 2226, the first end wall 2224, and the second end wall 2225 together define the fluid channel 222. The top wall 2221 is opposite to the bottom wall 2222. The first side wall 2223 is opposite to the second side wall 2226. The first end wall 2224 is opposite to the second end wall 2225.

[0080] Specifically, the fluid channel 222 is formed by the top wall 2221, the bottom wall 2222, the first side wall 2223, the second side wall 2226, the first end wall 2224, and the second end wall 2225. The top wall 2221, the bottom wall 2222, the first side wall 2223, and the second side wall 2226 enclose to form a cylindrical structure with openings at both ends. The bottom wall 2222 is opposite to the top wall 2221. The first side wall 2223 is opposite to the second side wall 2226. The first end wall 2224 is disposed at an end of the cylindrical structure. The first end wall 2224 is connected to each of the top wall 2221, the bottom wall 2222, the first side wall 2223, and the second side wall 2226 to close one opening of the cylindrical structure. The second end wall 2225 is disposed at another end of the cylindrical structure. The second end wall 2225 is connected to each of the top wall 2221, the bottom wall 2222, the first side wall 2223, and the second side wall

2226 to close another opening of the cylindrical structure.

[0081] In some embodiments of the present disclosure, as shown in FIGS. 12 and 13, the air inlet 223 is formed at the first end wall 2224. The top wall 2221 comprises a first top wall 22211, a second top wall 22212, and a third top wall 22213 that are sequentially connected. The first top wall 22211 is connected to the first end wall 2224. The third top wall 22213 is connected to the second end wall 2225. The liquid inlet 225 is formed at the first top wall 22211. The air outlet 224 is formed at the third top wall 22213. The blocking structure 227 is disposed at the first top wall 22211 or the second top wall 22212.

[0082] Specifically, the air outlet 224 and the liquid inlet 225 are both formed at the top wall 2221. The blocking structure 227 is disposed between the air outlet 224 and the liquid inlet 225. The top wall 2221 comprises a first top wall 22211, a second top wall 22212, and a third top wall 22213 that are sequentially connected. The liquid inlet 225 is formed at the first top wall 22211. The outlet 224 is disposed at the third top wall 22213. The blocking structure 227 is disposed at the first top wall 22211 or the second top wall 22212. When the condenser 22 operates, the coolant enters the fluid channel 222 through the liquid inlet 225, and the air to be cooled enters the fluid channel 222 through the air inlet 223. As a result, during the flowing of the air, part of the coolant flows along the top wall 2221 with the air along the air flow path. The blocking structure 227 is disposed at the top wall 2221 (the first top wall 22211 or the second top wall 22212) and used to block the coolant flowing along the top wall 2221 towards the air outlet 224, to reduce outflowing of the coolant through the air outlet 224.

[0083] It should be understood that when the condenser 22 of the present disclosure operates, the condenser 22 is fixedly mounted at the outer side of the drum assembly 10 of the laundry treatment device 100, the top wall 2221 of the shell 221 is located above the bottom wall 2222. In this case, the liquid inlet 225 is opened at the first top wall 22211 of the top wall 2221, allowing the coolant to enter the cooling channel through the liquid inlet 225 and then fall down towards the bottom wall 2222 under the action of its own gravity. Therefore, the liquid inlet 225 can be formed away from the air outlet 224. Therefore, a possibility of the coolant flowing with the air towards the air outlet 224 can be reduced. Meanwhile, the air outlet 224 is formed at the third top wall 22213 of the top wall 2221. A direction of the airflow flowing out of the fluid channel 222 is oriented upwards by disposing the air outlet 224 on the third top wall 22213.

[0084] It should be noted that the blocking structure 227 disposed at the first top wall 22211 or the second top wall 22212 protrudes from the top wall 2221, and the blocking structure 227 has an end connected to the first side wall 2223 and another end connected to the

second side wall 2226. By providing the blocking structure 227, the blocking structure 227 can provide, at the top wall 2221, a better blocking effect on the coolant, thereby reducing the flowing of the blocking structure 227 to the air outlet 224 along the top wall 2221.

[0085] In some embodiments of the present disclosure, as shown in FIGS. 11 to 13, the blocking structure 227 is disposed at the bottom wall 2222. In a direction from the first side wall 2223 to the second side wall 2226, a dimension of the blocking structure 227 is smaller than or equal to a dimension of the bottom wall 2222.

[0086] Specifically, among the walls defining the fluid channel 222, the top wall 2221 is opposite to the bottom wall 2222, and each of the liquid inlet 225 and the air outlet 224 is disposed at the top wall 2221. When the condenser 22 operates, the coolant enters the fluid channel 222 through the liquid inlet 225, and the air to be cooled enters the fluid channel 222 through the air inlet 223. The coolant flows along the liquid flow path, and the air flows along the air flow path. The air exchanges heat with the coolant during its flow. The heat-exchanged coolant falls onto the bottom wall 2222 under the action of its own gravity. The coolant falling onto the bottom wall 2222 flows along the liquid flow path on the bottom wall 2222. By providing the blocking structure 227 at the bottom wall 2222, the coolant flowing along the bottom wall 2222 is blocked by the blocking structure 227. As a result, the coolant can flow along the liquid flow path to reduce the flowing of the coolant along the bottom wall 2222 to a position below the air outlet 224 to be drawn out of the air outlet 224.

[0087] It should be noted that the blocking structure 227 disposed at the bottom wall 2222 protrudes from the bottom wall 2222. In a direction from the first side wall 2223 to the second side wall 2226, when the dimension of the blocking structure 227 is equal to the dimension of the bottom wall 2222, the blocking structure 227 is connected to each of the first side wall 2223 and the second side wall 2226; when the dimension of the blocking structure 227 is smaller than the dimension of the bottom wall 2222, two ends of the blocking structure 227 may be spaced apart from the first side wall 2223 and the second side wall 2226, respectively, or an end of the blocking structure 227 may be connected to one of the first side wall 2223 and the second side wall 2226, and another end of the blocking structure 227 may be spaced apart from another one of the first side wall 2223 and the second side wall 2226.

[0088] In some embodiments of the present disclosure, as shown in FIGS. 12 and 13, in a length direction of the fluid channel 222, the bottom wall 2222 comprises a first bottom wall 22221 and a second bottom wall 22222 connected to the first bottom wall 22221. The second bottom wall 22222 has a liquid outlet 226, and the second bottom wall 22222 is located at a lower level than the first bottom wall 22221.

[0089] Specifically, among the walls defining the fluid channel 222, the top wall 2221 is opposite to the bottom wall 2222; the liquid inlet 225 is formed at the first top wall 22211 of the top wall 2221; and the liquid outlet 226 is formed at the second bottom wall 22222. When the condenser 22 operates, the coolant enters the fluid channel 222 through the liquid inlet 225 and flows along the liquid flow path, and the air enters the fluid channel 222 through the air inlet 223 and flows along the air flow path. The air exchanges heat with the coolant during the flowing of the air, to cool the air. The cooled air is discharged through the air outlet 224, and the heat-exchanged coolant is discharged through the liquid outlet 226. By locating the second bottom wall 22222 at a lower level than the first bottom wall 22221, the coolant can be collected towards the liquid outlet 226, thereby improving a discharging effect of the coolant and reducing a problem of bacterial growth caused by the coolant remaining in the condenser 22.

[0090] It should be noted that in the present disclosure, the first bottom wall 22221 is disposed obliquely, and the second bottom wall 22222 is connected to the lowest part of the first bottom wall 22221. The first bottom wall 22221 disposed obliquely can provide a better guiding effect on the coolant, allowing the coolant to quickly flow from the first bottom wall 22221 to the second bottom wall 22222 to be discharged through the liquid outlet 226.

[0091] In addition, the second end wall 2225 of the fluid channel 222 is connected to the second bottom wall 22222, and the liquid outlet 226 is disposed at a position where the second end wall 2225 of the fluid channel 222 is connected to the second bottom wall 22222.

[0092] In some embodiments of the present disclosure, as shown in FIGS. 11 to 13, the first bottom wall 22221 comprises a first portion 22221a, a second portion 22221b, and a third portion 22221c. The second portion 22221b is connected to the first side wall 2223 by the first portion 22221a, and the second portion 22221b is connected to the second side wall 2226 by the third portion 22221c. The first portion 22221a, the second portion 22221b, and the third portion 22221c are arranged in a stepped structure. The third portion 22221c is located at a lower level than the first portion 22221a. The first portion 22221a is of an arc-shaped structure arching towards an inner side of the fluid channel 222 and provided with the blocking structure 227. The third portion 22221c is of an inclined structure, and the lowest position of the third portion 22221c is connected to the second bottom wall 22222.

[0093] Specifically, among the walls defining the fluid channel 222, the top wall 2221 is opposite to the bottom wall 2222. The top wall 2221 comprises a first top wall 22211, a second top wall 22212, and a third top wall 22213 that are sequentially connected in the length direction of the fluid channel 222. The bottom wall 2222 comprises a first bottom wall 22221 and a second bot-

tom wall 22222 that are sequentially connected in the length direction of the fluid channel 222. The first top wall 22211 and the second top wall 22212 are opposite to the first bottom wall 22221. The third top wall 22213 is opposite to the second bottom wall 22222. The first top wall 22211 or the second top wall 22212 is provided with the blocking structure 227. The first top wall 22211 is provided with the liquid inlet structure. The third top wall 22213 is provided with the air outlet 224. The first portion 22221a of the first bottom wall 22221 is also provided with the blocking structure 227. The second bottom wall 22222 has the liquid outlet 226.

[0094] When the condenser 22 operates, the coolant enters the fluid channel 222 through the liquid inlet 225 and flows along the liquid flow path, and the air enters the fluid channel 222 through the air inlet 223 and flows along the air flow path. The air exchanges heat with the coolant during the flowing of the air, to cool the air. The cooled air is discharged through the air outlet 224, and the heat-exchanged coolant falls onto the first bottom wall 22221. The coolant falling onto the first portion 22221a is blocked by the blocking structure 227. Under guidance of the blocking structure 227, the coolant onto the first bottom wall 22221 falls onto the third portion 22221c along the second portion 22221b and flows to the liquid outlet 226 of the second bottom wall 22222 through the third portion 22221c, to allow the coolant to be discharged through the liquid outlet 226.

[0095] It should be understood that the first portion 22221a is in a structure formed by the shell 221 arching from an outer surface of the shell 221 towards the inner side of the fluid channel 222. When the condenser 22 is mounted at the drum assembly 10 of the laundry treatment device 100, a corresponding part of the first portion 22221a can be adapted to the structure of a peripheral surface of the drum assembly 10, thereby realizing adaptive mounting of the condenser 22 and the drum assembly 10 and improving overall structural compactness.

[0096] In addition, the first portion 22221a, the second portion 22221b, and the third portion 22221c are arranged in a stepped structure, and the third portion 22221c is located at a lower level than the first portion 22221a. The second portion 22221b is vertically connected to the first portion 22221a and also vertically connected to the third portion 22221c. The third portion 22221c is inclined in the length direction of the fluid channel 222, and the lowest end of the third portion 22221c is connected to the second bottom wall 22222. By providing the first portion 22221a, the second portion 22221b, and the third portion 22221c, the coolant falling onto the first bottom wall 22221 can flow along the liquid flow path, reducing the outflowing of the coolant along with the air.

[0097] In some embodiments of the present disclosure, as shown in FIG. 9, a distance between a central axis a of the air outlet 224 and the first side wall 2223 is L1, and a distance between the central axis a of the air

outlet 224 and the second side wall 2226 is L2, where $L2 > L1$, and the first side wall 2223 is provided with the blocking structure 227.

[0098] Specifically, the first top wall 22211 of the top wall 2221 is provided with the blocking structure 227; the first portion 22221a of the first bottom wall 22221 (the first portion 22221a is connected to the first side wall 2223) is provided with the blocking structure 227; and the first side wall 2223 is provided with the blocking structure 227. The air outlet 224 has the central axis a. In the direction from the first side wall 2223 to the second side wall 2226, the distance between the central axis a and the first side wall 2223 is L1, and the distance between the central axis a and the second side wall 2226 is L2. By setting L2 to be greater than L1, the air outlet 224 is close to a side of the first side wall 2223.

[0099] By providing the blocking structures 227 at the first top wall 22211, the first side wall 2223, and the first portion 22221a of the first bottom wall 22221, the coolant in the air flow path can be effectively blocked by the blocking structures 227, further reducing the flowing of the coolant to the air outlet 224.

[0100] In some embodiments of the present disclosure, as shown in FIGS. 11 to 13, the blocking structure 227 disposed at the first top wall 22211 or the second top wall 22212, the blocking structure 227 disposed at the first side wall 2223, and the blocking structure 227 disposed at the first portion 22221a are sequentially connected.

[0101] Specifically, in the present disclosure, the blocking structure 227 is a rib structure disposed at a wall of the fluid channel 222. The blocking structure 227 disposed at the first top wall 22211 or the second top wall 22212 is a first rib portion 2271. The blocking structure 227 disposed at the first side wall 2223 is a second rib portion 2272. The blocking structure 227 disposed at the first portion 22221a is a third rib portion 2273. The first rib portion 2271, the second rib portion 2272, and the third rib portion 2273 are sequentially connected.

[0102] By providing the blocking structures 227 on the three walls, the blocking structures 227 on the three walls can be formed into an integral structure, which can enhance the blocking effect and further reduce the flowing of the coolant out of the liquid outlet 226.

[0103] It should be noted that in the present disclosure, a protruding height of the protruding rib structure ranges from 4 mm to 10 mm, and the specific value may be 4 mm, 4.5 mm, 5 mm, 5.5 mm, 6 mm, 6.5 mm, 7 mm, 7.5 mm, 8 mm, 8.5 mm, 9 mm, 9.5 mm, or 10 mm.

[0104] In addition, the connection method between the protruding rib structure and the wall corresponding to the protruding rib structure comprises, but is not limited to, bonding, welding, or integral molding.

[0105] In some embodiments of the present disclosure, the air outlet 224 has a projection area on the

bottom wall 2222, and the liquid outlet 226 and the third portion 22221c are both located outside the projection area.

[0106] Specifically, the top wall 2221 and the bottom wall 2222 of the fluid channel 222 are opposite to each other, and the third top wall 22213 and the second bottom wall 22222 are both located at one side of the blocking structure 227 and opposite to each other. The air outlet 224 is formed at the third top wall 22213, and the liquid outlet 226 is formed at the second bottom wall 22222. The air in the air flow path is discharged out of the condenser 22 through the air outlet 224, and the coolant in the liquid flow path is discharged out of the condenser 22 through the liquid outlet 226.

[0107] By providing the air outlet 224, the liquid outlet 226, and the third portion 22221c of the first bottom wall 22221, the air outlet 224 is offset from a position directly above the liquid outlet 226 and the third portion 22221c, thereby reducing entrainment of the coolant at the liquid outlet 226 and the third portion 22221c when the heat-exchanged air is drawn out through the air outlet 224, further reducing discharging of the coolant through the air outlet 224.

[0108] In some embodiments of the present disclosure, as shown in FIGS. 12 and 13, the condenser 22 further comprises a flow guide plate 229. The flow guide plate 229 is disposed in the fluid channel 222. The flow guide plate 229 is located below the liquid inlet 225 and faces towards the liquid inlet 225. The air inlet 223 faces towards the flow guide plate 229.

[0109] Specifically, in the present disclosure, the flow guide plate 229 is disposed inside the fluid channel 222 and connected to the first side wall 2223 of the fluid channel 222, and the flow guide plate 229 faces towards the liquid inlet 225. When the condenser 22 operates, the coolant enters the fluid channel 222 through the liquid inlet 225 and falls onto the flow guide plate 229, and falls down along an edge of the flow guide plate 229, thereby forming a water curtain structure. The air inlet 223 is formed at the first end wall 2224 of the fluid channel 222. After the air enters the fluid channel 222 through the air inlet 223, the air needs to pass through the water curtain. The air exchanges heat with the coolant while passing through the water curtain, to cool the air. The cooled air reaches the air outlet 224 along the air flow path and is discharged. The heat-exchanged coolant also flows to the liquid outlet 226 along the liquid flow path and is discharged through the liquid outlet 226.

[0110] By providing the flow guide plate 229, a heat exchange area between the coolant and the air is expanded, thereby improving a heat exchange effect on the air.

[0111] In some embodiments of the present disclosure, as shown in FIGS. 12 and 13, a plurality of flow guide plates 229 are provided and arranged at intervals in a direction from the top wall 2221 to the bottom wall 2222. For two adjacent flow guide plates 229 of the

plurality of flow guide plates 229, an upper one of the two adjacent flow guide plates 229 has a projection on a lower one of the two adjacent flow guide plates 229, and a projection area is smaller than an area of the lower flow guide plate 229.

[0112] By providing the plurality of flow guide plates 229 and arranging the plurality of flow guide plates 229, the coolant can be dispersed layer by layer after passing through each of the plurality of flow guide plates 229 from top to bottom, thereby increasing a coverage region of the water curtain. Therefore, the heat exchange area between the coolant and the air can be further expanded, thereby further improving the heat exchange effect on the air.

[0113] In some embodiments of the present disclosure, as shown in FIGS. 12 and 13, the condenser 22 further comprises a water baffle 228. The water baffle 228 is disposed on the first top wall 22211 and disposed between the liquid inlet 225 and the blocking structure 227.

[0114] Specifically, the water baffle 228 and the liquid inlet 225 are both disposed on the first top wall 22211 of the top wall 2221, and the water baffle 228 is disposed between the blocking structure 227 and the liquid inlet 225. Meanwhile, the water baffle 228 is disposed at an edge of the liquid inlet 225, and a surface of the water baffle 228 is inclined towards the liquid inlet 225. In the present disclosure, the air flow path intersects the liquid flow path. When the coolant enters the fluid channel 222 through the liquid inlet 225, the air can drive the coolant to flow towards the liquid outlet 226 along the first top wall 22211. By providing the water baffle 228 to block the coolant flowing along the first top wall 22211, the coolant can flow along the liquid flow path when entering the fluid channel 222 through the liquid inlet 225, and can thus fully contact the air to improve the heat exchange effect on the air.

[0115] In some embodiments of the present disclosure, as shown in FIGS. 8 to 11, the condenser 22 is of a split structure and comprises a cover plate 2211 and a shell body 2212. The water baffle 228 and the flow guide plate 229 are both disposed at the shell body 2212. The shell body 2212 has an opening. The cover plate 2211 is connected to the shell body 2212 and is configured to close the opening of the shell body 2212, thereby forming the fluid channel 222. By configuring the condenser 22 as the split structure, processing and manufacturing can be performed through injection molding, which can effectively lower the manufacturing cost.

[0116] In some embodiments of the present disclosure, an engagement method between the cover plate 2211 and the shell body 2212 comprises, but is not limited to, welding, riveting, bonding, screw connection, or snap-fit.

[0117] In some embodiments of the present disclosure, the condenser 22 is provided with at least one connection portion.

[0118] Specifically, when the condenser 22 is applied in the laundry treatment device 100, the condenser 22 is mounted and fixed at the outer drum 11 of the drum assembly 10 by the connection portion. By providing the connection portion, assembling of the condenser 22 is facilitated, thereby effectively improving assembling efficiency and lowering the manufacturing cost.

[0119] It should be noted that in the present disclosure, the connection portion comprises, but is not limited to, a buckle or a connection hole. For example, the connection portion is a connection hole. When the condenser 22 is fixedly connected to the outer drum 11 of the drum assembly 10, a screw can be passed through the connection hole to fix the condenser 22 to the outer drum 11.

[0120] In the present disclosure, the laundry treatment device described above may be a washer-dryer integrated machine or other laundry treatment devices with washing and drying functions. For convenience of description, a drum washing machine with a drying function is taken as an example of the laundry treatment device for illustration in the present disclosure. For structures of other parts of the drum washing machine with the drying function, reference can be made to the related art, and details thereof are omitted herein.

[0121] While the specific embodiments of the present disclosure have been described above, the scope of the present disclosure is not limited to these embodiments. Various modifications and alternatives can be easily conceived by any of those skilled in the art without departing from the scope of the present disclosure. Therefore, these modifications and alternatives are to be encompassed by the scope of the present disclosure as defined by the claims as attached.

Claims

1. A laundry treatment device, comprising:

a drum assembly (10) comprising an overflow structure;
a cooling assembly having a liquid outlet; and
a flow guide member (30) comprising a liquid flow channel (33), a first liquid inlet structure (34), and a second liquid inlet structure (36), wherein:

the overflow structure is in communication with the liquid flow channel (33) via the first liquid inlet structure (34); and
the liquid outlet is in communication with the liquid flow channel (33) via the second liquid inlet structure (36).

2. The laundry treatment device according to claim 1, wherein the liquid flow channel (33) comprises a

first channel portion (331) and a second channel portion (332), the overflow structure being in communication with the first channel portion (331) via the first liquid inlet structure (34), and the liquid outlet being in communication with the second channel portion (332) via the second liquid inlet structure (36).

3. The laundry treatment device according to claim 2, wherein:

the flow guide member (30) further comprises a first liquid outlet structure (35); and
the laundry treatment device further comprises a drainage assembly, wherein the first channel portion (331) is in communication with the drainage assembly via the first liquid outlet structure (35).

4. The laundry treatment device according to claim 3, wherein:

the first liquid inlet structure (34) is in communication with an end of the first channel portion (331); and
the first liquid outlet structure (35) is in communication with an other end of the first channel portion (331) and located below the first liquid inlet structure (34).

5. The laundry treatment device according to claim 4, wherein the first channel portion (331) comprises at least one U-shaped bend (3311) disposed between the first liquid inlet structure (34) and the first liquid outlet structure (35).

6. The laundry treatment device according to claim 2, wherein:

the flow guide member (30) further comprises a second liquid outlet structure (37); and
the drum assembly (10) further comprises a water return structure, wherein the second channel portion (332) is in communication with the water return structure via the second liquid outlet structure (37).

7. The laundry treatment device according to claim 2, wherein the flow guide member (30) further comprises a plurality of rib plates (38) arranged inside the flow guide member (30) and configured to define the first channel portion (331) and the second channel portion (332) within the flow guide member (30).

8. The flow guide member (30) according to claim 7, wherein the flow guide member (30) comprises:

a first body (31); and
a second body (32), wherein:

the first body (31) and/or the second body
(32) is provided with the plurality of rib 5
plates (38); and
the first body (31), the second body (32),
and the plurality of rib plates (38) together
define the first channel portion (331) and 10
the second channel portion (332).

9. The flow guide member (30) according to claim 8,
wherein:

the first body (31) is engaged with the second 15
body (32) through welding, bonding, riveting,
snap-fit, or screw connection; and/or
the flow guide member (30) is provided with at
least one connection structure fixedly con- 20
nected to an outer drum (11) of the drum as-
sembly (10).

10. The laundry treatment device according to any one
of claims 1 to 11, wherein the cooling assembly 25
further comprises a condenser (22), the condenser
(22) comprising:

a fluid channel;
an air inlet and an air outlet, wherein an air
flow path is formed by the air inlet, the fluid 30
channel, and the air outlet; and
a liquid inlet and the liquid outlet, wherein a
coolant flow path is formed by the liquid inlet,
the fluid channel, and the liquid outlet, 35
wherein the coolant flow path at least partially
intersects the air flow path.

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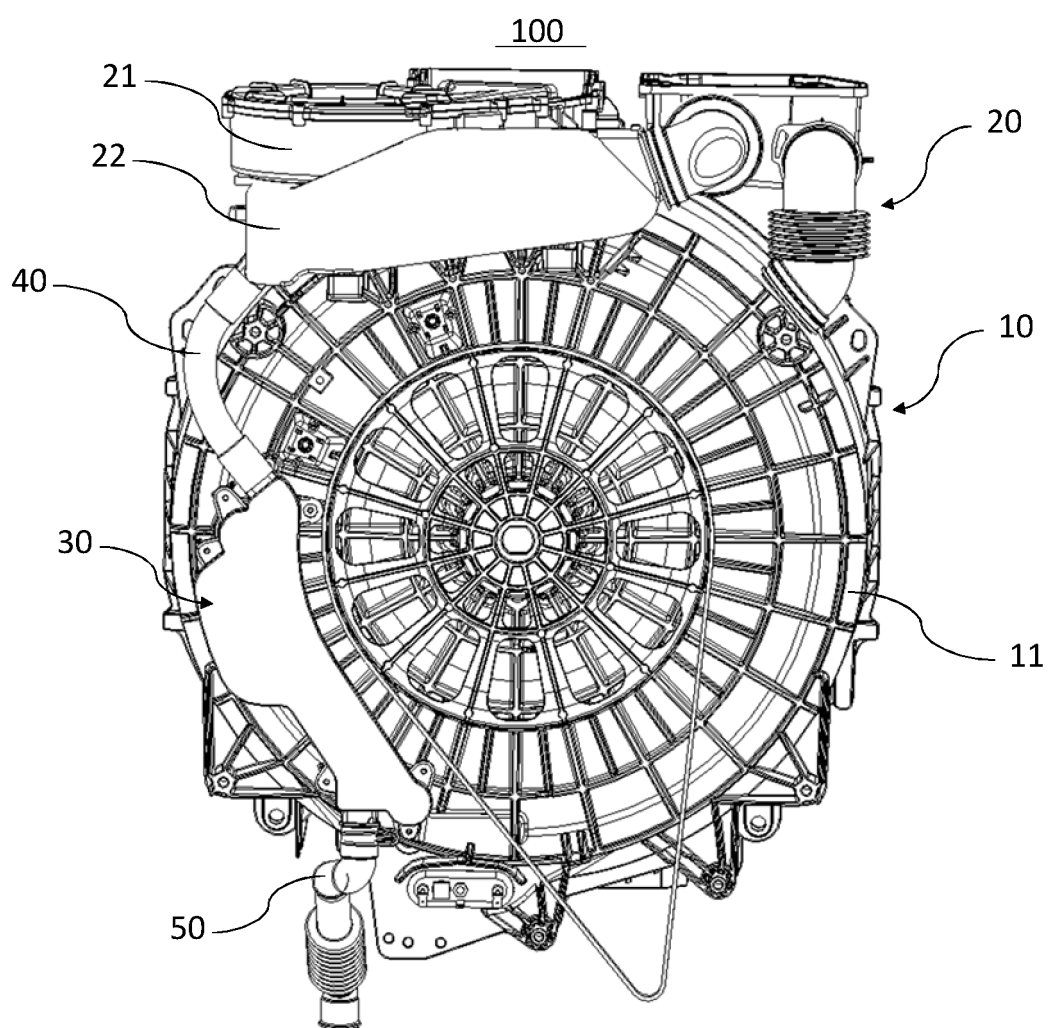


FIG. 1

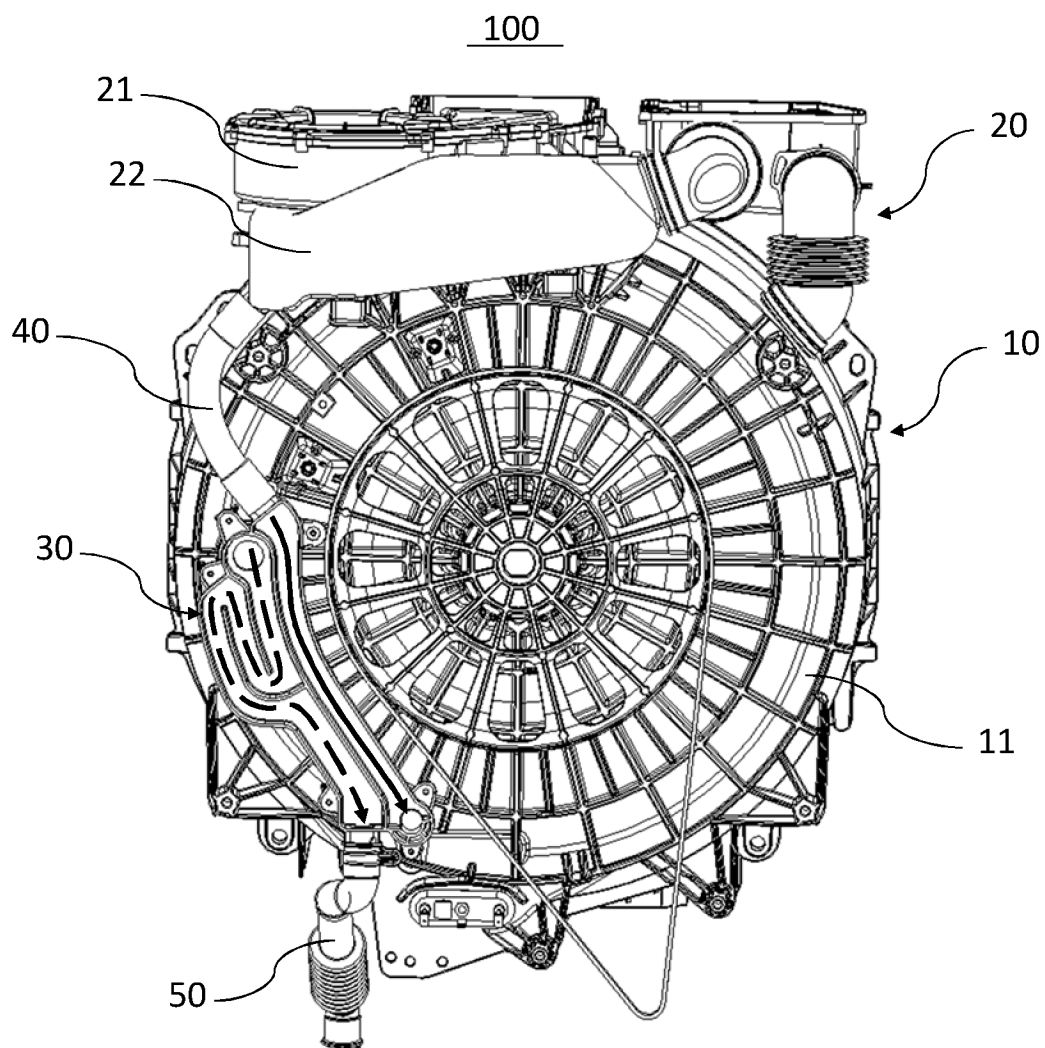


FIG. 2

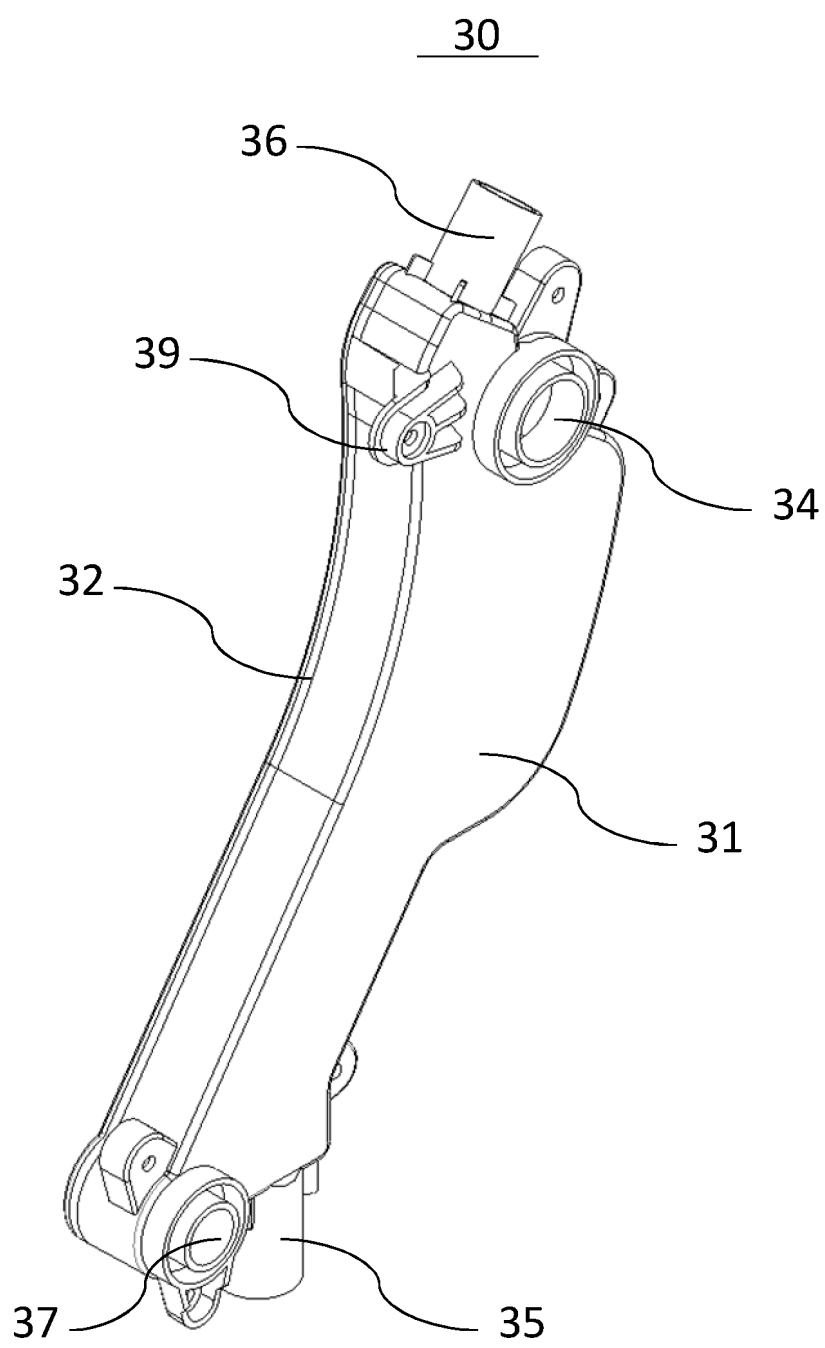


FIG. 3

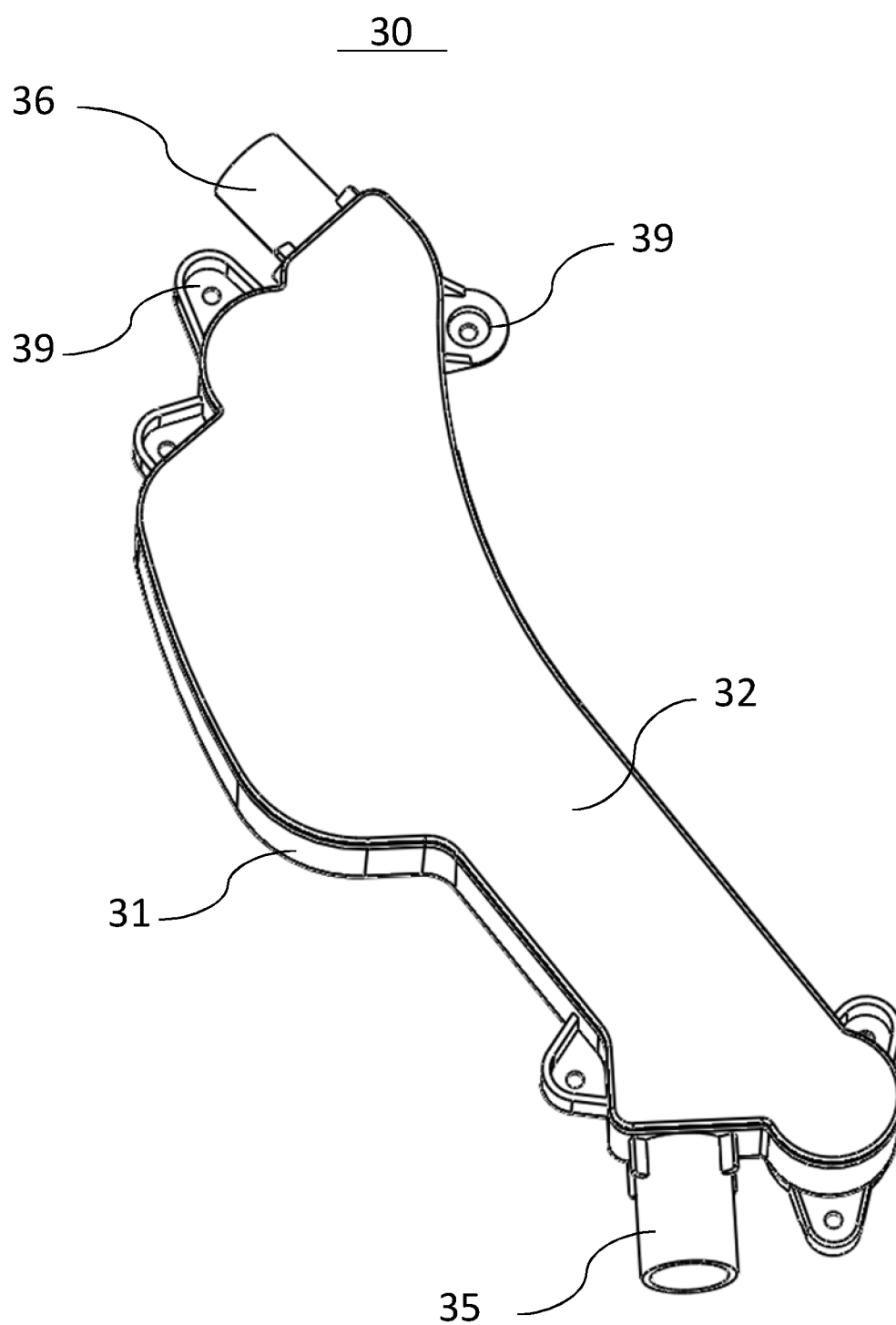


FIG. 4

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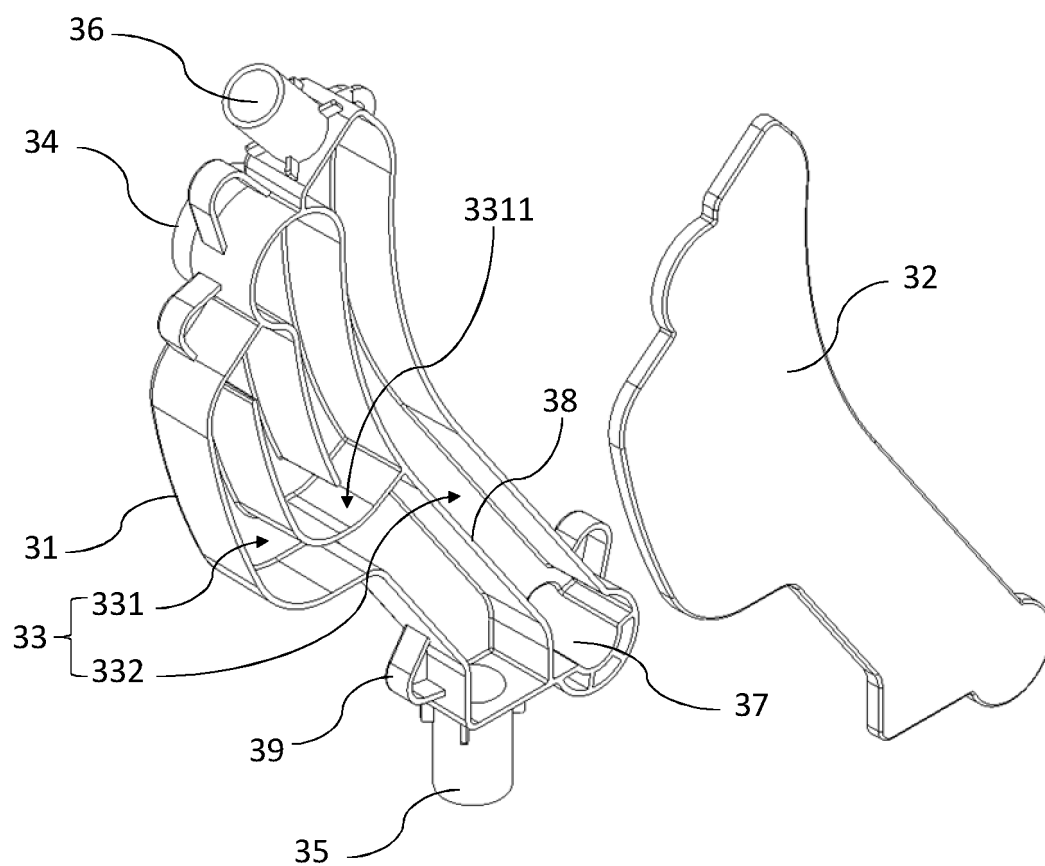


FIG. 5

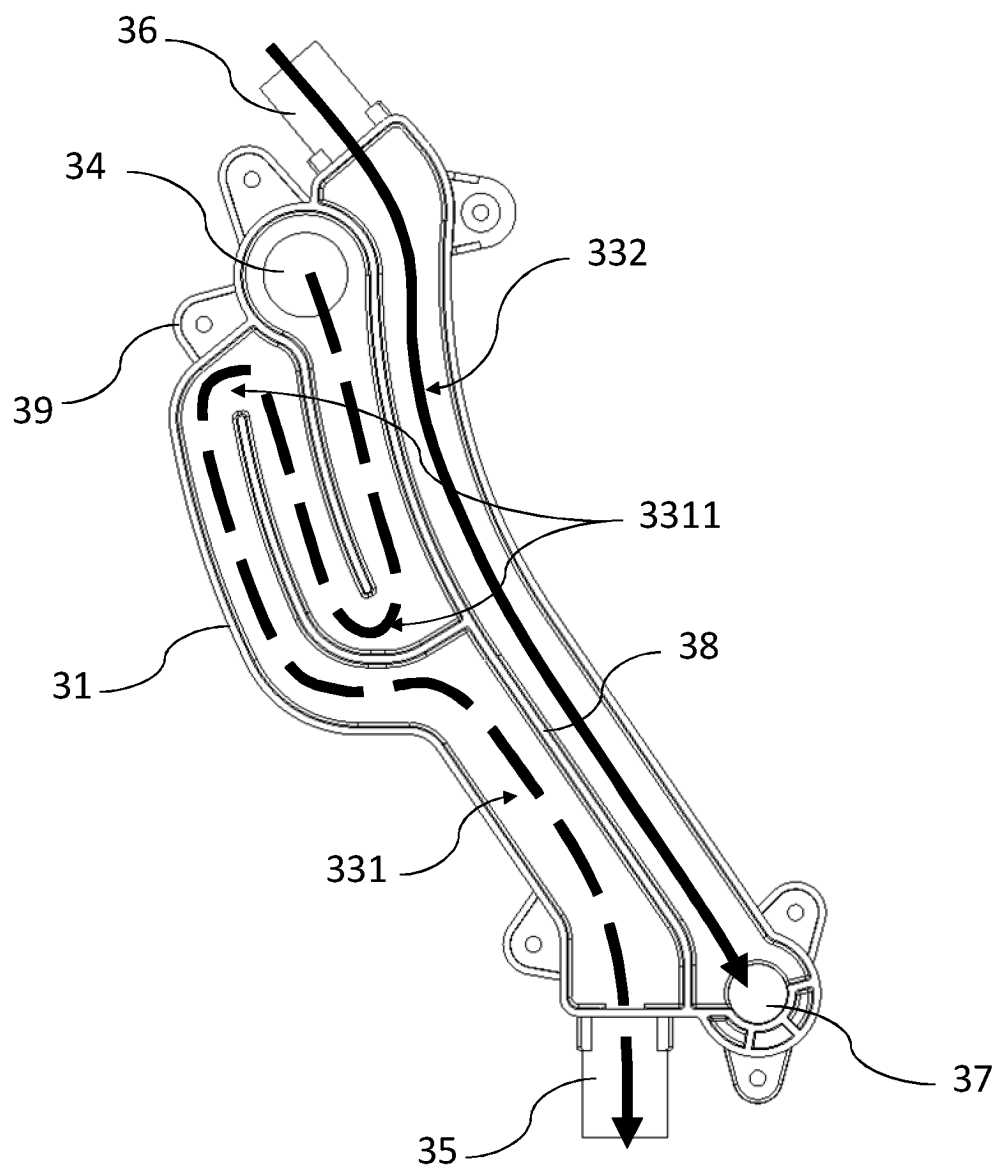


FIG. 6

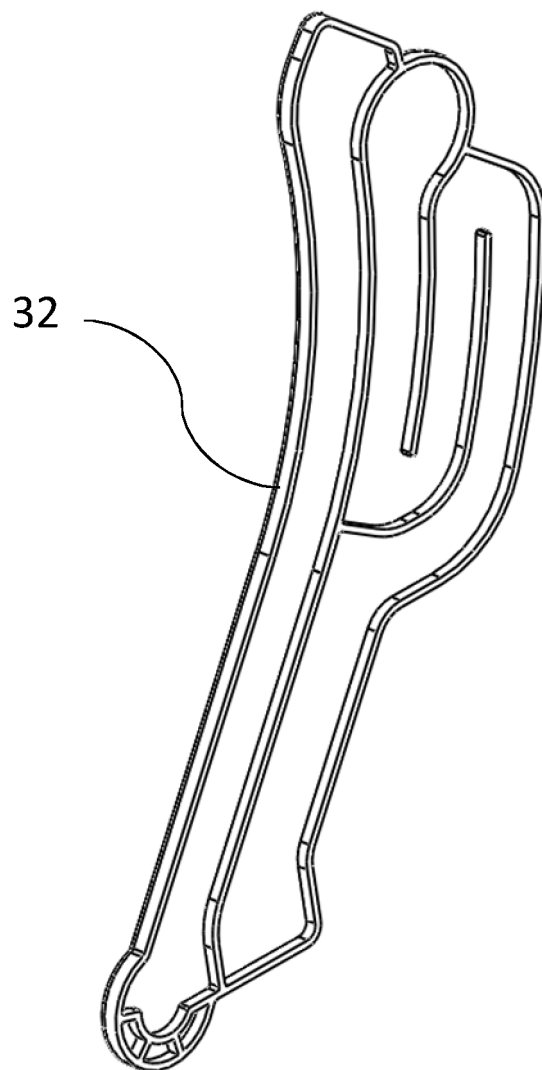


FIG. 7

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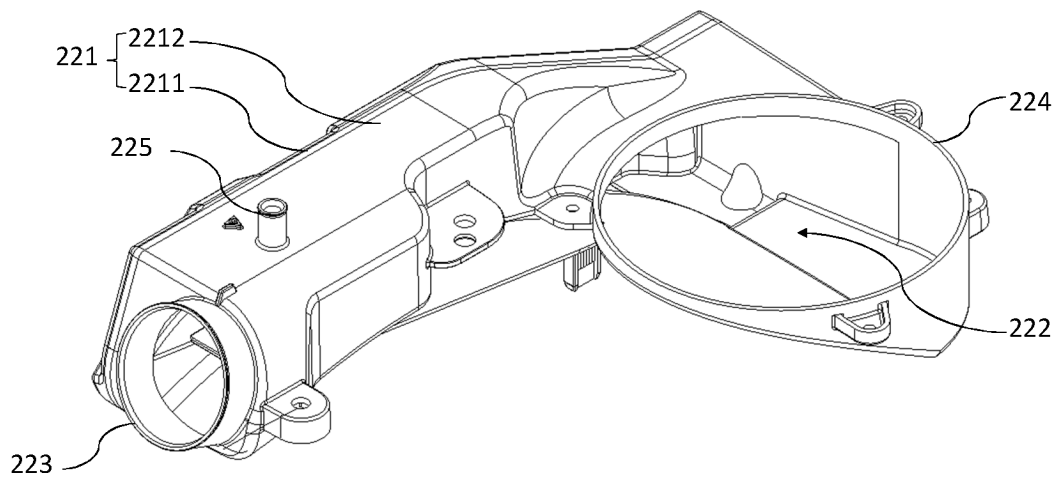


FIG. 8

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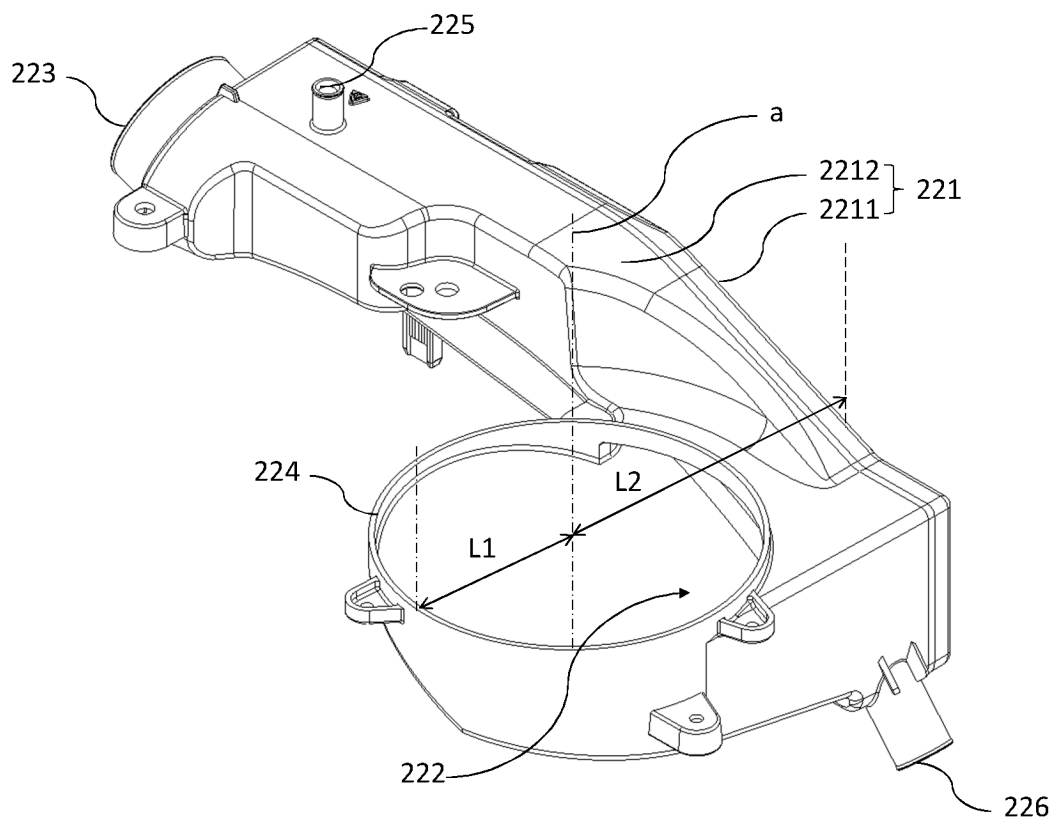


FIG. 9

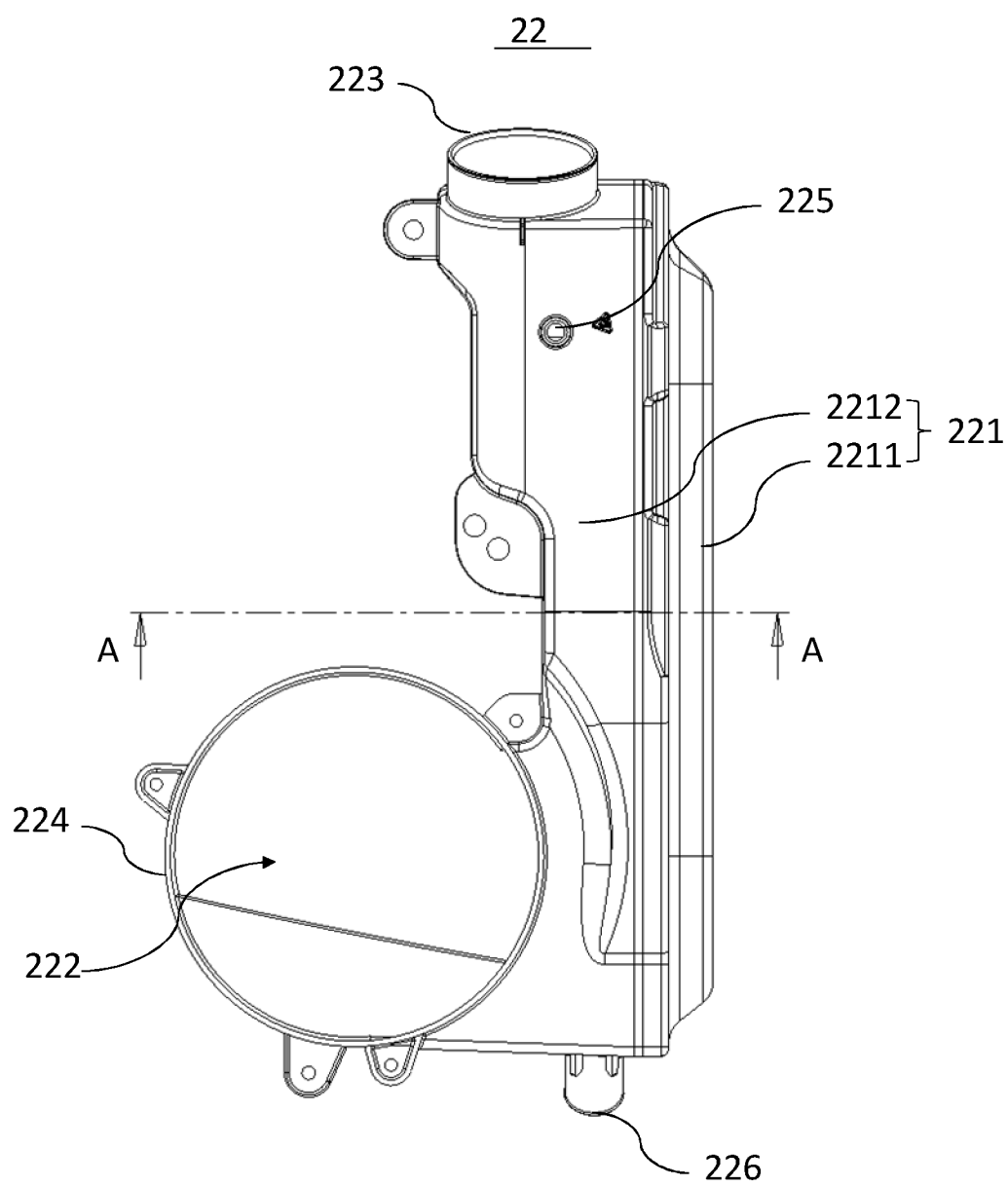


FIG. 10

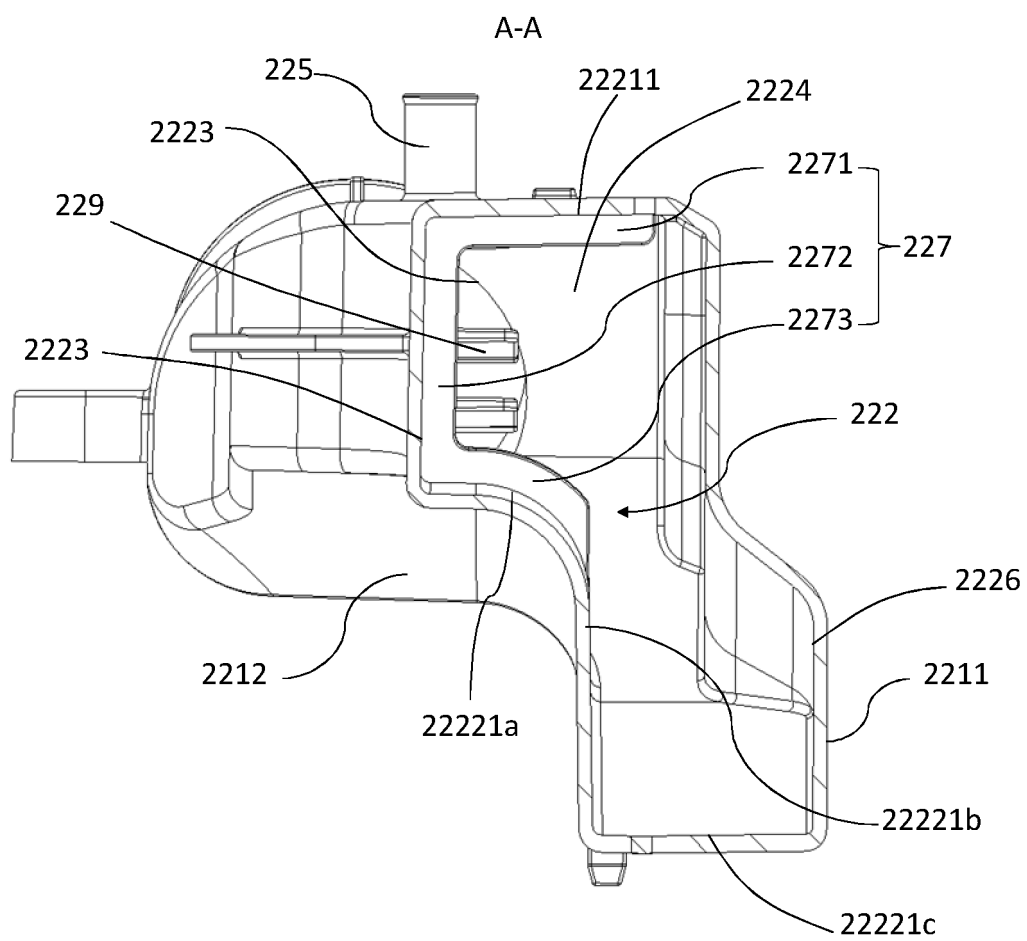


FIG. 11

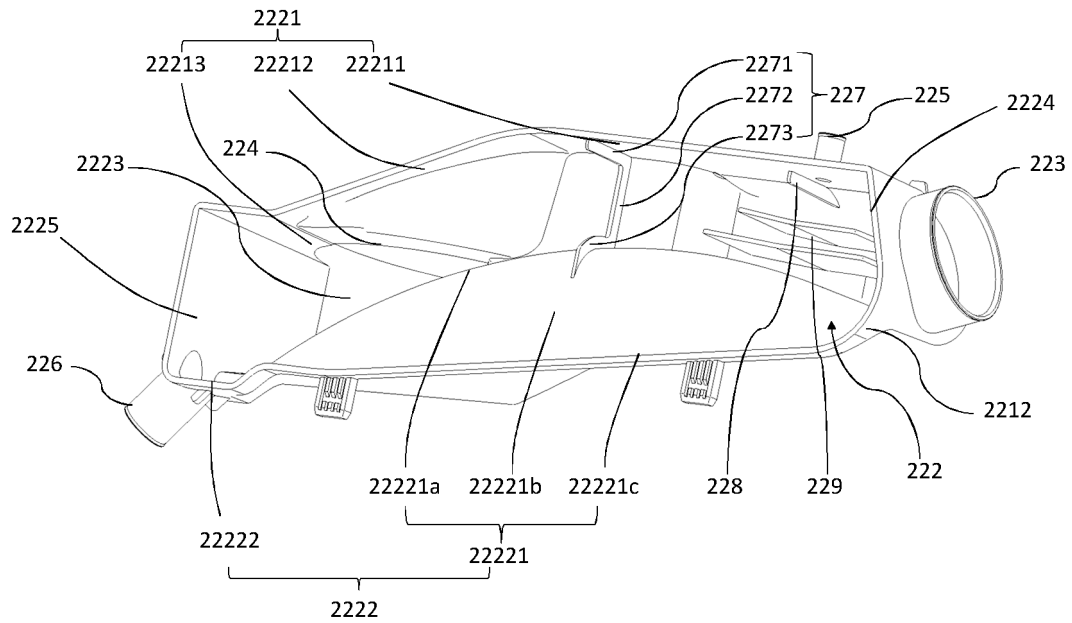


FIG. 12

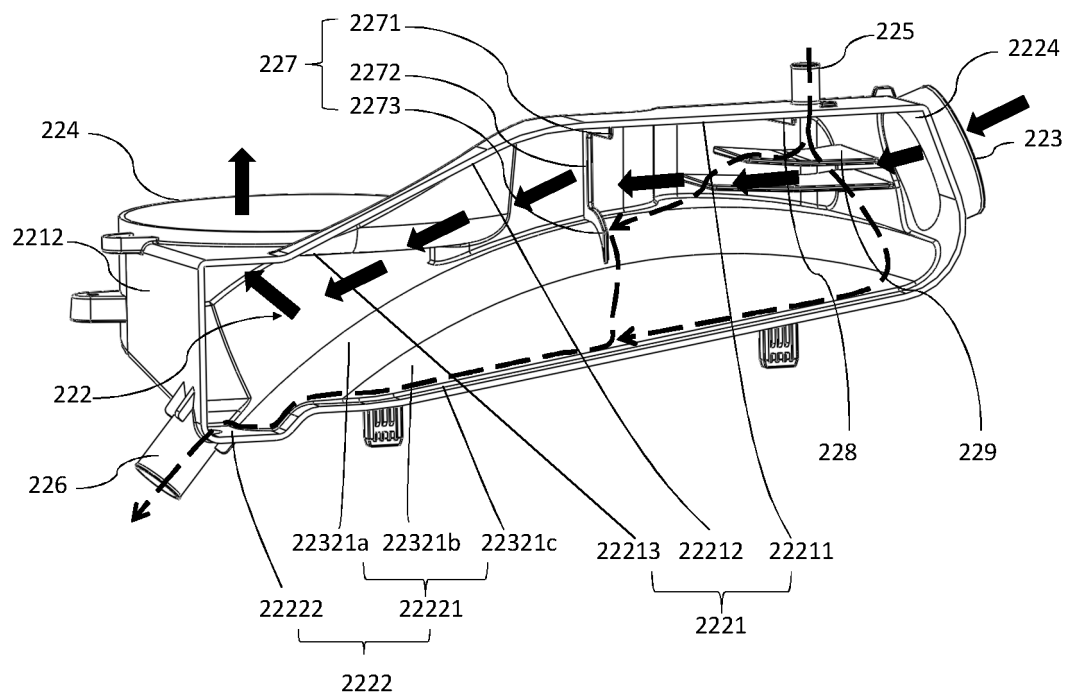


FIG. 13

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2024/102503

A. CLASSIFICATION OF SUBJECT MATTER

D06F 39/08(2006.01)i; D06F 58/24(2006.01)n

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)

IPC: 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)

CNTXT, DWPI, ENTXTC, CNKI: 导流, 烘干, 集成, 冷凝, 冷凝水, 冷却水, 流道, 排出, 排水, 通道, 洗涤水, 洗烘, 一体, 溢出, 溢水, discharg+, guid+, flow?, drainag+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 110396802 A (QINGDAO HAIER DRUM WASHING MACHINE CO., LTD.) 01 November 2019 (2019-11-01) description, embodiment 1, and figures 1-3	1-3, 6
X	CN 110552149 A (WUXI LITTLE SWAN ELECTRIC CO., LTD.) 10 December 2019 (2019-12-10) description, paragraphs 32-39, and figures 1-3	1-2
X	CN 217839454 U (WUXI HAOLI PUMPS INDUSTRIAL CO., LTD.) 18 November 2022 (2022-11-18) description, paragraphs 26-31, and figures 1-4	1
A	CN 111088678 A (GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI) 01 May 2020 (2020-05-01) entire document	1-10
A	CN 1814895 A (LG ELECTRONICS INC.) 09 August 2006 (2006-08-09) entire document	1-10

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

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"D" document cited by the applicant in the international application	"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
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"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 12 October 2024	Date of mailing of the international search report 15 October 2024
Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT
Information on patent family members

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CN	110396802	A	01 November 2019	WO	2019205927	A1	31 October 2019
CN	110552149	A	10 December 2019	None			
CN	217839454	U	18 November 2022	None			
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REFERENCES CITED IN THE DESCRIPTION

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