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CONDENSATE WATER EVAPORATING DEVICE AND REFRIGERATION APPARATUS COMPRISING THE SAME

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ABSTRACT

The present disclosure provides a condensate water evaporating device, comprising: a water box comprising a bottom and a plurality of side walls, the bottom and the plurality of side walls forming an accommodating space configured to receive and accommodate condensate water; a fan unit fixed to the water box and configured to blow air towards the accommodating space of the water box; a heating means located at the bottom of the water box and configured to heat condensate water accommodated in the water box; and a controller configured to control the fan unit and the heating means. The present disclosure also provides a refrigeration apparatus comprising a condensate water evaporating device.

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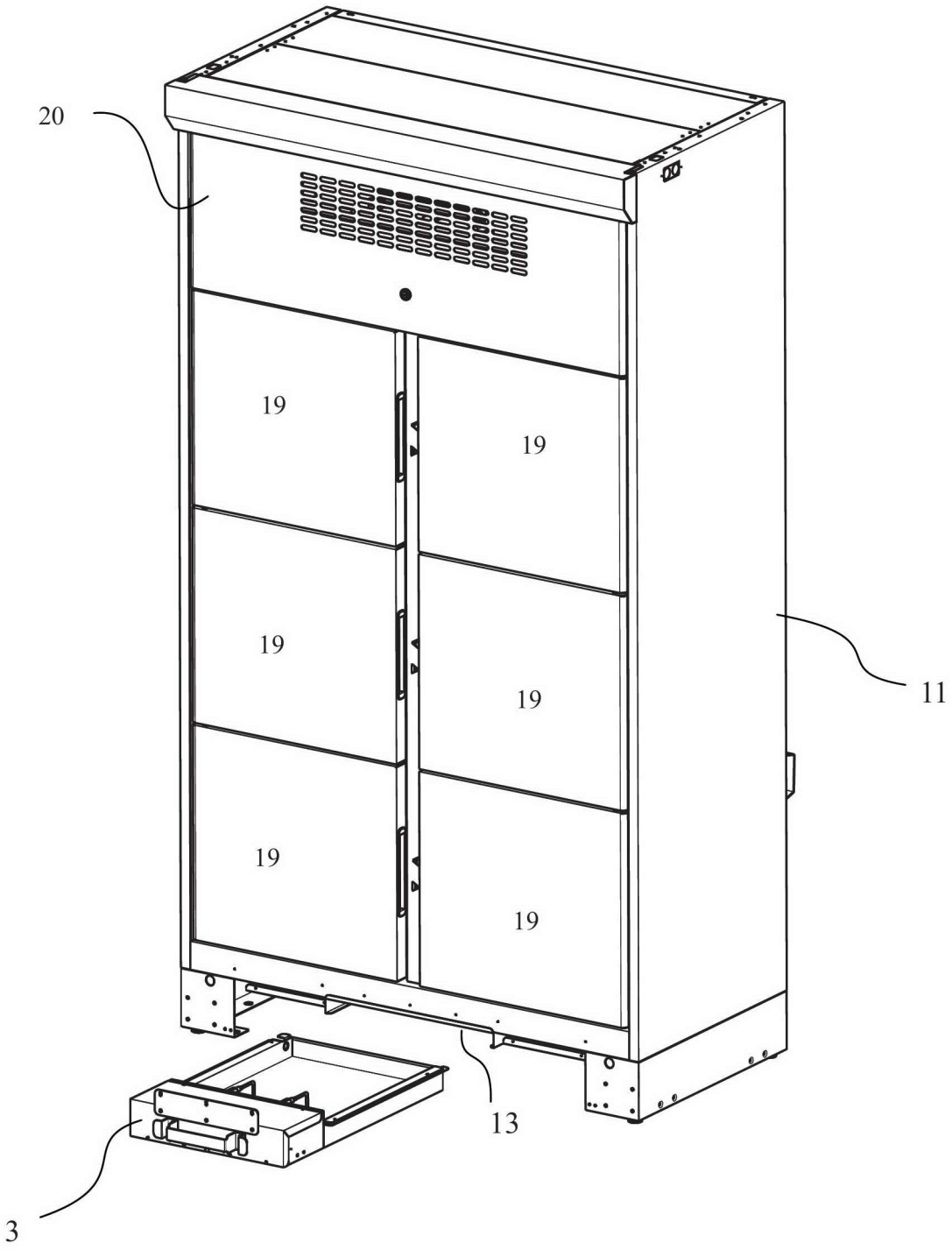

FIG. 2

CONDENSATE WATER EVAPORATING DEVICE AND REFRIGERATION APPARATUS COMPRISING THE SAME

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the priority of Chinese Patent Application No. 201911278384.2 filed on December 12, 2019 in the China National Intellectual Property Administration, the whole disclosure of which is incorporated herein by reference.

TECHNICAL FIELD

[0002] The present disclosure generally relates to a refrigeration apparatus. In particular, the present disclosure generally relates to a condensate water evaporating device and a refrigeration apparatus including the condensate water evaporating device.

BACKGROUND

[0003] With a continuous improvement of living standards and a continuous progress of logistics technology, there has been a kind of intelligent cabinet. Such an intelligent cabinet may be placed in, for example, a residential area for users to store packages to be sent, and also for deliveryman to place the packages to be signed. This intelligent cabinet has played a good intermediary role between the deliveryman and the user, and has become a new trend in future due to its convenience.

[0004] With a further development of E-commerce, there is a continuous increase in kinds of items suitable for online shopping, and there is a growing demand for seafood, fresh dairy products, vegetables and other products that require cryopreservation. This raises a higher requirement for cold-chain transportation, and then intelligent cabinets with refrigeration function emerge.

[0005] In such an intelligent cabinet with refrigeration function, as with ordinary refrigeration apparatus (such as a refrigerator, a freezer, etc.), there is a problem of discharge of condensate water. In the ordinary refrigeration apparatus, a water box that receives and holds the condensate water is usually placed above a refrigeration

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assembly (such as a compressor). The heat released by the refrigeration assembly during operation may be utilized to force heating, thereby evaporating the condensate water received in the water box, so that the condensate water is discharged in a gaseous form.

[0006] However, since the lower portion of the intelligent cabinet is usually reserved for the refrigerating chambers so as to facilitate the user to pick up and store items, the refrigeration assembly is usually desired to be positioned on the top of the intelligent cabinet and thus located above the refrigerating chambers. Therefore, the above-mentioned method, which discharges the condensate water with a waste heat of the refrigeration assembly, is not suitable for intelligent cabinets with refrigeration function.

[0007] Existing intelligent cabinets with refrigeration function usually discharges the condensate water in a straight discharging way. That is, a discharge port is provided at the bottom of the cabinet, and the condensate water is converged to the discharge port along a pipe for condensate water and is directly discharged to the ground below the bottom of the intelligent cabinet with refrigeration function via the discharge port. This way of directly discharging the condensate water greatly affects aesthetics of environment around the intelligent cabinet.

SUMMARY

[0008] At least one object of the present disclosure is to provide a condensate water evaporating device for a refrigeration apparatus. The refrigeration apparatus may be used as an intelligent cabinet. During the operation of the refrigeration apparatus, the condensate water evaporating device may ensure that the condensate water will not be discharged to the ground below the bottom of the refrigeration apparatus.

[0009] At least one object of the present disclosure is to provide a condensate water evaporating device, which may be simply mounted to a refrigeration apparatus.

[00010] At least one object of the present disclosure is to provide a refrigeration apparatus comprising the above condensate water evaporating device. The refrigeration apparatus may be used as an intelligent cabinet.

[00011] Embodiments of the present disclosure provide a condensate water

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evaporating device, comprising:

a water box comprising a bottom and a plurality of side walls, the bottom and the plurality of side walls forming an accommodating space configured to receive and accommodate condensate water;

a fan unit fixed to the water box and configured to blow air towards the accommodating space of the water box;

a heating means located at the bottom of the water box and configured to heat condensate water accommodated in the water box; and

a controller configured to control the fan unit and the heating means.

[00012] In at least one embodiment, the condensate water evaporating device further comprises: an operation chamber being fixed to an outside of one of the plurality of side walls of the water box, the fan unit and the controller being accommodated in the operation chamber.

[00013] In at least one embodiment, the operation chamber is provided with at least one opening on a side facing the water box, through which the fan unit blows air towards the accommodating space.

[00014] In at least one embodiment, the condensate water evaporating device further comprises: a level sensor controlled by the controller and configured to detect liquid surface level of the condensate water in the water box.

[00015] In at least one embodiment, two opposite side walls of the plurality of side walls of the water box are provided with first connecting members, respectively, which are configured to cooperate with second connecting members on a bottom surface of a refrigeration apparatus.

[00016] In at least one embodiment, the first connecting member slidably cooperates with the second connecting member, so that the condensate water evaporating device is slidably connected to the refrigeration apparatus.

[00017] In at least one embodiment, the first connecting member and the second connecting member are configured such that: when the condensate water evaporating device is connected to the refrigeration apparatus via a cooperation of the first connecting member with the second connecting member, the water box, the first

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connecting member, the second connecting member and the bottom surface of the refrigeration apparatus form a channel, the air blown by the fan unit entering the channel from one end of the channel and leaving the channel from the other end of the channel.

[00018] In at least one embodiment, the first connecting member has a sheet-like structure extending along the two opposite side walls.

[00019] In at least one embodiment, the water box and a bottom surface of a refrigeration apparatus form a channel, the air blown by the fan unit entering the channel from one end of the channel and leaving the channel from the other end of the channel.

[00020] In at least one embodiment, the fan unit is inclined such that an angle between a direction in which air is blown from an air outlet of the fan unit and a surface of the condensate water in the water box is 30 to 90 degrees.

[00021] In at least one embodiment, the water box further comprises an inner box and an outer box which are cooperated with each other, the heating means being located between a bottom plane of the inner box and a bottom plane of the outer box.

[00022] In at least one embodiment, at least one of the plurality of side walls of the water box is provided with a discharge outlet for condensate water.

[00023] In at least one embodiment, the condensate water evaporating device further comprises: an air flow disturbance means located above the accommodating space of the water box and configured to disturb the air flow blown by the fan unit.

[00024] In at least one embodiment, the air flow disturbance means includes:

a block-shaped body; and

a plurality of through holes penetrating the block-shaped body.

[00025] In at least one embodiment, the fan unit is configured to blow vapor, generated by evaporation of the condensate water accommodated in the water box, out of the water box.

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[00026] Embodiments of the present disclosure also provides a refrigeration apparatus, comprising the condensate water evaporating device as described above, which is mounted on a bottom surface of the refrigeration apparatus.

[00027] In at least one embodiment, two opposite side walls of the plurality of side walls of the water box are provided with first connecting members, respectively, and the bottom surface of the refrigeration apparatus is provided with second connecting members, the first connecting members cooperating with the second connecting members on the bottom surface of the refrigeration apparatus.

[00028] In at least one embodiment, the first connecting member slidably cooperates with the second connecting member, so that the condensate water evaporating device is slidably connected to the refrigeration apparatus.

[00029] In at least one embodiment, the second connecting member has a bent sheet-like structure.

[00030] In at least one embodiment, the refrigeration apparatus further comprises an air flow disturbance means mounted on the bottom surface of the refrigeration apparatus.

[00031] The condensate water evaporating devices according to embodiments of the present disclosure may ensure that the condensate water will not be discharged to the ground below the bottom of the refrigeration apparatus, have simple structure and are convenient for installation.

BRIEF DESCRIPTION OF THE DRAWINGS

[00032] The above characteristics, technical features, advantages and implementations of the present disclosure will be further described in a clear and easy to understand way in the following description of the preferred embodiments taken in conjunction of the accompanying drawings. The following drawings are only intended to illustrate and explain the present disclosure, and should not be constructed to limit the scope of the present disclosure, in which:

Fig. 1 shows a perspective view of a refrigeration apparatus including a condensate water evaporating device according to an embodiment of the

present disclosure, wherein the condensate water evaporating device is mounted to the bottom of the refrigeration apparatus;

Fig. 2 shows a perspective view of a refrigeration apparatus including a condensate water evaporating device according to an embodiment of the present disclosure, wherein the condensate water evaporating device is not mounted to the bottom of the refrigeration apparatus;

Fig. 3 is an enlarged schematic view of the bottom portion of the refrigeration apparatus in Fig. 1;

Fig. 4 is an enlarged schematic view of the bottom portion of the refrigeration apparatus in Fig. 2;

Figs. 5a and 5b show a top view and a front view of a condensate water evaporating device according to an embodiment of the present disclosure, respectively, and Figs. 5c to 5d show cross-sectional views of the condensate water evaporating device of Fig. 5a along a line BB and along a line AA in Fig. 5a, respectively;

Fig. 6 shows a cross-sectional view of a condensate water evaporating device according to an embodiment of the present disclosure, wherein the condensate water evaporating device is mounted below the bottom of the refrigeration apparatus;

Fig. 7 shows an air flow path of the condensate water evaporating device shown in Fig. 6 during operation; and

Fig. 8 is a rear view of a bottom of the refrigeration apparatus according to an embodiment of the present disclosure.

DETAILED DESCRIPTION OF EMBODIMENTS

[00033] For clearly understanding technical features, objects and effects of the present disclosure, detailed embodiments of the present disclosure will be described with reference to the accompanying drawings.

[00034] Embodiments of the present disclosure provide a condensate water evaporating device. The condensate water evaporating device includes a water box, a fan unit, and a heating means. The water box is configured to receive and accommodate condensate water. The heating means is configured to heat the water box to evaporate the condensate water accommodated in the water box. The fan unit is configured to blow air into the water box, so as to accelerate air flow above a

condensate water surface, thereby further increasing an evaporation rate of the condensate water. The condensate water evaporating device in the present disclosure may enable the condensate water generated by the refrigeration apparatus with the condensate water evaporating device to be quickly evaporated, ensuring that the condensate water will not be discharged to the ground below the bottom of the refrigeration apparatus.

[00035] An embodiment of the present disclosure provides a refrigeration apparatus 1 including a condensate water evaporating device, which is shown in Figs. 1 and 2. The refrigeration apparatus 1 includes: a housing 11 defining at least one refrigerating chamber 19 for providing a low-temperature environment to items accommodated in the refrigerating chamber 19; and a refrigeration unit 20 including a refrigeration assembly (not shown) therein configured to cool the refrigerating chambers 19. The refrigeration unit 20 is located at the top of the refrigeration apparatus 1 and is thus positioned above the refrigerating chambers 19. In this way, the lower portion of the refrigeration apparatus 1, which is convenient for a user to pick up and store items, may be occupied by the refrigerating chambers 19, while a upper portion of the refrigeration apparatus 1, which is inconvenient to use, is occupied by the refrigeration unit 20.

[00036] The refrigeration apparatus 1 in an embodiment of the present disclosure further includes a condensate water evaporating device 3. The condensate water evaporating device 3 has a box shape as a whole, and is slidably mounted to a lower surface of the bottom of the refrigeration apparatus 1, as shown in Fig. 1. The condensate water evaporating device 3 may be "pushed in" or "pulled out" like a drawer. Fig. 1 shows a schematic diagram of the refrigeration apparatus 1 when the condensate water evaporating device 3 is “pushed in”. Fig. 2 shows a schematic diagram of the refrigeration apparatus 1 when the condensate water evaporating device 3 is “pulled-out”.

[00037] Figs. 3 and 4 show enlarged schematic views of bottom portions of the refrigeration apparatuses 1 shown in Figs. 1 and 2, respectively. Hereinafter, the condensate water evaporating device 3 will be described in detail with reference to Figs. 5-8.

[00038] Figs. 5a and 5b are the top view and the front view of a condensate water

evaporating device 3 according to an embodiment of the present disclosure, respectively. Figs. 5c to 5d show cross-sectional views of the condensate water evaporating device 3 of Fig. 5a along the line BB and along the line AA in Fig. 5a, respectively.

[00039] As shown in Fig. 5a, the condensate water evaporating device 3 includes a water box 31. The water box 31 has a bottom 314 and a plurality of side walls 313 (in the embodiment shown in Fig. 5, four side walls). The bottom 314 and the plurality of side walls 313 form an accommodating space 317. When the condensate water evaporating device 3 is mounted on the bottom surface 12 of the refrigeration apparatus 1, the water box 31 is placed below a discharge port 13 for condensate water on the bottom surface 12 of the refrigeration apparatus 1. Thus, the condensate water discharged from the discharge port 13 for condensate water falls into the accommodating space 317 of the water box 31.

[00040] The condensate water evaporating device 3 further includes an operation chamber 32. The operation chamber 32 includes a casing 321 which encloses a cavity. A fan unit 33 is placed in the cavity (the fan unit 33 is covered by the casing 321, so that the location of the fan unit 33 is shown by the broken line in FIG. 5a). The operation chamber 32 is fixed to the outside of one of the plurality of side walls 313 of the water box 31. Thus, the fan unit 33 accommodated in the operation chamber 32 is fixed relative to the water box 31. The operation chamber 32 is provided with at least one opening 34 on the side facing the water box 31 (the opening 34 is not shown in Fig. 5a and its location corresponds to the location through which the arrow(s) in Fig. 5a passes). The location of the opening 34 is shown in Fig. 5d. The fan unit 33 blows air into the accommodating space 317 of the water box 31 through the opening 34. An air flow path is shown by the arrow in Fig. 5a.

[00041] The condensate water evaporating device 3 further includes a heating means 35. In an embodiment according to the present disclosure, the heating means 35 may comprise, for example, a heating resistance wire. As shown in Figs. 5c and 5d, the heating means 35 may be located at the bottom 314 of the water box 31. In the embodiment shown in Figs. 5c and 5d, the water box 31 is composed of an inner box 311 and an outer box 312. The inner box 311 and the outer box 312 are stacked together to form a double-layer water box 31. The heating means 35 may be located between the bottom plane of the inner box 311 and the bottom plane of the outer box

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312. Preferably, the outer box 312 is made of a heat-insulating material so as to prevent heat generated by the heating means 35 from being diffused into the environment through the outer box 312.

[00042] The condensate water evaporating device 3 further includes a controller 36. The controller 36 is configured to control the fan unit 33 and the heating means 35. As shown in Fig. 5c, the controller 36 is accommodated in the operation chamber 32. The condensate water evaporating device 3 further includes a level sensor 37. The level sensor 37 is connected to and controlled by the controller 36. The level sensor 37 is configured to detect the liquid surface level of condensate water in the water box 31. The controller 36 may control heating power of the heating means 35 and power of the fan unit 33 according to the liquid surface level detected by the level sensor 37. For example, when the controller 36 determines that the level of the condensate water inside the water box 31 is higher than a certain threshold based on a detection result of the level sensor 37, the controller 36 controls the heating means 35 and the fan unit 33 to increase their power. For another example, when the controller 36 determines that a growth rate of the level of the condensate water inside the water box 31 is higher than a certain threshold based on the detection result of the level sensor 37, the control device 36 controls the heating device 35 and the fan unit 33 to increase their power.

[00043] As shown in Fig. 5c, at least one side wall of the condensate water evaporating device 3 is provided with a discharge outlet 315 for discharging condensate water directly. A height h1 of the discharge outlet 315 relative to the bottom 314 of the water box 31 is smaller than a height h2 of an air outlet (that is, the opening 34) of the fan unit 33. By providing the discharge outlet 315, if the condensate water grows abnormally fast and is not able to be evaporated in a short time by the heating means 35 and the fan unit 33, the condensate water may be discharged outside the water box 31 through the discharge outlet 315. Since the height of the discharge outlet 315 relative to the bottom 314 of the water box 31 is less than the height of the air outlet of the fan unit 33, when the condensate water increases abnormally rapidly, the condensate water may be prevented from entering the fan unit 33 through the opening 34, thereby avoiding damage to the fan unit 33 by the condensate water.

[00044] Hereinafter, an operating process of the condensate water evaporating device

3 in the present disclosure will be described in detail with reference to Figs. 6 to 8. Fig. 6 shows a cross-sectional view of a condensate water evaporating device 3 according to an embodiment of the present disclosure, wherein the condensate water evaporating device 3 is mounted below the bottom of the refrigeration apparatus 1, and the water box 31 is located below the discharge port 13 for condensate water (not shown in Figure 6) on the bottom surface 12 of the refrigeration apparatus 1. The condensate water from the discharge port 13 for condensate water will fall into the accommodating space 317 of the water box 31. The heating means 35, the controller 36, and the fan unit 33 may be powered by the refrigeration apparatus 1.

[00045] In order to further enhance utilization rate of the flowing air provided by the fan unit 33, as shown in Figs. 6 and 7, an air flow disturbance means 40 is provided on the bottom surface 12 of the refrigeration apparatus 1. Figs. 6 and 7 show side views of the air flow disturbance means 40, and Fig. 8 shows a rear view of the air flow disturbance means 40. The air flow disturbance means 40 includes a block-shaped body 41 and a plurality of through holes 42 that penetrates the block-shaped body 41.

[00046] Fig. 7 shows an air flow path of the condensate water evaporating device 3 shown in Fig. 6 during operation. As shown by the arrows in Fig. 7, the air blown by the fan unit 33 is blown toward the accommodating space 317 of the water box 31 via the opening 34 on the side wall 313 of the water box 31. The air is first blown into the space between the bottom surface 12 of the refrigeration apparatus 1 and the water box 31 through the opening 34, and propagates in a direction substantially parallel to the bottom 314 of the water box 31 (that is, parallel to a direction of the level of condensate water when the condensate water is present), thereby enhancing air flow above the level of condensate water in the water box 31, and increasing the evaporation rate of the condensate water. As the air flow further gets closer to the air flow disturbance means 40, a portion of the air flow continues to flow through the through holes 42 of the air flow disturbance means 40, while another portion of the air flow is blocked by the air flow disturbance means 40, thereby forming a "vortex", as shown by curved arrows in Fig. 7. The air flow disturbance means 40 may make the air flow stay longer above the level of condensate water, so as to use the air flow more effectively, and improve the evaporating efficiency.

[00047] In other embodiments according to the present disclosure, the air flow

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disturbance means 40 may be also in other forms. In addition, the air flow disturbance means 40 is also not limited to being mounted on the bottom surface of the refrigeration apparatus 1. Air flow disturbance means, having any type of disturbing the air flow blown by the fan unit 33 above the level of condensate water and being mounted at any position, is applicable to the present disclosure. For example, the air flow disturbance means 40 may also be mounted on the side wall 313 of the water box 31.

[00048] In addition, in order to improve the utilization efficiency of the air flow, the fan unit 33 is inclined, as shown in Figs. 5c and 6-7. As shown in Fig. 7, an angle between a direction z in which air is blown from the air outlet of the fan unit 33 and the surface of the condensate water in the water box 31 is 30 to 90 degrees. Compared with the fan unit 33 that is not inclined (that is, the angle between the direction z in which the air is blown from the air outlet of the fan unit 33 and the surface of the condensate water in the water box 31 is 0 degree), this fan unit 33, which is inclined, may more easily form an air "vortex", thereby improving the utilization efficiency of the air flow.

[00049] During the operation of the condensate water evaporating device 3 according to the present disclosure, the condensate water discharged from the discharge port 13 for condensate water on the bottom surface of the refrigeration apparatus 1 will fall into the accommodating space 317 of the water box 31 and be collected there. The heating means of the condensate water evaporating device is heated under a control of the controller 36 to evaporate the condensate water in the water box 31. At the same time, the fan unit 33 blows air toward the accommodating space 317 of the water box 31 under the control of the controller 36 to accelerate the flow of the air above the level of condensate water, thereby increasing the rate at which the condensate water is evaporated. Thus, with the use of the condensate water evaporating device according to the embodiments of the present disclosure, the condensate water is discharged in a gaseous state, and is not discharged to the ground below the bottom of the refrigeration apparatus, thereby avoiding the impact on the environment around the refrigeration apparatus.

[00050] In addition, the condensate water evaporating device according to embodiments of the present disclosure has advantages of simple structure and convenient installation. As described above with reference to Figs. 1 to 4, the

condensate water evaporating device 3 may be "pushed in" or "pulled out" of the refrigeration apparatus 1 like a drawer. The condensate water evaporating device 3 is connected, by a rail connecting member thereon, to a corresponding rail connecting member on the bottom surface 12 of the refrigerating apparatus 1. This not only makes the condensate water evaporating device easy to install, but also has additional advantages, such as restricting the air flow path to improve the utilization efficiency of air flow. This will be described in detail below with reference to Fig. 4.

[00051] As shown in Fig. 4, two opposite side walls 313 of the water box 31 are provided with first connecting members 91, respectively, and the bottom surface 12 of the refrigeration apparatus 1 is provided with second connecting members 92. The first connecting member 91 slidably cooperates with the second connecting member 92 so that the condensate water evaporating device 3 is slidably connected to the refrigeration apparatus 1. The first connecting member 91 is a sheet-like structure extending along the side wall 313. The second connecting member 92 is a bent sheet-like structure. When the condensate water evaporating device 3 is connected to the refrigeration apparatus 1 through the cooperation of the first connecting member 91 and the second connecting member 92, the water box 31, the first connecting member 91, the second connecting member 92 and the bottom surface 12 of the refrigerating apparatus 1 encloses a channel P. A cross section of the channel P is shown in Figs. 6 and 7 (that is, a space through which the air flows, as indicated by arrows in Fig. 7). A starting end of the channel P is located on one side wall 313 of the water box 31 that is adjacent to the operation chamber 32, and a terminal end of the channel P is located on the other side wall 313 opposite to the one side wall 313. The air blown by the fan unit 33 enters the channel P from the starting end of the channel P, and leaves the channel P via the terminal end of the channel P.

[00052] Since the channel P enclosed by the water box 31, the first connecting member 91, the second connecting member 92 and the bottom surface 12 of the refrigeration apparatus 1 is substantially sealed in the lateral direction perpendicular to the channel P, the air flow path is restricted, and the air flow is prevented from being spread out in all directions, thereby improving the utilization efficiency of air flow.

[00053] In other embodiment according to the present disclosure, the first connecting member 91 and the second connecting member 92 may also be in other forms. But preferably, the first connecting member 91 and the second connecting member 92

may be slidably cooperated. More preferably, the first connecting member 91 and the second connecting member 92 are configured such that the channel P enclosed by the water box 31, the first connecting member 91, the second connecting member 92, and the bottom surface 12 of the refrigeration apparatus 1 is substantially sealed in the direction transverse to the channel P.

[00054] In other embodiment according to the present disclosure, without depending on the first connecting member 91 and the second connecting member 92, a channel may also be formed between the water box 31 and the bottom surface 12 of the refrigeration apparatus 1. For example, two side walls 313 of the water box 31 perpendicular to the operation chamber 32 may have a height higher than the side wall 313 opposite to the operation chamber 32, and the height of the two side walls 313 is arranged such that the two side walls 313 are generally in contact with the bottom surface 12 of the refrigeration apparatus 1 when the water box 31 is mounted to the refrigeration apparatus 1. In this way, the two side walls of the water box 31 and the bottom surface 12 of the refrigeration apparatus 1 form a channel, which is substantially sealed in the direction transverse to the channel.

[00055] It should be understood that, although the specification has been described in terms of various embodiments, it is not intended that every embodiment includes only one independent technical solution. The description of the specification is merely for the sake of clarity, and those skilled in the art should consider the specification as a whole, and the technical solutions in the embodiments may be combined as appropriate so as to form other embodiments that can be understood by those skilled in the art.

[00056] The above is only the exemplary embodiments of the present disclosure and is not intended to limit the scope of the present disclosure. Equivalent changes, modifications, and combinations of the present disclosure may be made by the person skilled in the art without departing from the concept and principle of the present disclosure.

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What is claimed is,

1. A condensate water evaporating device, comprising:

a water box comprising a bottom and a plurality of side walls, the bottom and the plurality of side walls forming an accommodating space configured to receive and accommodate condensate water;

a fan unit fixed to the water box and configured to blow air towards the accommodating space of the water box;

a heating means located at the bottom of the water box and configured to heat condensate water accommodated in the water box; and

a controller configured to control the fan unit and the heating means.

2. The condensate water evaporating device according to claim 1, further comprising: an operation chamber being fixed to an outside of one of the plurality of side walls of the water box, the fan unit and the controller being accommodated in the operation chamber.

3. The condensate water evaporating device according to claim 2, wherein the operation chamber is provided with at least one opening on a side facing the water box, through which the fan unit blows air towards the accommodating space.

4. The condensate water evaporating device according to claim 1, further comprising: a level sensor controlled by the controller and configured to detect liquid surface level of the condensate water in the water box.

5. The condensate water evaporating device according to claim 1, wherein two opposite side walls of the plurality of side walls of the water box are provided with first connecting members, respectively, which are configured to cooperate with second connecting members on a bottom surface of a refrigeration apparatus.

6. The condensate water evaporating device according to claim 5, wherein the first connecting member slidably cooperates with the second connecting member, so that the condensate water evaporating device is slidably connected to the refrigeration apparatus.

7. The condensate water evaporating device according to claim 5, wherein the first connecting member and the second connecting member are configured such that: when the condensate water evaporating device is connected to the refrigeration apparatus via a cooperation of the first connecting member with the second connecting member, the water box, the first connecting member, the second connecting member and the bottom surface of the refrigeration apparatus form a channel, the air blown by the fan unit entering the channel from one end of the channel and leaving the channel from the other end of the channel.

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8. The condensate water evaporating device according to claim 5, wherein the first connecting member has a sheet-like structure extending along the two opposite side walls.

9. The condensate water evaporating device according to claim 1, wherein the water box and a bottom surface of a refrigeration apparatus form a channel, the air blown by the fan unit entering the channel from one end of the channel and leaving the channel from the other end of the channel.

10. The condensate water evaporating device according to claim 1, wherein the fan unit is inclined such that an angle between a direction in which air is blown from an air outlet of the fan unit and a surface of the condensate water in the water box is 30 to 90 degrees.

11. The condensate water evaporating device according to claim 1, wherein the water box further comprises an inner box and an outer box which are cooperated with each other, the heating means being located between a bottom plane of the inner box and a bottom plane of the outer box.

12. The condensate water evaporating device according to claim 1, wherein at least one of the plurality of side walls of the water box is provided with a discharge outlet for condensate water.

13. The condensate water evaporating device according to claim 1, further comprising an air flow disturbance means located above the accommodating space of the water box and configured to disturb the air flow blown by the fan unit.

14. The condensate water evaporating device according to claim 13, wherein the air flow disturbance means includes:

a block-shaped body; and

a plurality of through holes penetrating the block-shaped body.

15. The condensate water evaporating device according to claim 1, wherein the fan unit is configured to blow vapor, generated by evaporation of the condensate water accommodated in the water box, out of the water box.

16. A refrigeration apparatus, comprising the condensate water evaporating device according to any one of claims 1-15, which is mounted on a bottom surface of the refrigeration apparatus.

17. The refrigeration apparatus according to claim 16, wherein two opposite side walls of the plurality of side walls of the water box are provided with first connecting members, respectively, and the bottom surface of the refrigeration apparatus is provided with second connecting members, the first connecting members cooperating

with the second connecting members on the bottom surface of the refrigeration apparatus.

18. The refrigeration apparatus according to claim 17, wherein the first connecting member slidably cooperates with the second connecting member, so that the condensate water evaporating device is slidably connected to the refrigeration apparatus.

19. The refrigeration apparatus according to claim 17, wherein the second connecting member has a bent sheet-like structure.

20. The refrigeration apparatus according to claim 16, further comprising an air flow disturbance means mounted on the bottom surface of the refrigeration apparatus.

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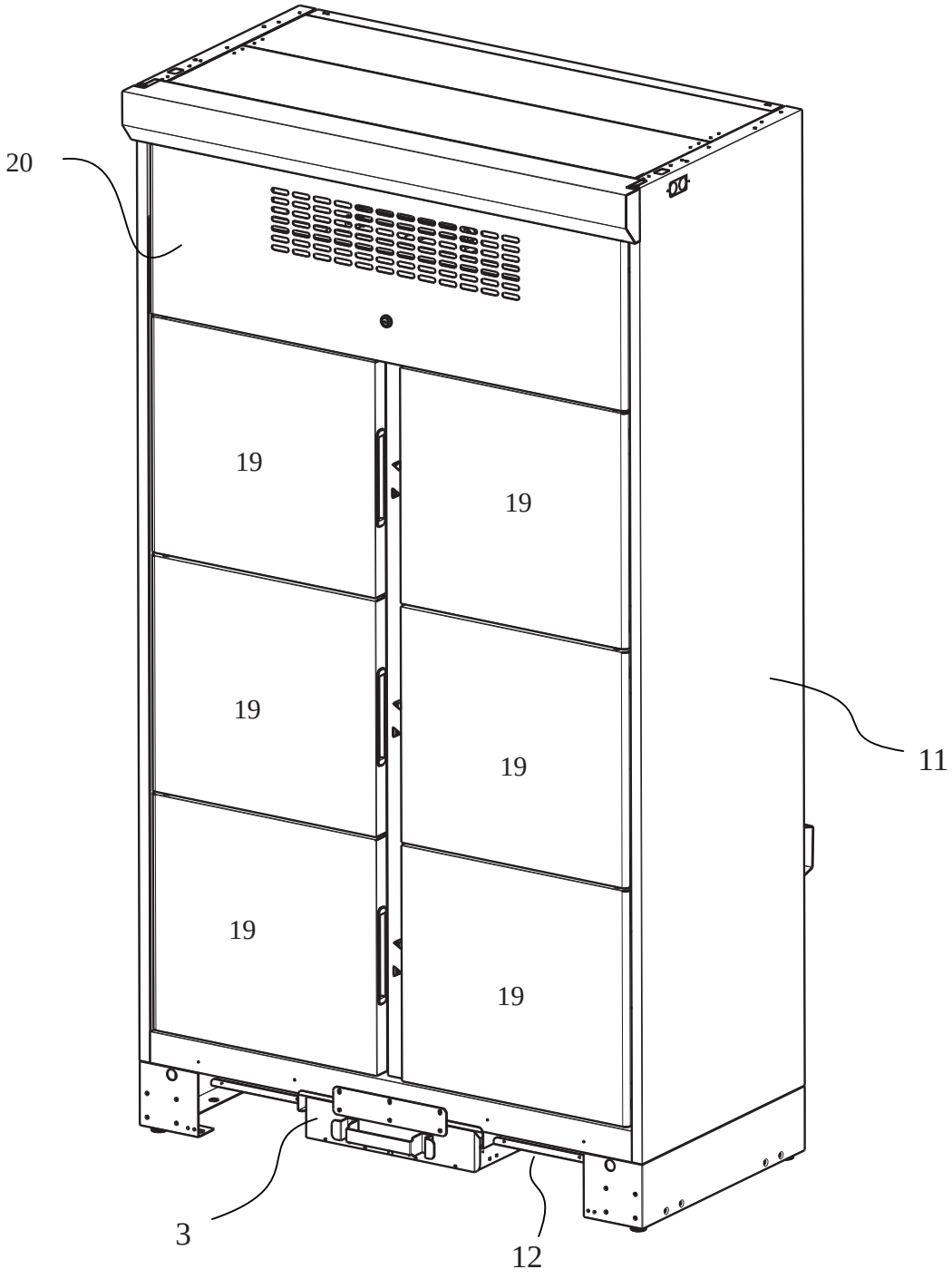

FIG. 1

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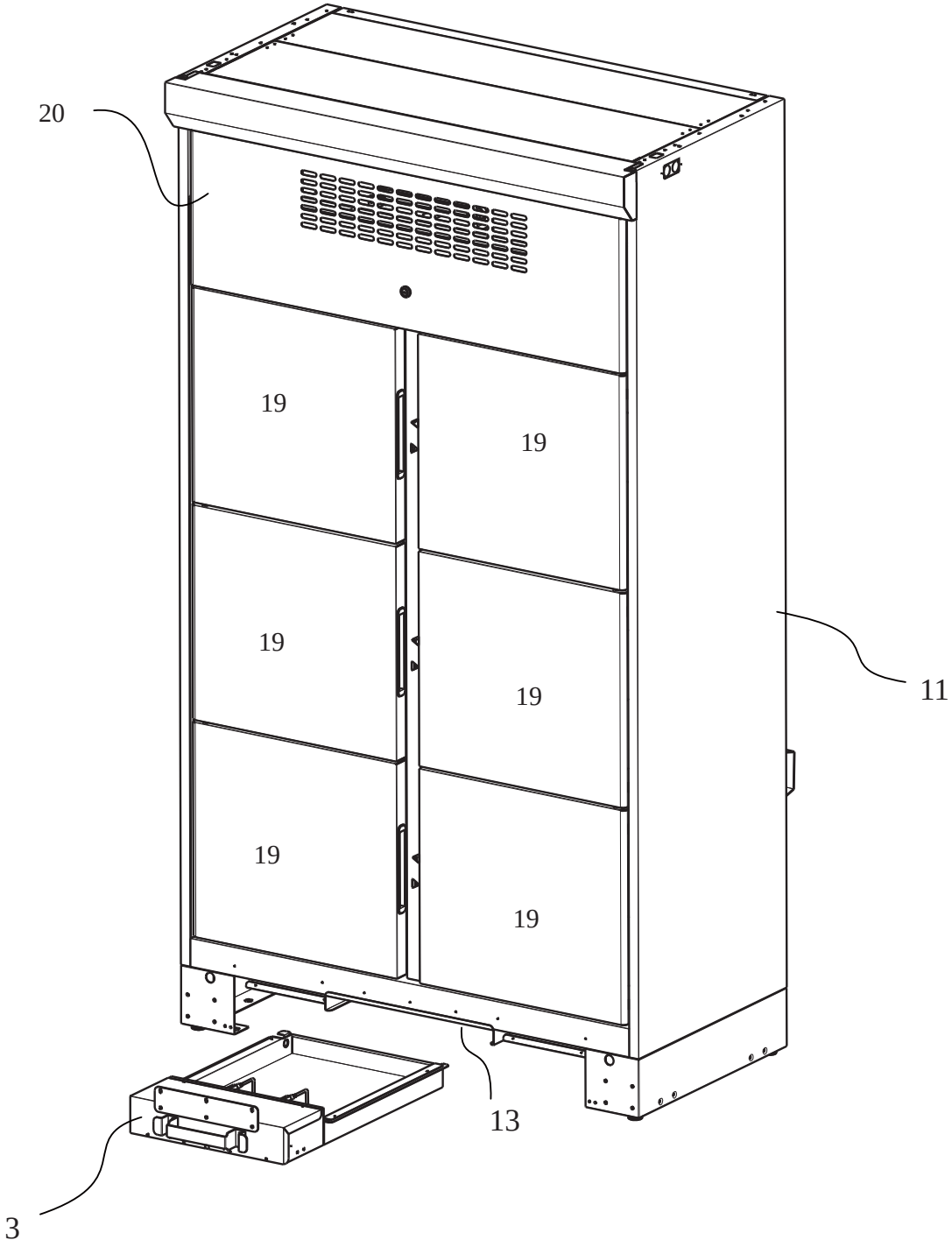

FIG. 2

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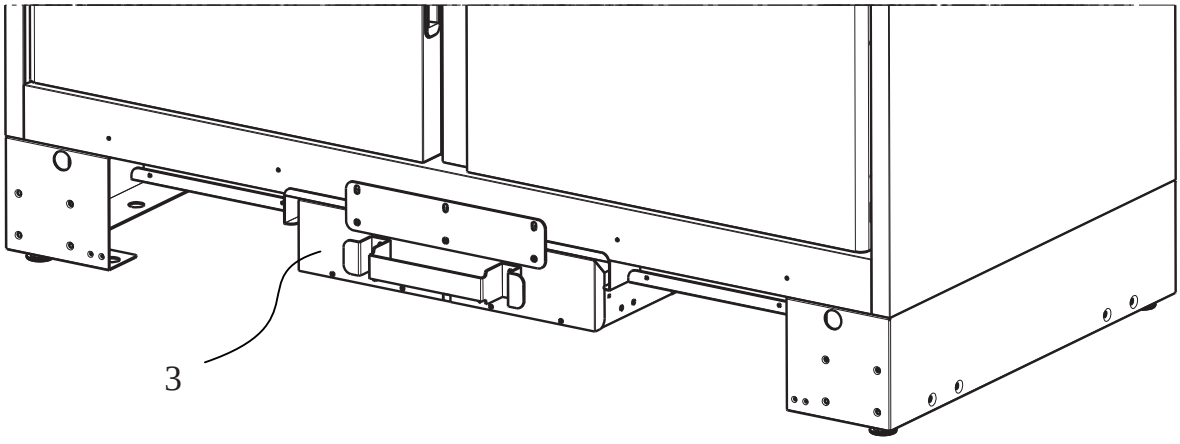

FIG. 3

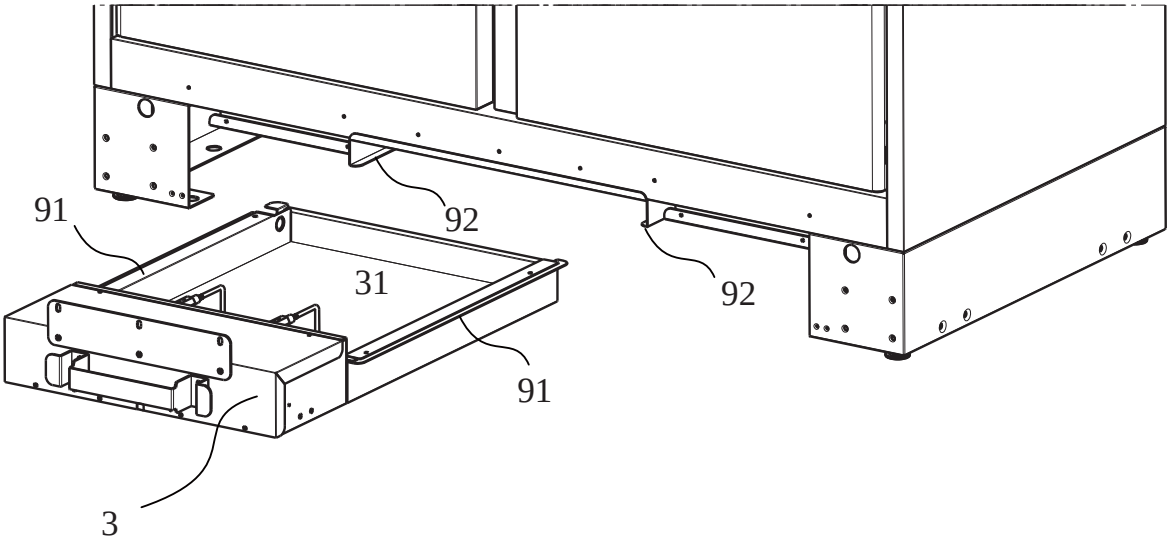

FIG. 4

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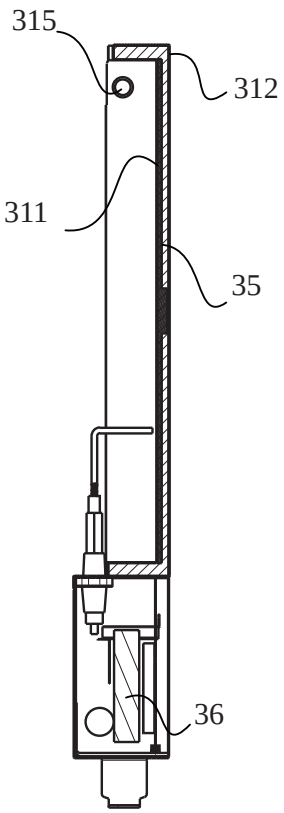

FIG. 5c

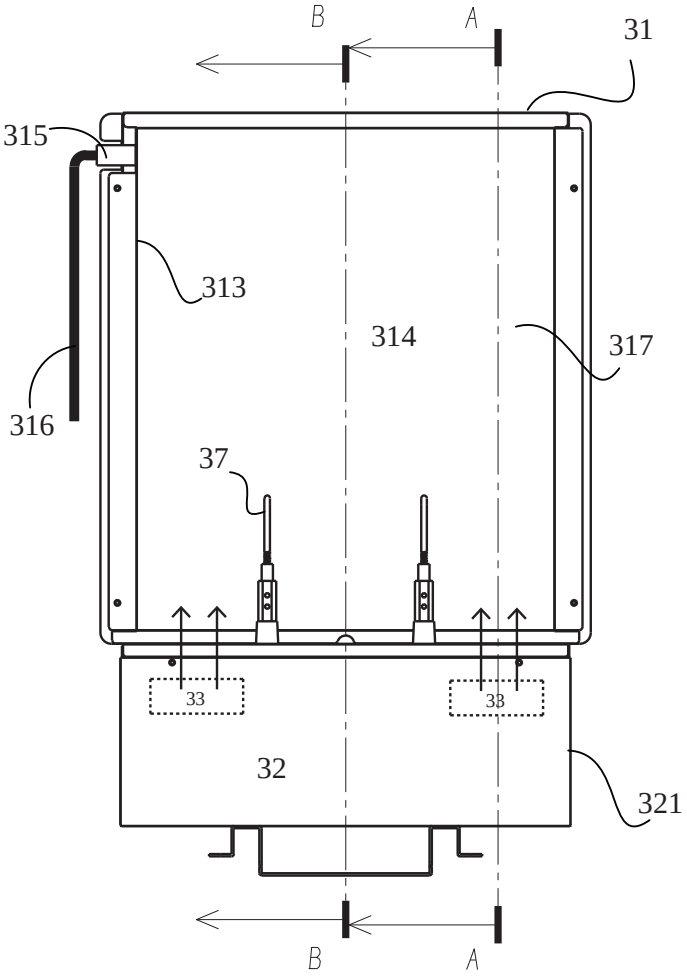

FIG. 5a

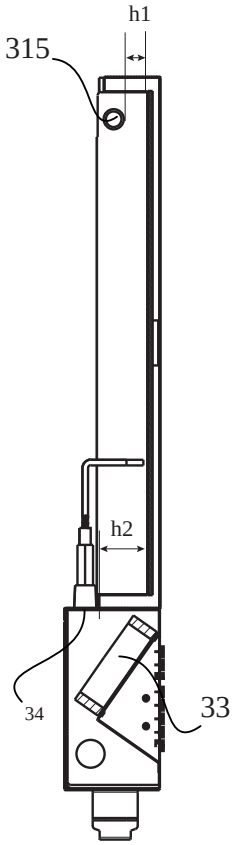

FIG. 5d

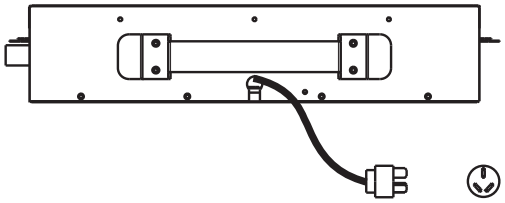

FIG. 5b

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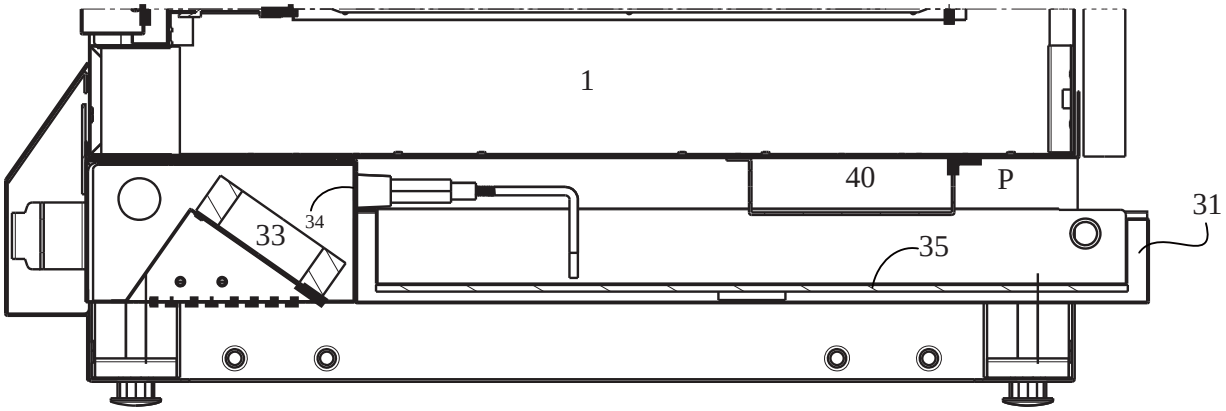

FIG.6

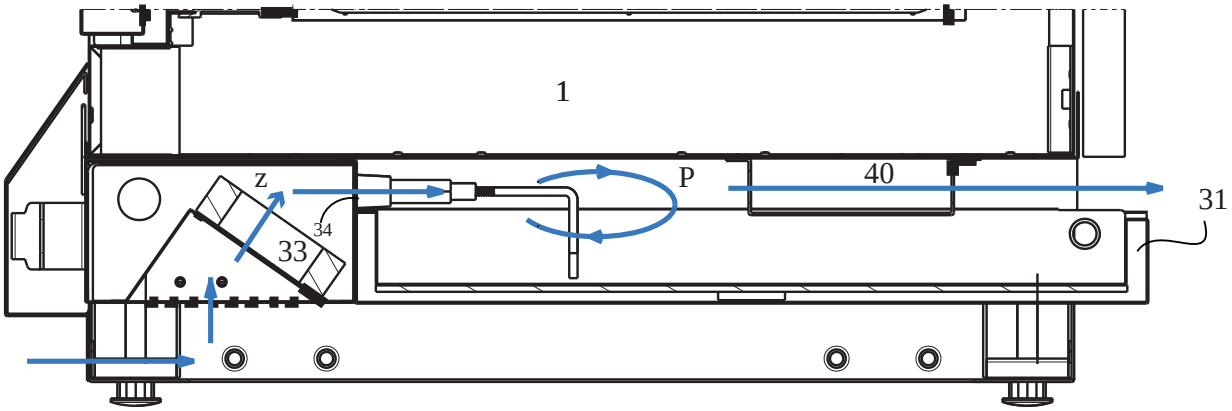

FIG. 7

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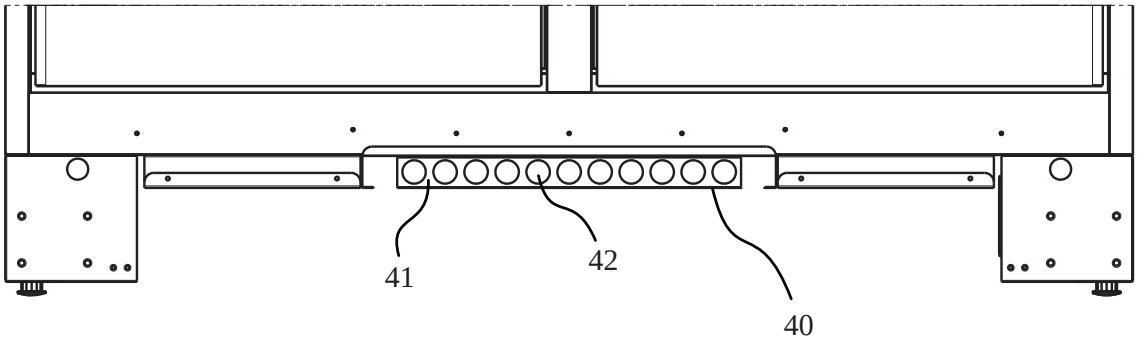

FIG. 8