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(54) **AIR DUCT SHELL FOR USE IN CLOTHES DRYER AND CLOTHES DRYER**

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COQUE DE CONDUIT D'AIR DESTINÉE À ÊTRE UTILISÉE DANS UN SÈCHE-LINGE ET SÈCHE-LINGE

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(56) References cited:

EP-A1- 1 550 764	WO-A1-2010/090411
WO-A1-2012/072477	WO-A1-2015/065299
CN-A- 106 480 676	CN-A- 109 468 816
CN-A- 111 188 173	CN-A- 111 364 220
CN-U- 205 775 467	CN-U- 209 537 878
JP-B2- 5 122 881	US-A1- 2005 278 972

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Description

FIELD

[0001] The present invention relates to the field of laundry treatment device technologies, and in particular, to an air duct shell for a dryer and a dryer.

BACKGROUND

[0002] In the related art, a base assembly of a dryer includes a base and a two-device installation cavity. The base has a drainage channel defined thereon, and the two-device installation cavity has a hollow structure in communication with the drainage channel. Condensed water generated during an operation of the evaporator flows through the hollow structure to the drainage channel. The above structure is prone to water leakage, and is not conducive to a heat preservation of the two-device installation cavity and the air duct, thereby affecting drying efficiency of the dryer.

[0003] Patent Application Publication WO 2010/090411 A1 discloses a heat pump module (100) that includes: a housing (4), an evaporator (1) provided in the housing (4) that condenses humid air introduced into the housing (4) via evaporation of a refrigerant, a condenser (2) provided in the housing (4) that heats the air having passed through the evaporator (1) via condensation of the refrigerant, and at least one condensed water guide (431) or remover provided in the housing (4) that removes condensed water generated on a surface of the evaporator (1) therefrom.

SUMMARY

[0004] The present disclosure aims to solve at least one of the technical problems existing in the related art. To this end, the present disclosure proposes an air duct shell for a dryer, in which a liquid drainage channel is integrally formed in the air duct shell, which effectively avoids leakage of condensed water and air. Aspects of the present invention are defined in the accompanying claims.

[0005] The present invention is defined by claim 1. Advantageous embodiments of the invention are defined by the dependent claims.

[0006] Additional aspects and advantages of the present disclosure will be set forth, in part, from the following description, and in part will become apparent from the following description, or may be learned by practice of the present disclosure.

BRIEF DESCRIPTION OF DRAWINGS

[0007] The above and/or additional aspects and advantages of the present disclosure will become apparent from the following description of embodiments in conjunction with the accompanying drawings, in which:

FIG. 1 is a partial structural schematic view of an air duct shell according to an embodiment of the present disclosure;

FIG. 2 is a structural schematic view of an assembly of an air duct shell, an evaporator and a condenser according to an embodiment of the present disclosure; and

FIG. 3 is a cross-sectional view taken along line A-A of FIG. 2.

Reference Numerals:

[0008]

air duct shell 100; first chamber 110; second chamber 120; evaporator 200; condenser 300; body 10; liquid drainage groove 11; liquid drainage channel 12; liquid guide groove 13; first liquid guide groove 131; second liquid guide groove 132; liquid passage port 14; communication port 15; first communication port 151; second communication port 152; third communication port 153; partition plate 20; liquid leakage hole 21; blocking rib 30; first blocking rib 31; second blocking rib 32.

DESCRIPTION OF EMBODIMENTS

[0009] The embodiments of the present disclosure are described in detail below. Examples of the embodiments are shown in the accompanying drawings, in which the same or similar reference numerals indicate the same or similar elements or elements with the same or similar functions. The embodiments described below with reference to the accompanying drawings are exemplary, and are only used to explain the present disclosure, rather than being construed as limiting the present disclosure.

[0010] 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," "vertical," "horizontal," "top," "bottom," "inner," "outer," "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 may not be understood as a limitation of the present disclosure. Furthermore, 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 two or more, unless otherwise defined.

[0011] An air duct shell 100 for a dryer according to an embodiment of the present disclosure will be described below with reference to the accompanying drawings.

[0012] As shown in FIGS. 1 to 3, an air duct shell 100 for a dryer according to an embodiment of the present disclosure has a first chamber 110 where an evaporator 200 is mounted, and a second chamber 120 where a condenser 300 is mounted. The air duct shell 100 includes a body 10 and a partition plate 20.

[0013] In some embodiments of the present disclosure, the body 10 has a liquid drainage groove 11 and a liquid guide groove 13 that defined on an inner surface of a bottom wall thereof. The partition plate 20 is configured to cover and seal an opening of the liquid drainage groove 11 to define a liquid drainage channel 12 together with the body 10. Water-gas separation can be achieved by the partition plate 20. An internal circulating air flows in an upper part of the partition plate 20, and a condensed water flows through and is stored in a lower part of the partition plate 20. The liquid guide groove 13 is in communication with both the first chamber 110 and the liquid drainage channel 12.

[0014] As shown in FIGS. 1 to 3, hot wet air generated during an operation of the dryer may enter the first chamber 110 and the second chamber 120 of the air duct shell 100. After exchanging heat with the evaporator 200 in the first chamber 110, water in the hot wet air is condensed into condensed water, so that the hot wet air becomes dry air. After the dry air exchanges heat with the condenser 300 in the second chamber 120, the dry air becomes hot air. The hot air can be discharged from an air duct outlet of the air duct shell 100 and then enter a laundry holding cavity of the dryer to dry the laundry. Here, the condensed water generated during an operation of the evaporator 200 in the first chamber 110 may enter the liquid guide groove 13 due to gravity, and then flow into the liquid drainage channel 12 by a guiding of the liquid guide groove 13 to be discharged through the liquid drainage channel 12.

[0015] In the related art, a base assembly of the dryer includes a base and a two-device installation cavity. Here, the base has a drainage channel defined thereon, and the two-device installation cavity has a hollow structure in communication with the drainage channel. The condensed water generated during the operation of the condenser is discharged to the drainage channel through the hollow structure. In the above structure, there is a risk of sealing failure between the two-device installation cavity and the base, resulting in leakage of the condensed water or airflow in the installation cavity, which may not only affect a drainage effect, but also is not conducive to a heat exchange efficiency of the air in the installation cavity and a heat preservation of the two-device installation cavity and the air duct, thereby affecting the drying efficiency of the dryer.

[0016] However, in the embodiment of the present disclosure, the opening of the liquid drainage groove 11 on the bottom wall of the body 10 is closed by the partition plate 20 to define the liquid drainage channel 12, so that the liquid drainage channel 12 is integrally formed in the air duct shell 100. Therefore, there is no problem of seal-

ing failure between the two-device installation cavity and the base, thereby effectively avoiding use safety of other parts of the dryer from being affected due to the leakage of condensed water in the liquid drainage channel 12. In addition, it is also possible to avoid the drying efficiency of the dryer from being affected due to the air leakage in the first chamber 110 and the second chamber 120.

[0017] In addition, in some embodiments of the present disclosure, the partition plate 20 is an integral molded part, which not only makes the structure of the air duct shell 100 simpler and easier to be processed and assembled, but also reduces a gap formed between the body 10 and the partition plate 20 when they are engaged with each other, so as to prevent the condensed water in the liquid drainage channel 12 from flowing back into the first chamber 110 and the second chamber 120 through the gap between the body 10 and the partition plate 20, which can ensure an effectiveness of the drainage and prevent the evaporator 200 and the condenser 300 from being soaked by the condensed water. Thus, it is beneficial to improve the heat exchange efficiency of the evaporator 200 and the condenser 300.

[0018] According to the air duct shell 100 for the dryer according to the embodiment of the present disclosure, the liquid drainage groove 11 is formed on the inner surface of the bottom wall of the body 10, and the partition plate 20 cooperates with the body 10 to define the liquid drainage channel 12, so that the liquid drainage channel 12 is integrally formed in the air duct shell 100, which can effectively avoid the leakage of the condensed water and the air, thereby improving the drying efficiency of the dryer. In addition, the air duct shell 100 has a simple structure, is easily to be processed, and can avoid the back-flow of the condensed water.

[0019] In some embodiments, the body 10 may be a foamed member such as a foamed plastic, a foamed rubber, or the like. Therefore, it is beneficial to improve a thermal insulation effect of the air duct shell 100 while reducing a weight of the air duct shell 100.

[0020] In some embodiments, the body 10 may include an upper housing and a lower housing. Here, the liquid drainage groove 11 and the liquid guide groove 13 are defined on an inner surface of a bottom wall of the lower housing, and the liquid drainage channel 12 is defined by the partition plate 20 together with the lower housing. In order to facilitate an illustration of an internal structures of the air duct shell 100, such as the liquid drainage channel 12 and the liquid guide groove 13, only the lower housing is shown in FIGS. 1 to 3 without showing the upper housing

[0021] The applicant has researched and found that when the dryer runs for a long time, although there is a filter to filter dander or clothes generated during drying the laundry, small clothes or the dander may inevitably enter the air duct. After entering the air duct, the small clothes or the dander will be accumulated on a front end surface of the evaporator 200 for a long time. If not cleaned, large dander or clothes will be formed, and then

fall on the liquid guide groove 13 or the partition plate 20. The accumulation of the dander or clothes falling on the liquid guide groove 13 or the partition plate 20 would block the liquid guide groove 13, so that the condensed water can not flow into the liquid drainage channel 12 smoothly. In addition, after the liquid guide groove 13 is blocked, a water level of the condensed water will rise, and the heat exchanger (including the evaporator 200 and the condenser 300) would be soaked, which can reduce a heat exchange capacity and affect the performance of the whole machine. Thus, the drying time of the laundry is prolonged, and the power consumption is increased.

[0022] Therefore, in some embodiments of the present disclosure, as shown in FIG. 1 and FIG. 2, the first chamber 110 has a plurality of liquid guide grooves 13 defined on a bottom wall thereof and arranged in an airflow direction. In addition, at least one liquid guide groove 13 is in communication with the liquid drainage channel 12 through a liquid passage port 14, and at least two adjacent liquid guide grooves 13 are in communication with each other through a communication port 15.

[0023] When one of the liquid guide grooves 13 is blocked by the accumulated dander or clothes, the condensed water in the liquid guide groove 13 may flow into the adjacent liquid guide groove 13 through the communication port 15 so as to smoothly enter the liquid drainage channel 12 through the adjacent liquid guide groove 13, which can reduce or avoid the reduction of the heat exchange capacity of the heat exchanger due to the blockage of the liquid guide groove 13. Thus, it is beneficial to ensure the performance of the whole machine, shorten the drying time of laundry, and reduce the power consumption.

[0024] According to the air duct shell 100 for the dryer according to the embodiment of the present disclosure, at least two adjacent liquid guide grooves 13 are in communication with each other through the communication port 15. After the whole machine is used for a long time, the liquid guide groove 13 may be blocked due to the accumulation of the dander or debris, the condensed water can flow into the adjacent liquid guide groove 13 through the communication port 15, so as to be smoothly discharged into the liquid drainage channel 12 through the adjacent liquid guide groove 13. Thus, it can effectively reduce or avoid the heat exchange capacity of the heat exchanger due to the rise of the condensed water level, which is beneficial to improve the performance of the whole machine, reduce the drying time of the laundry, and reduce the power consumption.

[0025] It should be noted that, in the embodiment of the present disclosure, among the plurality of liquid guide grooves 13, two adjacent liquid guide grooves 13 may be in communication with each other through the communication port 15, so as to reduce the risk of reducing the heat exchange capacity of the heat exchanger due to the blockage of the liquid guide groove 13. Or as shown in FIG. 1 and FIG. 2, any two adjacent liquid guide grooves 13 may be in communication with each other

through the communication port 15, so that when any one of the liquid guide grooves 13 is blocked, the condensed water can flow into the adjacent liquid guide groove 13 through the communication port 15 to be discharged, which can greatly reduce the risk of reducing the heat exchange capacity of the heat exchanger due to the blockage of the liquid guide groove 13.

[0026] In addition, with continued reference to refer to FIG. 1 and FIG. 2, any two adjacent liquid guide grooves 13 are in communication with each other through at least one communication port 15. In an embodiment in which any two adjacent liquid guide grooves 13 are in communication with each other through a plurality of communication ports 15, a communication effect of the two adjacent liquid guide grooves 13 is good, so that the condensed water can flow between the two liquid guide grooves 13 from a plurality of positions, which can effectively avoid the risk of reducing the heat exchange capacity of the heat exchanger due to the blockage of the liquid guide groove 13.

[0027] According to some embodiments of the present disclosure, as shown in FIGS. 1 to 3, the first chamber 110 has at least one liquid leakage hole 21 defined on a bottom wall thereof. The first chamber 110 and the liquid drainage channel 12 are in communication with each other by the at least one liquid leakage hole 21. The condensed water may also flow directly from the first chamber 110 to the liquid drainage channel 12 through the liquid leakage hole 21 to be discharged through the liquid drainage channel 12. Therefore, after the liquid guide groove 13 is blocked, when the condensed water can not flow to the liquid drainage channel 12 through the liquid guide groove 13, it may be discharged through the liquid leakage hole 21, so as to avoid the reduction of the heat exchange capacity of the heat exchanger due to the rise of the level of the condensed water, which is beneficial to improve the performance of the whole machine and reduce the drying time of laundry.

[0028] It should be noted that, in the embodiment of the present disclosure, the air duct shell 100 may have both the communication port 15 and the liquid leakage hole 21, or only have one of the communication port 15 and the liquid leakage hole 21, which both can reduce the risk of blocking the liquid guide groove 13 and reducing the heat exchange capacity of the heat exchanger. In the embodiment in which the air duct shell 100 has both the communication port 15 and the liquid leakage hole 21, the communication port 15 and the liquid leakage hole 21 cooperates with each other to avoid the reduction of the heat exchange capacity of the heat exchanger better.

[0029] In some embodiments, as shown in FIG. 1 and FIG. 2, a plurality of liquid leakage holes 21 is provided and arranged in the airflow direction. The plurality of liquid leakage holes 21 can discharge the condensed water in a wider range in the airflow direction with a high discharging efficiency. It should be noted that three liquid leakage holes 21 in FIGS. 1 to 3 is only for the purpose of illus-

tration, and in other embodiments, the liquid leakage hole 21 may include two, four or more liquid leakage holes. In other words, two or more liquid leakage holes 21 may be provided.

[0030] According to some embodiments of the present disclosure, as shown in FIG. 3, the liquid leakage hole 21 is defined directly above the liquid drainage channel 12. As shown in FIG. 2, the liquid leakage hole 21 is located between the liquid guide groove 13 and a side wall of the first chamber 110, and is not easy to be blocked by dander or laundry. After the liquid guide groove 13 is blocked, the condensed water overflows from the liquid guide groove 13 and may flow into the liquid leakage hole 21 more smoothly, and then smoothly leaks from the liquid leakage hole 21 to the liquid drainage channel 12, and the liquid drainage efficiency is thus higher.

[0031] In the embodiment in which the air duct shell 100 includes the body 10 and the partition plate 20, as shown in FIGS. 1 to 3, the liquid leakage hole 21 may be defined on the partition plate 20. On the one hand, the liquid leakage hole 21 is directly in communication with the liquid drainage channel 12, and the liquid drainage is thus smoother. On the other hand, the liquid leakage hole 21 is easier to be processed, which is beneficial to reduce the difficulty of the processing technology.

[0032] In some embodiments of the present disclosure, as shown in FIGS. 1 to 3, a bottom wall of the first chamber 110 is formed by a part of the partition plate 20, and a bottom wall of the second chamber 120 is formed by the other part of the partition plate 20. The partition plate 20 has at least one liquid leakage hole 21 defined thereon and in communication with the liquid drainage channel 12. Thus, the liquid drainage channel 12 can have a longer extending length, which is beneficial to avoid the backflow of the condensed water in the liquid drainage channel 12.

[0033] Further, with continued reference to refer FIGS. 1 to 3, the liquid leakage hole 21 is formed on the bottom wall of the first chamber 110. That is, the liquid leakage hole 21 is formed on a part of the partition plate 20, so that the condensed water in the first chamber 110 can smoothly flow into the liquid drainage channel 12 through the liquid leakage hole 21, and the condensed water in the liquid drainage channel 12 can flow to the second chamber 120 from the first chamber 110. Thus, it is beneficial to avoid the backflow of the condensed water in the liquid drainage channel 12.

[0034] The applicant's research has found that during the operation of the dryer, a negative pressure is generated in each of the first chamber 110 and the second chamber 120, and the liquid drainage channel 12 is in communication with outside, so that the liquid drainage channel 12 is at atmospheric pressure. During the operation, after the hot wet air passes through the evaporator 200 to condense the water vapor in the hot wet air into the condensed water, the condensed water flows into a sump or is discharged along the liquid drainage channel 12 (as shown by the arrows from front to back in the liquid

drainage channel 12 in FIG. 3). In an actual process, since a pressure difference is generated between the liquid drainage channel 12 and the first chamber 110, the condensed water will be sucked into the first chamber 110 in a direction of the backflow water (as shown by the arrow from the back to the front in the liquid drainage channel 12 in FIG. 3). The condensed water at the liquid passage port 14 would boil due to a large local pressure difference, and even enter the second chamber 120. The sucked condensed water will affect the heat exchange efficiency of the heat exchanger, thereby affecting the performance of the whole machine, which makes the drying time longer and increases the energy consumption.

[0035] Therefore, in some embodiments of the present disclosure, as shown in FIG. 1 and FIG. 2, the plurality of liquid guide grooves 13 include at least one first liquid guide groove 131 and at least one second liquid guide groove 132. The second liquid guide groove 132 is located on a side of the first liquid guide groove 131 close to the second chamber 120, i.e., located at a downwind side of the first liquid guide groove 131. In other words, the second chamber 120 is located at the downwind side of the first chamber 110 in the airflow direction, and the plurality of liquid guide grooves 13 include the first liquid guide grooves 131 and the second liquid guide grooves 132 arranged in the airflow direction. In other words, when one or more second liquid guide grooves 132 and one or more first liquid guide grooves 131 are provided, the second liquid guide grooves 132 are all located on a side of all the first liquid guide grooves 131 close to the second chamber 120. For example, in the example shown in FIG. 1 and FIG. 2, the air flow in the air duct shell 100 flows from the front to the back. The second chamber 120 is located at a rear side of the first chamber 110, and two second liquid guide grooves 132 are all located at the rear side of three first liquid guide grooves 131.

[0036] The first liquid guide groove 131 is in communication with the liquid drainage channel 12 through the liquid passage port 14, and the second liquid guide groove 132 is in communication with the liquid drainage channel 12 through the first liquid guide groove 131. That is, the condensed water in the first liquid guide groove 131 can be directly discharged into the liquid drainage channel 12 through the liquid passage port 14, and the condensed water in the second liquid guide groove 132 needs to flow to the first liquid guide groove 131 first and then is discharged into the liquid drainage channel 12 through the liquid passage port 14. Similarly, when the condensed water flows back due to the pressure difference, under the limitation of the pressure difference, the returned condensed water will only flow back to the first liquid guide groove 131 without directly or indirectly flowing back into the second liquid guide groove 132 closer to the second chamber 120, thereby preventing the backflow condensed water from entering the second chamber 120 to ensure the heat exchange efficiency of the condenser 300 in the second chamber 120. Thus, it is pos-

sible to solve the problem of the long drying time of the whole machine and high energy consumption.

[0037] For example, in the example shown in FIG. 1 and FIG. 2, an end of the first liquid guide groove 131 close to the liquid drainage channel 12 is in communication with the liquid drainage channel 12 through the liquid passage port 14, and an end of the second liquid guide groove 132 close to the liquid drainage channel 12 is closed. In addition, a middle part of the second liquid guide groove 132 is in communication with the liquid drainage channel 12 through the first liquid guide groove 131. A distance between the connection between the second liquid guide groove 132 and the first liquid guide groove 131 and the liquid passage port 14 is larger, so that even if the condensed water flows back into the first liquid guide groove 131 through the liquid passage port 14, the condensed water can not easily enter the second liquid guide groove 131, so as to prevent the condensed water in the second liquid guide groove 132 from overflowing, thereby avoiding the condensed water from flowing into the second chamber 120.

[0038] It should be noted that, the phrase "a middle part of the second liquid guide groove 132 is in communication with the liquid drainage channel 12 through the first liquid guide groove 131" herein means that a part of the second liquid guide groove 132 except for an end thereof close to the liquid drainage channel 12 and an end thereof away from the liquid drainage channel 12 is in communication with the liquid drainage channel 12 through the first liquid guide groove 131, rather than meaning that the second liquid guide groove 132 is in communication with the first liquid guide groove 131 through either end thereof. For example, in some embodiments, the two ends of the second liquid guide groove 132 are arranged perpendicular to the airflow direction, and the second liquid guide groove 132 has two side groove walls that are opposite to and spaced apart from each other in the airflow direction. Each of the side groove walls of the second liquid guide groove 132 has a communication port defined thereon and in communication with the first liquid guide groove 131. The communication port is located between the two ends of the second liquid guide groove 132, i.e., in the middle part of the second liquid guide groove 132. Thus, the middle part of the second liquid guide groove 132 is in communication with the liquid drainage channel 12 through the first liquid guide groove 131.

[0039] In some embodiments, referring to FIG. 2, one end (e.g., the right end shown in FIG. 2) of the first liquid guide groove 131 extends to the side wall of the first chamber 110, and the other end (e.g., the left end shown in FIG. 2) of the first liquid guide groove 131 is in communication with the liquid drainage channel 12 through the liquid passage port 14. In addition, one end (e.g., the right end shown in FIG. 2) of the second liquid guide groove 132 extends to the side wall of the first chamber 110, and the other end (e.g., the left end shown in FIG. 2) of the second liquid guide groove 132 is closed. Further, the middle part of the second liquid guide groove

132 is in communication with the first liquid guide groove 131 through the communication port 15. The one end of the first liquid guide groove 131 and the one end of the second liquid guide groove 132 extend to the side wall of the first chamber 110, so that the liquid guide groove 13 can collect the condensed water from a larger range. The condensed water in the first chamber 110 thus can flow to the liquid drainage channel 12 in time, so as to prevent the heat exchange efficiency of the heat exchanger from being reduced due to the rising of the level of the condensed water in the first chamber 110.

[0040] According to the air duct shell 100 for the dryer according to the embodiment of the present disclosure, by providing the first liquid guide groove 131 and the second liquid guide groove 132, when the condensed water returns, it is difficult for the condensed water to enter the second liquid guide groove 132 and the second chamber 120, effectively preventing the condenser 300 in the second chamber 120 from being soaked in the water to reduce the heat exchange efficiency. Thus, the performance of the whole machine can be improved, and the drying time can be shortened with lower energy consumption.

[0041] In the embodiment in which the liquid leakage hole 21 is included, as shown in FIGS. 1 and 2, the liquid leakage hole 21 may be located directly above a part of the liquid drainage channel 12 close to the first liquid guide groove 131. In other words, the liquid leakage hole 21 is located on sides, close to the liquid drainage channel 12, of some of the plurality of liquid guide grooves 13 facing away from the second chamber 120. Therefore, even if the condensed water flows back through the liquid leakage hole 21 or boils at the liquid leakage hole 21, the returned condensed water can not easily enter the second liquid guide groove 132 and the second chamber 120, which further avoids the reduction of the heat exchange efficiency of the heat exchanger in the second chamber 120, thereby improving the performance of the whole machine.

[0042] A structure of each of the first liquid guide groove 131 and the second liquid guide groove 132 will be described below with reference to the accompanying drawings.

[0043] In some embodiments, one second liquid guide groove 132 and a plurality of first liquid guide grooves 131 are provided. The second liquid guide groove 132 is in communication with one of the plurality of first liquid guide grooves 131 adjacent to the second liquid guide groove 132 through at least one first communication port 151, so that the condensed water in the second liquid guide groove 132 can enter the adjacent first liquid guide groove 131 through the first communication port 151 and then be discharged into the liquid drainage channel 12 through the first liquid guide groove 131.

[0044] In other embodiments, as shown in FIG. 1 and FIG. 2, a plurality of second liquid guide grooves 132 is provided and arranged in the airflow direction, and one or more first liquid guide groove 131 is provided. The first

liquid guide groove 131 and the second liquid guide groove 132 that are arranged adjacent to each other are in communication with each other through at least one first communication port 151, and two adjacent second liquid guide grooves 132 are in communication with each other through at least one second communication port 152. Thus, the condensed water in the second liquid guide groove 132 close to the second chamber 120 can enter the second liquid guide groove 132 adjacent thereto and close to the first liquid guide groove 131 through the second communication port 152, and the condensed water in this second liquid guide groove 132 further enters the adjacent first liquid guide groove 131 through the first communication port 151, and then is discharged into the liquid drainage channel 12 through the first liquid guide groove 131.

[0045] According to some embodiments of the present disclosure, the two adjacent second communication ports 152 in the airflow direction are staggered in a length direction of the second liquid guide groove 132. After entering one of the second liquid guide grooves 132, the returned condensed water can not easily flow to other second liquid guide grooves 132 through the second communication port 152, thereby reducing the risk of the returned condensed water entering the second liquid guide groove 132 and the second chamber 120. Taking three second liquid guide grooves 132 as an example, the three second liquid guide grooves 132 may be arranged in the front-rear direction and extend in the left-right direction, and the second communication port 152 for communicating the front second liquid guide groove 132 with the middle second liquid guide groove 132, and the second communication port 152 for communicating the middle second liquid guide groove 132 with the rear second liquid guide groove 132 are staggered with each other in a length direction of the second liquid guide groove 132 (i.e., the left-right direction). That is, a projection of the second communication port 152 for communicating the front second liquid guide groove 132 with the middle second liquid guide groove 132 does not at least partially overlap with a projection of the second communication port 152 for communicating the middle second liquid guide groove 132 with the rear second liquid guide groove 132.

[0046] According to some embodiments of the present disclosure, as shown in FIG. 2, the first communication port 151 close to the liquid drainage channel 12 and the second communication port 152 close to the liquid drainage channel 12 has a gradually increased distance from the liquid drainage channel 12 in the airflow direction, so that the first communication port 151 and the second communication port 152 that are close to the liquid drainage channel 12 are arranged in a stepped manner, and are spaced apart from the liquid drainage channel 12 by a predetermined distance. Even if the condensate water flows back or boils at the liquid passage port 14, the condensed water in the first liquid guide groove 131 can not easily enter the adjacent second liquid guide groove 132

through the first communication port 151. In addition, even if the condensed water in the first liquid guide groove 131 enters the second liquid guide groove 132 through the first communication port 151, it can not easily further enter the second liquid guide groove 132 closer to the second chamber 120 through the second communication port 152, thereby effectively reducing the risk of condensed water entering the second chamber 120 and ensuring the heat exchange efficiency of the condenser 300 in the second chamber 120.

[0047] For example, in the example shown in FIG. 2, two second liquid guide grooves 132 are provided and in communication with each other through one second communication port 152. Further, one of the two second liquid guide grooves 132 is in communication with the adjacent first liquid guide groove 131 through one first communication port 151, and a distance between this first communication port 151 and the liquid drainage channel 12 is smaller than a distance between the second communication port 152 and the liquid drainage channel 12. In other embodiments, three second liquid guide grooves 132 are provided. The rear second liquid guide groove 132 and the middle second liquid guide groove 132 are in communication with each other through one second communication port 152 (referred to as a rear second communication port 152), the middle second liquid guide groove 132 and the front side second liquid guide groove 132 are in communication with each other through one second communication port 152 (referred to as a front side second communication port 152), and the front side second liquid guide groove 132 and the adjacent first liquid guide groove 131 are in communication with each other through one first communication port 151. Further, a distance between the first communication port 151 and the liquid drainage channel 12, a distance between the front side second communication port 152 and the liquid drainage channel 12, and a distance between the rear side second communication port 152 and the liquid drainage channel 12 are increased gradually. According to the above description, it should be understood by those skilled in the art that more than one second liquid guide grooves 132, more than one first communication ports 151, and more than one second communication ports 152 may be provided.

[0048] According to some embodiments of the present disclosure, one first liquid guide groove 131 may be provided, or as shown in FIG. 2, a plurality of first liquid guide grooves 131 may be provided and arranged in the airflow direction. Two adjacent first liquid guide grooves 131 are in communication with each other through at least one third communication port 153. Therefore, when one of the first liquid guide grooves 131 is blocked by the dander or laundry, the condensed water in this first liquid guide groove 131 may enter the adjacent first liquid guide groove 131 through the third communication port 153, and then is discharged to the liquid drainage channel 12. Thus, it is possible to prevent the heat exchange efficiency of the heat exchanger from being reduced due to the

blockage of the first liquid guide groove 131.

[0049] In some embodiments of the present disclosure, as shown in FIG. 1 and FIG. 2, the adjacent third communication ports 153 in the airflow direction are staggered with each other in a length direction of the first liquid guide groove 131. The staggered third communication ports 153 can communicate the plurality of first liquid guide grooves 131 in a greater range, and a flow path of the condensate water is more complicated, which reduces a risk of the adjacent third communication ports 153 being blocked in the airflow direction at the same time, so the condensed water can be discharged more smoothly. Taking three first liquid guide grooves 131 as an example, the three first liquid guide grooves 131 may be arranged in the front-rear direction and extend in the left-right direction, the third communication port 153 for communicating the front first liquid guide groove 131 and the middle first liquid guide groove 131 and the third communication port 153 for communicating the middle first liquid guide groove 131 and the rear first liquid guide groove 131 are staggered with each other in the length direction of the first liquid guide groove 131 (i.e., the left-right direction). That is, a projection of the third communication port 153 for communicating the front first liquid guide groove 131 and the middle first liquid guide groove 131 does not at least partially overlap with a projection of the third communication port 153 for communicating the middle first liquid guide groove 131 and the rear first liquid guide groove 131 in the airflow direction.

[0050] According to some embodiments of the present disclosure, as shown in FIG. 1 and FIG. 2, each liquid guide groove 13 extends perpendicularly to the airflow direction. That is, the length direction of the liquid guide groove 13 is perpendicular to the airflow direction. One end of at least one liquid guide groove 13 in its length direction is in communication with the liquid drainage channel 12 through the liquid passage port 14, so that the condensed water in the liquid guide groove 13 can be discharged into the liquid drainage channel 12 through the liquid passage port 14. Sides of the two adjacent liquid guide grooves 13 in their width directions are in communication with each other through the communication port 15, so that when one of the liquid guide grooves 13 is blocked by the dander or laundry, the condensed water can enter the adjacent liquid guide groove 13 through the communication port 15 and then be discharged into the liquid drainage channel 12, thereby reducing or avoiding an influence on the heat exchange efficiency of the heat exchanger.

[0051] For example, in the embodiment in which the plurality of liquid guide grooves 13 includes a first liquid guide groove 131 and a second liquid guide groove 132, as shown in FIG. 2, the first liquid guide groove 131 and the second liquid guide groove 132 extend perpendicular to the airflow direction, respectively, and an end, facing away from the liquid drainage channel 12, of each of the first liquid guide groove 131 and the second liquid guide groove 132 extends to the side wall of the air duct shell

100, so that the condensed water in the first chamber 110 can be fully collected into the first liquid guide groove 131 and the second liquid guide groove 131, and is smoothly guided to the liquid drainage channel 12, thereby improving the efficiency of draining the condensed water.

[0052] According to some embodiments of the present disclosure, as shown in FIG. 3, the liquid drainage channel 12 extends in the airflow direction, and at least one liquid guide groove 13 is in communication with a liquid inlet end of the liquid drainage channel 12 through the liquid passage port 14 (for example, as shown in FIG. 3). For example, the first liquid guide groove 131 is in communication with the liquid inlet end of the liquid drainage channel 12 through the liquid passage port 14. After entering the liquid drainage channel 12 through the liquid passage port 14, the condensed water flows in the airflow direction to be discharged to the water collecting tank or outside. Thus, the liquid drainage channel 12 has a longer extending length, which is beneficial to solve the problem of the backflow of the condensed water.

[0053] According to some embodiments of the present disclosure, as shown in FIGS. 1 to 3, the air duct shell 100 has a blocking rib 30 provided on the bottom wall thereof and separating the first chamber 110 from the second chamber 120. The blocking rib 30 with a predetermined height can prevent the condensed water flowing back to the first chamber 110 from flow therethrough in a tumbling manner, so that the condensed water is completely blocked in the first chamber 110 to ensure the heat exchange efficiency of the condenser 300 in the second chamber 120. Thus, it is possible to solve the problems of long drying time and high energy consumption of the whole machine.

[0054] In some embodiments of the present disclosure, as shown in FIG. 2, both ends of the blocking rib 30 are respectively connected to two opposite side walls of the air duct shell 100. For example, both ends of the blocking rib 30 are respectively connected to a left side wall and a right side wall shown in FIG. 2, so as to enable the blocking rib 30 to block the condensed water in a greater range. When the condensed water in the first chamber 110 is distributed perpendicular to the airflow direction in a greater range due to the blockage of the liquid guide groove 13 or too much returned condensed water, the blocking rib 30 can still provide a good blocking effect to ensure the heat exchange efficiency of the condenser 300 in the second chamber 120.

[0055] According to some embodiments of the present disclosure, a top of the blocking rib 30 is lower than a heat exchange tube of the evaporator 200 and/or the condenser 300 close to the bottom wall of the air duct shell 100. On the one hand, the blocking rib 30 can block the condensed water from entering the second chamber 120. On the other hand, a resistance of the blocking rib 30 to the airflow can be reduced, so that an airflow in the first chamber 110 can smoothly flow cross the blocking rib 30 as shown by the arrows in FIG. 3 and then enter

the second chamber 120. The blocking rib 30 basically has no effect on the heat exchange efficiency between the heat exchange tube of the evaporator 200 and/or the condenser 300 and the air, which ensures the heat exchange efficiency.

[0056] In the embodiment in which the air duct shell 100 includes the body 10 and the partition plate 20, as shown in FIG. 1 and FIG. 2, the body 10 has a first blocking rib 31 on the inner surface of the bottom wall thereof, and the partition plate 20 has a second blocking rib 32 on an upper surface thereof. The first blocking rib 31 and the second blocking rib 32 are connected to each other to form the blocking rib 30 for separating the first chamber 110 from the second chamber 120, and the blocking rib 30 thus is easier to be processed. For example, in some embodiments, the first blocking rib 31 may be integrally formed with the bottom wall of the body 10, and the second blocking rib 32 may be integrally formed with the partition plate 20, which can not only improve the reliability and tightness of the connection between the blocking rib 30 and the bottom wall of the air duct shell 100, and the installation of the blocking ribs 30 can be realized while the partition plate 20 is installed, thereby reducing the assembly process.

[0057] In some embodiments of the present disclosure, as shown in FIGS. 1 to 3, one or more second blocking rib 32 is provided, and a plurality of second blocking ribs 32 is arranged at intervals in a width direction thereof. That is, the plurality of second blocking ribs 32 is arranged at intervals in an arrangement direction of the first chamber 110 and the second chamber 120. A predetermined gap is formed between two adjacent second blocking ribs 32, so that a plurality of second blocking ribs 32 is formed as a multi-layer blocking barrier. If the level of the condensed water in the first chamber 110 is higher than a height of the second blocking rib 32, after passing across the first second blocking rib 32 close to the first chamber 110, the condensed water will flow to the gap between the two second blocking ribs, and is blocked by the second blocking rib 32. When the blocking rib 30 has a predetermined height, a better blocking effect of the condensed water can be achieved.

[0058] The dryer according to the embodiment of the present disclosure includes the air duct shell 100 for the dryer according to the embodiment of the present disclosure. Since the air duct shell 100 for the dryer according to the embodiment of the present disclosure has the above beneficial technical effects, according to the dryer according to the embodiment of the present disclosure, by defining the liquid drainage groove 11 on the inner surface of the bottom wall of the body 10, the integral partition plate 20 is engaged with the body 10 to define the liquid drainage channel 12, so that the liquid drainage channel 12 is integrally formed in the air duct shell 100, which effectively avoids the leakage of the condensed water and air. Thus, it is beneficial to improve the drying efficiency of the dryer, and the air duct shell 100 has a simple structure, and is easily to be processed. In addition,

it is possible to avoid the backflow of the condensed water.

[0059] Other configurations and operations of the dryer and the air duct shell 100 according to the embodiments of the present disclosure are known to those of ordinary skill in the art, and will not be described in detail herein.

[0060] In the description of this specification, descriptions with reference to the terms "an embodiment", "some embodiments", "exemplary embodiment", "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.

Claims

1. An air duct shell (100) for a dryer, the air duct shell (100) having a first chamber (110) and a second chamber (120), wherein an evaporator (200) is mounted in the first chamber (110), and wherein a condenser (300) is mounted in the second chamber (120), the air duct shell (100) comprising:

a body (10) having a liquid drainage groove (11) and a liquid guide groove (13) that are defined on an inner surface of a bottom wall thereof; and a partition plate (20) configured to cover and seal an opening of the liquid drainage groove (11) to define a liquid drainage channel (12) together with the body (10), the liquid guide groove (13) being in communication with the first chamber (110) and the liquid drainage channel (12), wherein:

the second chamber (120) is located at a downwind side of the first chamber (110) in an airflow direction;

the liquid guide groove (13) comprises at least one first liquid guide groove (131) and at least one second liquid guide groove (132) that are arranged in the airflow direction, the at least one second liquid guide groove (132) being located at a downwind side of the at least one first liquid guide groove (131);

an end of the at least one first liquid guide groove (131) close to the liquid drainage channel (12) is in communication with the liquid drainage channel (12) through a liquid passage port (14);

an end of the at least one second liquid

guide groove (132) close to the liquid drainage channel (12) is closed; and
a middle part of the at least one second liquid guide groove (132) is in communication with the liquid drainage channel (12) through the first liquid guide groove (131), wherein:

the at least one second liquid guide groove (132) comprises a plurality of second liquid guide grooves (132) arranged in the airflow direction;
the at least one first liquid guide groove (131) and one of the plurality of second liquid guide grooves (132) adjacent to the at least one first liquid guide groove (131) are in communication with each other through at least one first communication port (151); and
two adjacent second liquid guide grooves (132) of the plurality of second liquid guide grooves (132) are in communication with each other through at least one second communication port (152), and two adjacent second communication ports (152) in the airflow direction are staggered with each other in a length direction of each of the plurality of second liquid guide grooves (132).

2. The air duct shell (100) for the dryer according to claim 1, wherein:

the body (10) comprises a first blocking rib (31) disposed on the inner surface of the bottom wall thereof;
the partition plate comprises at least one second blocking rib (32) disposed on an upper surface thereof; and
the first blocking rib (31) is connected to the at least one second blocking rib (32) to separate the first chamber (110) from the second chamber (120).

3. The air duct shell (100) for the dryer according to claim 2, wherein the at least one second blocking rib comprises one second blocking rib, or a plurality of the second blocking ribs arranged at intervals in a width direction thereof.

4. The air duct shell (100) for the dryer according to any one of claims 1 to 3, wherein:

a bottom wall of the first chamber is formed by a part of the partition plate;
a bottom wall of the second chamber is formed by another part of the partition plate; and

the partition plate has at least one liquid leakage hole defined thereon and in communication with the liquid drainage channel.

5. The air duct shell (100) for the dryer according to claim 4, wherein the at least one liquid leakage hole (21) is defined on the bottom wall of the first chamber (110).

6. The air duct shell (100) for the dryer according to claim 1, wherein the at least one first communication port (151) close to the liquid drainage channel (12) and the at least one second communication port (152) close to the liquid drainage channel (12) have a gradually increased distance from the liquid drainage channel (12) in the airflow direction.

7. The air duct shell (100) for the dryer according to claim 1 or 6, wherein:

the at least one first liquid guide groove (131) comprises one first liquid guide groove (131); or
the at least one first liquid guide groove (131) comprises a plurality of first liquid guide grooves (131) arranged in the airflow direction, two adjacent first liquid guide grooves (131) of the plurality of first liquid guide grooves (131) being in communication with each other through at least one third communication port (153).

8. The air duct shell (100) for the dryer according to claim 7, wherein adjacent third communication ports (153) adjacent to each other in the airflow direction are staggered with each other in a length direction of each first liquid guide groove (131).

9. The air duct shell (100) for the dryer according to any one of claims 1, 6 to 8, wherein:

the at least one first liquid guide groove (131) and the at least one second liquid guide groove (132) extend perpendicularly to the airflow direction; and
an end, facing away from the liquid drainage channel (12), of the at least one first liquid guide groove (131), and an end, facing away from the liquid drainage channel (12), of the at least one second liquid guide groove (132) extend to a side wall of the air duct shell.

10. The air duct shell (100) for the dryer according to any one of claims 1, 6 to 9, wherein:

the liquid drainage channel (12) extends in the airflow direction; and
the at least one first liquid guide groove (131) is in communication with a liquid inlet end of the liquid drainage channel (12) through the liquid

passage port (14).

11. A dryer, comprising the air duct shell (100) for the dryer according to any one of claims 1 to 10.

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Patentansprüche

1. Luftführungsmantel (100) für einen Trockner, wobei der Luftführungsmantel (100) eine erste Kammer (110) und eine zweite Kammer (120) aufweist, wobei in die erste Kammer (110) ein Verdampfer (200) und in die zweite Kammer (120) ein Verflüssiger (300) eingebaut ist, wobei der Luftführungsmantel (100) Folgendes umfasst:

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einen Hauptteil (10) mit einer Flüssigkeitsablauftrinne (11) und einer Flüssigkeitsleitrinne (13), die an einer Innenfläche einer Bodenwand davon definiert sind, und
eine Trennplatte (20), die so konfiguriert ist, dass sie eine Aussparung der Flüssigkeitsablauftrinne (11) bedeckt und abdichtet und so zusammen mit dem Hauptteil (10) einen Flüssigkeitsablaufkanal (12) definiert, wobei die Flüssigkeitsleitrinne (13) mit der ersten Kammer (110) und dem Flüssigkeitsablaufkanal (12) in Verbindung steht, wobei:

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sich die zweite Kammer (120) in Luftströmungsrichtung auf einer windabgewandten Seite der ersten Kammer (110) befindet, die Flüssigkeitsleitrinne (13) mindestens eine erste Flüssigkeitsleitrinne (131) und mindestens eine zweite Flüssigkeitsleitrinne (132) umfasst, die in Luftströmungsrichtung angeordnet sind, wobei sich die mindestens eine zweite Flüssigkeitsleitrinne (132) auf einer windabgewandten Seite der mindestens einen ersten Flüssigkeitsleitrinne (131) befindet, ein Ende der mindestens einen ersten Flüssigkeitsleitrinne (131) in der Nähe des Flüssigkeitsablaufkanals (12) über eine Flüssigkeitsdurchflussöffnung (14) mit dem Flüssigkeitsablaufkanal (12) in Verbindung steht, ein Ende der mindestens einen zweiten Flüssigkeitsleitrinne (132) in der Nähe des Flüssigkeitsablaufkanals (12) geschlossen ist und ein mittlerer Teil der mindestens einen zweiten Flüssigkeitsleitrinne (132) über die erste Flüssigkeitsleitrinne (131) mit dem Flüssigkeitsablaufkanal (12) in Verbindung steht, wobei:

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die mindestens eine zweite Flüssig-

keitsleitrinne (132) mehrere zweite Flüssigkeitsleitrinnen (132) umfasst, die in Luftströmungsrichtung angeordnet sind, die mindestens eine erste Flüssigkeitsleitrinne (131) und eine der mindestens einen ersten Flüssigkeitsleitrinne (131) benachbarte der mehreren zweiten Flüssigkeitsleitrinnen (132) über mindestens eine Verbindungsöffnung (151) miteinander in Verbindung stehen und zwei benachbarte zweite Flüssigkeitsleitrinnen (132) der mehreren zweiten Flüssigkeitsleitrinnen (132) über mindestens eine zweite Verbindungsöffnung (152) miteinander in Verbindung stehen und zwei in Luftströmungsrichtung benachbarte zweite Verbindungsöffnungen (152) in Längsrichtung jeder der mehreren zweiten Flüssigkeitsleitrinnen (132) zueinander versetzt angeordnet sind.

2. Luftführungsmantel (100) für den Trockner nach Anspruch 1, wobei:

der Hauptteil (10) eine erste Sperrrippe (31) umfasst, die an der Innenfläche der Bodenwand davon angeordnet ist, die Trennplatte mindestens eine zweite Sperrrippe (32) umfasst, die an einer oberen Fläche davon angeordnet ist, und die erste Sperrrippe (31) so mit der mindestens einen zweiten Sperrrippe (32) verbunden ist, dass die erste Kammer (110) von der zweiten Kammer (120) getrennt ist.

3. Luftführungsmantel (100) für den Trockner nach Anspruch 2, wobei die mindestens eine zweite Sperrrippe eine zweite Sperrrippe oder mehrere der zweiten Sperrrippen umfasst, die in Breitenrichtung davon in Abständen angeordnet sind.

4. Luftführungsmantel (100) für den Trockner nach einem der Ansprüche 1 bis 3, wobei:

eine Bodenwand der ersten Kammer von einem Teil der Trennplatte gebildet wird, eine Bodenwand der zweiten Kammer von einem weiteren Teil der Trennplatte gebildet wird und an der Trennplatte mindestens ein Flüssigkeitsaustrittsloch definiert ist, das mit dem Flüssigkeitsablaufkanal in Verbindung steht.

5. Luftführungsmantel (100) für den Trockner nach An-

spruch 4, wobei das mindestens eine Flüssigkeitsaustrittsloch (21) an der Bodenwand der ersten Kammer (110) definiert ist.

6. Luftführungsmantel (100) für den Trockner nach Anspruch 1, wobei die mindestens eine erste Verbindungsöffnung (151) in der Nähe des Flüssigkeitsablaufkanals (12) und die mindestens eine zweite Verbindungsöffnung (152) in der Nähe des Flüssigkeitsablaufkanals (12) in Luftströmungsrichtung immer weiter vom Flüssigkeitsablaufkanal (12) entfernt liegen. 5

7. Luftführungsmantel (100) für den Trockner nach Anspruch 1 oder 6, wobei: 10
 - die mindestens eine erste Flüssigkeitsleitrinne (131) eine erste Flüssigkeitsleitrinne (131) umfasst oder 15
 - die mindestens eine erste Flüssigkeitsleitrinne (131) mehrere erste Flüssigkeitsleitinnen (131) umfasst, die in Luftströmungsrichtung angeordnet sind, wobei zwei benachbarte erste Flüssigkeitsleitinnen (131) der mehreren ersten Flüssigkeitsleitinnen (131) über mindestens eine dritte Verbindungsöffnung (153) miteinander in Verbindung stehen. 20

8. Luftführungsmantel (100) für den Trockner nach Anspruch 7, wobei benachbarte dritte Verbindungsöffnungen (153), die in Luftströmungsrichtung nebeneinanderliegen, in Längsrichtung jeder ersten Flüssigkeitsleitrinne (131) zueinander versetzt angeordnet sind. 25

9. Luftführungsmantel (100) für den Trockner nach einem der Ansprüche 1 und 6 bis 8, wobei: 30
 - sich die mindestens eine erste Flüssigkeitsleitrinne (131) und die mindestens eine zweite Flüssigkeitsleitrinne (132) senkrecht zur Luftströmungsrichtung erstrecken und 35
 - sich ein vom Flüssigkeitsablaufkanal (12) wegweisendes Ende der mindestens einen ersten Flüssigkeitsleitrinne (131) und ein vom Flüssigkeitsablaufkanal (12) wegweisendes Ende der mindestens einen zweiten Flüssigkeitsleitrinne (132) bis zu einer Seitenwand des Luftführungsmantels erstrecken. 40

10. Luftführungsmantel (100) für den Trockner nach einem der Ansprüche 1 und 6 bis 9, wobei: 45
 - sich der Flüssigkeitsablaufkanal (12) in Luftströmungsrichtung erstreckt und 50
 - die mindestens eine erste Flüssigkeitsleitrinne (131) über die Flüssigkeitsdurchflussöffnung (14) mit einem 55

Flüssigkeitseinlassende des Flüssigkeitsablaufkanals (12) in Verbindung steht.

11. Trockner, der den Luftführungsmantel (100) für den Trockner nach einem der Ansprüche 1 bis 10 umfasst. 5

Revendications

1. Coque de conduit d'air (100) pour un sèche-linge, la coque de conduit d'air (100) ayant une première chambre (110) et une deuxième chambre (120), dans laquelle un évaporateur (200) est monté dans la première chambre (110), et dans laquelle un condensateur (300) est monté dans la deuxième chambre (120), la coque de conduit d'air (100) comportant : 10

un corps (10) ayant une rainure de vidange de liquide (11) et une rainure de guidage de liquide (13) qui sont définies sur une surface intérieure d'une paroi inférieure de celui-ci ; et 15

une plaque formant paroi de séparation (20) configurée pour recouvrir et sceller une ouverture de la rainure de vidange de liquide (11) pour définir un canal de vidange de liquide (12) conjointement avec le corps (10), la rainure de guidage de liquide (13) étant en communication avec la première chambre (110) et avec le canal de vidange de liquide (12), dans laquelle : 20

la deuxième chambre (120) est située au niveau d'un côté sous le vent de la première chambre (110) dans une direction allant dans le sens de l'écoulement d'air ; 25

la rainure de guidage de liquide (13) comporte au moins une première rainure de guidage de liquide (131) et au moins une deuxième rainure de guidage de liquide (132) qui sont agencées dans la direction allant dans le sens de l'écoulement d'air, ladite au moins une deuxième rainure de guidage de liquide (132) étant située au niveau d'un côté sous le vent de ladite au moins une première rainure de guidage de liquide (131) ; 30

une extrémité de ladite au moins une première rainure de guidage de liquide (131) à proximité du canal de vidange de liquide (12) est en communication avec le canal de vidange de liquide (12) par le biais d'un orifice de passage de liquide (14) ; 35

une extrémité de ladite au moins une deuxième rainure de guidage de liquide (132) à proximité du canal de vidange de liquide (12) est fermée ; et 40

une partie intermédiaire de ladite au moins

une deuxième rainure de guidage de liquide (132) est en communication avec le canal de vidange de liquide (12) par le biais de la première rainure de guidage de liquide (131),
dans laquelle :

ladite au moins une deuxième rainure de guidage de liquide (132) comporte une pluralité de deuxièmes rainures de guidage de liquide (132) agencées dans la direction allant dans le sens de l'écoulement d'air ;

ladite au moins une première rainure de guidage de liquide (131) et l'une de la pluralité de deuxièmes rainures de guidage de liquide (132) qui est adjacente par rapport à ladite au moins une première rainure de guidage de liquide (131) sont en communication l'une avec l'autre par le biais d'au moins un premier orifice de communication (151) ; et

deux deuxièmes rainures de guidage de liquide adjacentes (132) de la pluralité de deuxièmes rainures de guidage de liquide (132) sont en communication l'une avec l'autre par le biais d'au moins un deuxième orifice de communication (152), et deux deuxièmes orifices de communication adjacents (152) dans la direction allant dans le sens de l'écoulement d'air sont espacés de manière décalée l'un par rapport à l'autre dans une direction allant dans le sens de la longueur de chacune de la pluralité de deuxièmes rainures de guidage de liquide (132).

2. Coque de conduit d'air (100) pour le sèche-linge selon la revendication 1, dans laquelle :

le corps (10) comporte une première nervure de blocage (31) disposée sur la surface intérieure de la paroi inférieure de celui-ci ;

la plaque formant paroi de séparation comporte au moins une deuxième nervure de blocage (32) disposée sur une surface supérieure de celle-ci ; et

la première nervure de blocage (31) est raccordée à ladite au moins une deuxième nervure de blocage (32) pour séparer la première chambre (110) de la deuxième chambre (120).

3. Coque de conduit d'air (100) pour le sèche-linge selon la revendication 2, dans laquelle ladite au moins une deuxième nervure de blocage comporte une deuxième nervure de blocage, ou une pluralité des

deuxièmes nervures de blocage agencées selon des intervalles dans une direction allant dans le sens de la largeur de celles-ci.

4. Coque de conduit d'air (100) pour le sèche-linge selon l'une quelconque des revendications 1 à 3, dans laquelle :

une paroi inférieure de la première chambre est formée par une partie de la plaque formant paroi de séparation ;

une paroi inférieure de la deuxième chambre est formée par une autre partie de la plaque formant paroi de séparation ; et

la plaque formant paroi de séparation a au moins un trou de fuite de liquide défini sur celle-ci et en communication avec le canal de vidange de liquide.

5. Coque de conduit d'air (100) pour le sèche-linge selon la revendication 4, dans laquelle ledit au moins un trou de fuite de liquide (21) est défini sur la paroi inférieure de la première chambre (110).

6. Coque de conduit d'air (100) pour le sèche-linge selon la revendication 1, dans laquelle ledit au moins un premier orifice de communication (151) à proximité du canal de vidange de liquide (12) et ledit au moins un deuxième orifice de communication (152) à proximité du canal de vidange de liquide (12) ont une distance allant progressivement en augmentant depuis le canal de vidange de liquide (12) dans la direction allant dans le sens de l'écoulement d'air.

7. Coque de conduit d'air (100) pour le sèche-linge selon la revendication 1 ou la revendication 6, dans laquelle :

ladite au moins une première rainure de guidage de liquide (131) comporte une première rainure de guidage de liquide (131) ; ou

ladite au moins une première rainure de guidage de liquide (131) comporte une pluralité de premières rainures de guidage de liquide (131) agencées dans la direction allant dans le sens de l'écoulement d'air, deux premières rainures de guidage de liquide adjacentes (131) de la pluralité de premières rainures de guidage de liquide (131) étant en communication l'une avec l'autre par le biais d'au moins un troisième orifice de communication (153).

8. Coque de conduit d'air (100) pour le sèche-linge selon la revendication 7, dans laquelle des troisièmes orifices de communication adjacents (153) qui sont adjacents l'un par rapport à l'autre dans la direction allant dans le sens de l'écoulement d'air sont espacés de manière décalée l'un par rapport à l'autre dans

une direction allant dans le sens de la longueur de chaque première rainure de guidage de liquide (131).

9. Coque de conduit d'air (100) pour le sèche-linge selon l'une quelconque des revendications 1 et 6 à 8, dans laquelle :

ladite au moins une première rainure de guidage de liquide (131) et ladite au moins une deuxième rainure de guidage de liquide (132) s'étendent de manière perpendiculaire par rapport à la direction allant dans le sens de l'écoulement d'air ; et
une extrémité, orientée à l'opposé du canal de vidange de liquide (12), de ladite au moins une première rainure de guidage de liquide (13), et une extrémité, orientée à l'opposé du canal de vidange de liquide (12), de ladite au moins une deuxième rainure de guidage de liquide (132) s'étendent jusqu'à une paroi latérale de la coque de conduit d'air.

10. Coque de conduit d'air (100) pour le sèche-linge selon l'une quelconque des revendications 1 et 6 à 9, dans laquelle :

le canal de vidange de liquide (12) s'étend dans la direction allant dans le sens de l'écoulement d'air ; et
ladite au moins une première rainure de guidage de liquide (131) est en communication avec une extrémité d'entrée de liquide du canal de vidange de liquide (12) par le biais de l'orifice de passage de liquide (14).

11. Sèche-linge, comportant la coque de conduit d'air (100) pour le sèche-linge selon l'une quelconque des revendications 1 à 10.

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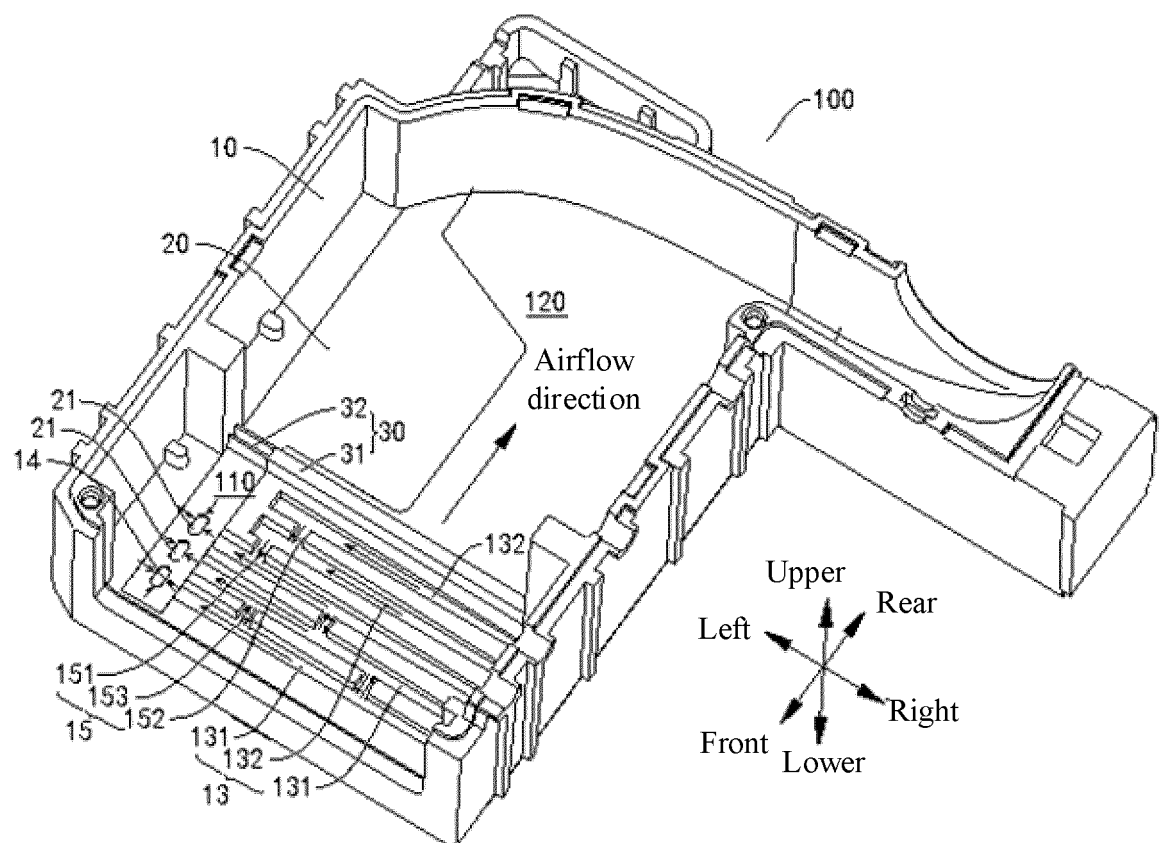


FIG. 1

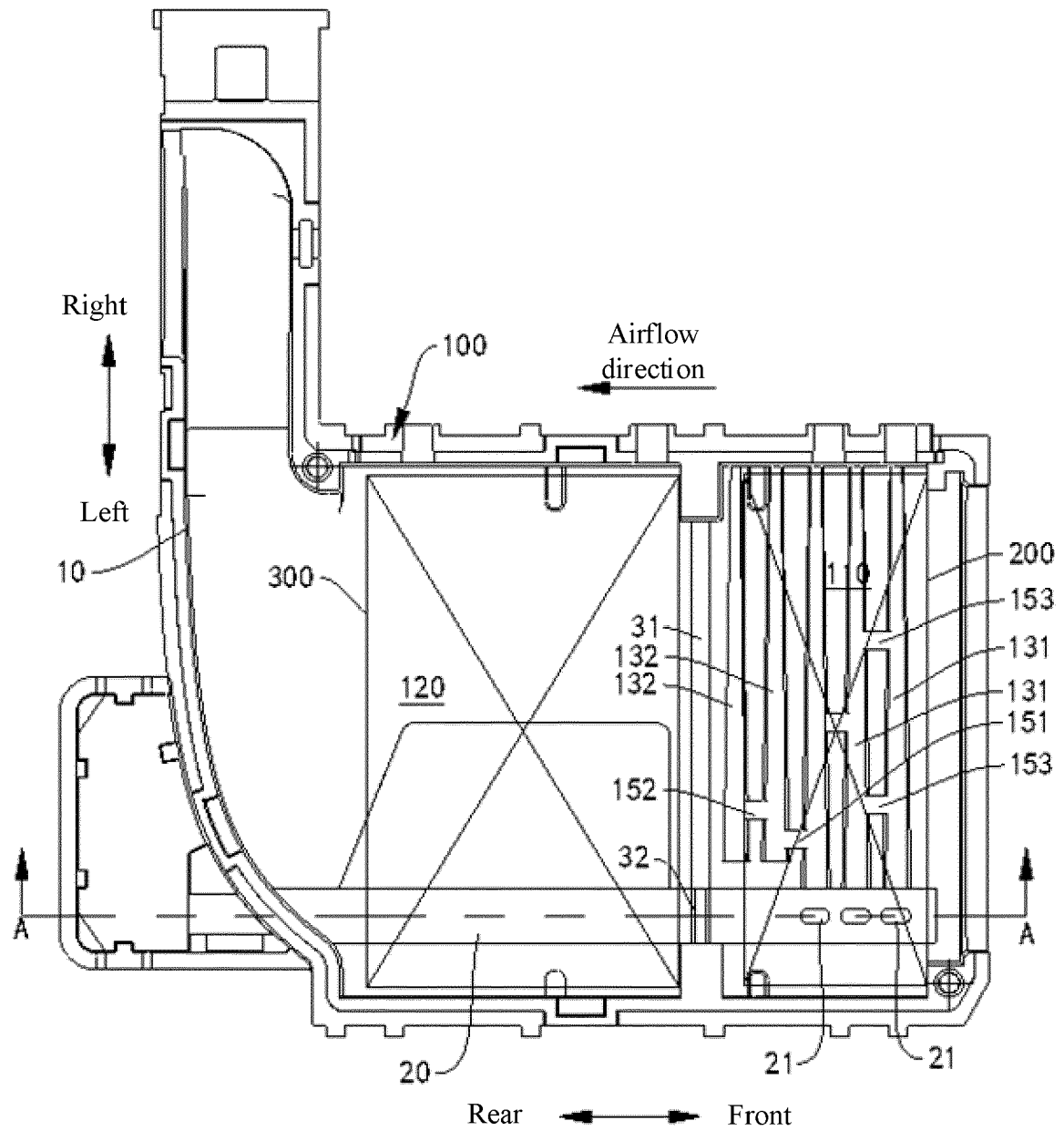


FIG. 2

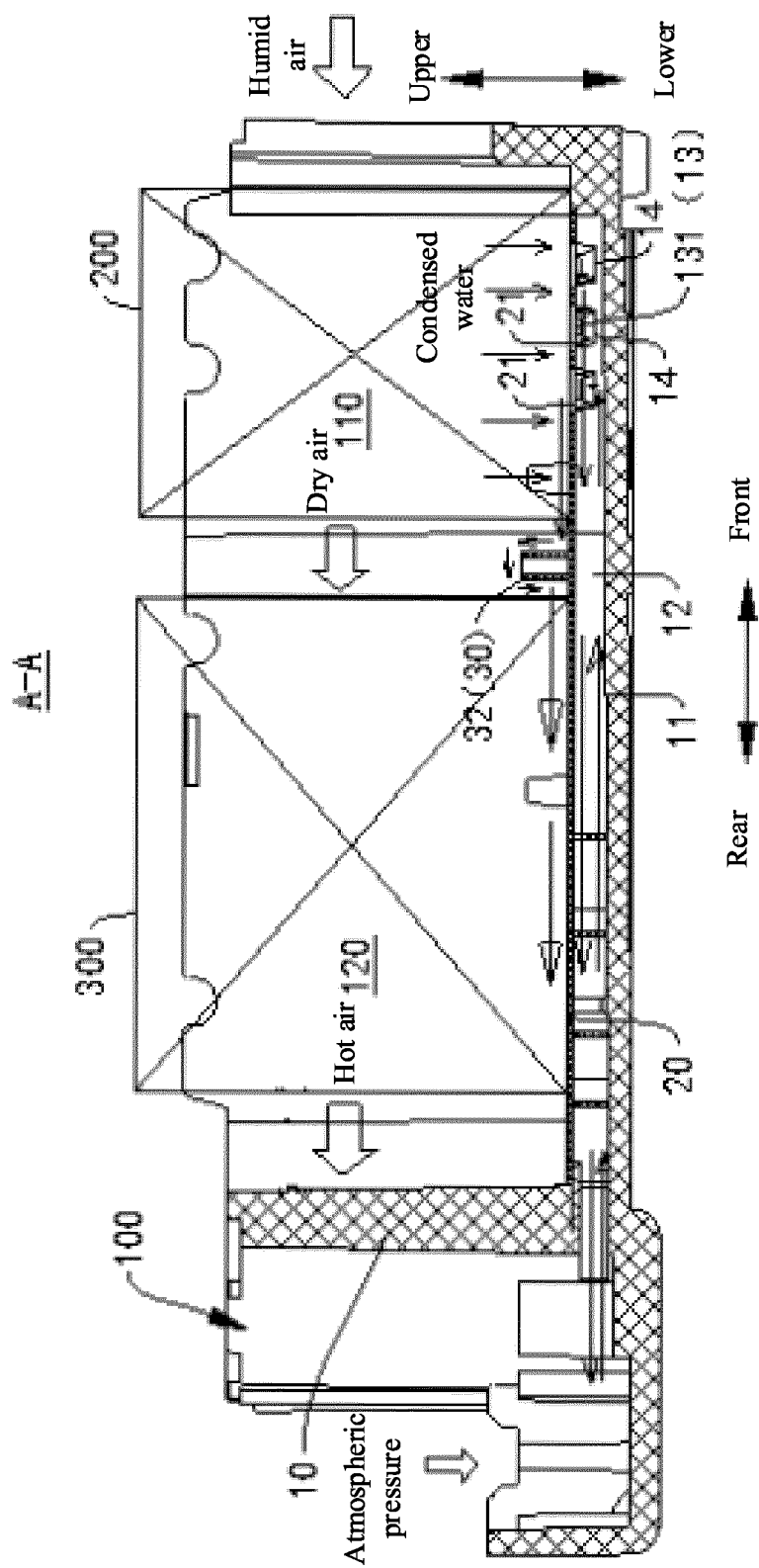


FIG. 3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 2010090411 A1 [0003]