TITLE OF THE INVENTION
ASSEMBLABLE CHAMBER FOR AN OUTDOOR UNIT

FIELD OF THE INVENTION

The present invention relates to an air conditioner. Particularly, the invention relates to an outdoor unit of an air conditioner. More particularly, the invention relates to an assemblable chamber for an outdoor unit of an air conditioner.

BACKGROUND OF THE INVENTION

Conventional air conditioning systems are provided with an outdoor unit with a control component including a control module such as printed circuit board and various electrical components for controlling an air conditioner. The control component is usually housed in an assembly which is connected to an internal structure within the outdoor unit. The conventional assembly offers the electrical components with basic protection from external environment such as moisture and dust. Additionally, the assembly is generally provided with means for heat dissipation for regulating the temperature of the electrical components to reduce the possibility of overheating of the components inside the assembly.

The outdoor units of the prior arts, for example, as described in PCT Publication No. WO 2014/034564 A1, are provided with a structure for mounting the electric component box in a specific position. Particularly, the electric component box is mounted on top of the partition plate and extended over a chamber where a fan is installed as well as another chamber where a machine is installed in order to mitigate the heat generated from the components inside the box. The electrical component which generates significant heat is specifically located on the chamber with the fan. Additionally, a heat sink is positioned between the components.

PCT Publication No. WO 2020/208675 A1 describes an outdoor unit for an air-conditioning apparatus, which includes a separator for dividing the interior of the outdoor unit into two chambers positioned side by side. The electric component box is located in a specific chamber. The outdoor unit includes positioning members for arranging the electric

component box relative to the heat exchanger and the separator so as to improve the workability upon positioning of the electric component box.

As can be seen, the conventional component assembly, provided as a sealed unit, can encounter challenges in effectively dissipating heat generated by the components. The heat in the assembly can lead to high temperature outside the optimal operating range of the components causing inefficiency and possible damage. On the other hand, if the assembly is not sufficiently sealed, it may render the assembly susceptible to certain environmental factors, including small animals or insects. Furthermore, undesirable humidity and moisture may also lead to condensation in the component assembly. As a result, it could cause malfunctions, shorten the lifespan, and increase maintenance demands, ultimately negatively affecting the overall performance of both the indoor and outdoor air conditioner units.

Therefore, there is a need to develop an enclosure for an outdoor unit of an air conditioner which can provide effective heat regulation as well as optimal protection to the electrical components.

SUMMARY OF THE INVENTION

The objective of the present invention is to provide a component assembly for an outdoor unit configured to enclose electrical components effectively while offering a sufficient means for heat dissipation.

An embodiment of the present invention provides an assemblable chamber for an outdoor unit comprising: an electrical component housed within the assemblable chamber; and a component plate disposed within the assemblable chamber and detachably engaged with the electrical component on the component plate; wherein the assemblable chamber comprises a front plate comprising holes for providing ventilation for the electrical components housed within the assemblable chamber.

Preferably, the assemblable chamber further comprises a cover plate, a side plate, and a bottom plate, wherein the front plate, the cover plate, the side plate, and the bottom plate are connected to form the assemblable chamber in a disengageable manner.

From the above embodiment, as the electrical component is detachably engaged with the component plate which in turn is positioned within the assemblable chamber, the electrical component can be arranged within the assemblable chamber. The detachable engagement of the electrical component and the component plate provides flexibility and ease of placement of the electrical component in the assemblable chamber. Each plate of the assemblable chamber can be selectively detached, providing ease of access to the electrical component.

Additionally, the electrical component inside the assemblable chamber is provided with ventilation enabled by the holes arranged on the front plate. The heat generated from the electrical component can be effectively dissipated through ventilation. Consequently, the temperature of the assemblable chamber and the electrical component can be optimized to be within a preferred range.

In another embodiment, the component plate comprises: a first surface and a second surface opposite to the first surface; an opening penetrating from the first surface toward the second surface and formed at one edge of the component plate; and a tortuous path defined by a plurality of wall members protruded from the second surface; wherein the electrical component is located on the first surface.

Preferably, the tortuous path is configured to be in an L-shape along two peripheral sides of the component plate.

Also preferably, the tortuous path comprises a first end located near the opening and a second end located adjacent to an aperture of the cover plate.

From the embodiments, the configuration is provided so that the heat inside assemblable chamber, particularly the heat generated from the electrical component located on the first surface of the component plate, will be directed to the opening and through the tortuous path to the outside of the assemblable chamber.

Since the opening and the tortuous path are provided on the component plate, the heat will be directed based on the provided path. The path is configured to buffer the external environment, including moisture, dust, and contaminants, from entering the component plate near the first surface on where the electrical component is arranged.

Specifically, the tortuous path is designed to minimize the ingress of raindrops and the formation of dew droplets or condensation from moisture that could cause potential damage to the electrical component. Additionally, the presence of dust and contaminants can be minimized thereby reducing possible damage and disruptions to the operation of the electrical component.

Furthermore, the position of the opening and the tortuous path enable the electrical component to be engaged with the component plate with minimal gap, thereby reducing the possibility of moisture or contaminants entering through other means.

As the second end of the tortuous path is located near the aperture of the cover plate, the engagement of the assemblable chamber with the component plate forms a connected route between the interior and exterior of the assemblable chamber for the transfer of heat. Particularly, the heat generated from the electrical component can exit the assemblable chamber through the aperture.

In an embodiment of the invention, the component plate comprises a heat regulator fitted into a slot of the cover plate.

Preferably, the heat regulator comprises a plurality of fins.

Due to the presence of the heat regulator, the temperature within the assemblable chamber can be effectively controlled, in addition to the ventilation provided by the aperture and the holes.

In another embodiment of the invention, the component plate is not directly engaged with the front plate, the side plate, and the bottom plate.

Since the electrical component is primarily supported by the component plate, minimal engagement of the component plate with other components results in a corresponding minimal engagement of the electrical component with those components. As the results, the likelihood of moisture from the external environment affecting the electrical component can be minimized, thereby enhancing optimal protection of the electrical components.

In another embodiment, the component plate further comprises a groove provided at a bottom portion of the component plate for supporting the electrical component.

In yet another embodiment, the component plate further comprises a hook provided at an upper portion of the component plate for detachably engaging with the electrical component.

In still yet another embodiment, the component plate further comprises a protrusion provided at the upper portion of the component plate for receiving with the electrical component.

With the combination of the above embodiments, the component plate is attached to the electrical component, without the need for any fasteners.

In a preferred embodiment, the bottom plate is provided with holes for providing ventilation for the electrical component.

Preferably, the holes are distributed across the front plate or the bottom plate.

Preferably, each hole has a size of not more than 3 mm.

Since the front plate and the bottom plate form the assemblable chamber, the holes are configured to provide ventilation while reducing the possibility of contaminants including small animals and insects from entering the assemblable chamber.

In another embodiment, the present invention provides an outdoor unit comprising the assemblable chamber according to any of the above combinations of the embodiments.

Preferably, the front plate is substantially directed towards a front portion of the outdoor unit.

In yet another embodiment, the outdoor unit further comprises a heat exchange chamber on which a fan and a heat exchanger are provided, wherein the heat exchange chamber is structured so that the cover plate of the assemblable chamber forms part of the heat exchange chamber.

The placement of the assemblable chamber in relative to the heat exchange chamber facilitates the heat dissipation of the assemblable chamber particularly by means of air flow generated from the fan. The heat regulator is preferably extended into the heat exchange chamber. Combined with the tortuous path, the heat transfer can be conducted effectively by both heat convection and conduction.

Still another further embodiment of the invention is an air conditioner comprising the outdoor unit described in the foregoing.

The air conditioner may further comprise an indoor unit comprising an indoor fan and an indoor heat exchanger located within the indoor unit for exchanging heat with the outdoor heat exchanger by means of refrigerant.

In some further embodiments, the outdoor unit can alternatively be used in refrigeration systems.

BRIEF DESCRIPTION OF THE DRAWINGS

For the purpose of facilitating an understanding of the invention, there is illustrated in the accompanying drawing the preferred embodiments from an inspection of which when considered in connection with the following description, the invention, its construction and operation, and many of its advantages would be readily understood and appreciated.

FIG. 1 shows a front view of the outdoor unit of an air conditioner in accordance with an embodiment of the invention.

FIG. 2 shows a perspective view of the assemblable chamber of the outdoor unit in accordance with an embodiment of the invention.

FIG. 3 shows a perspective view of the front plate of the assemblable chamber as illustrated in FIG. 2.

FIG. 4 shows an exploded view of the outdoor unit as illustrated in FIG. 1.

FIG. 5 shows an exploded view of the assemblable chamber as illustrated in FIG. 2.

FIG. 6 shows a perspective view of the component plate engaged with the electrical component on the first surface in accordance with an embodiment of the invention.

FIG. 7 shows a front view of the component plate on the second surface in accordance with the embodiment an embodiment of the invention.

DETAILED DESCRIPTION OF THE EMBODIMENTS OF THE INVENTION

It is to be understood that the following detailed description will be directed to embodiments, provided as examples for illustrating the concept of the present invention only. The present invention is in fact not limited to the particular embodiments described, as such may, of course, vary. It is also to be understood that the terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting, since the scope of this invention will be limited only by the appended claims.

The detailed description of the invention is divided into various sections for the reader's convenience only and disclosures found in any section may be combined with those in another section.

Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs.

It must be noted that as used herein and in the appended claims, the singular forms "a", "an" and "the" include plural referents unless the context clearly dictates otherwise.

"Comprising" or "comprises" is intended to mean that the compositions and processes include the recited elements, but does not exclude others.

The term "approximately" when used before a numerical designation, e.g., dimensions, time, amount and such other, including a range, indicates approximations, which may vary by (+) or (-) 10%, 5% or 1%, or between any sub-range or sub-value thereof.

Similarly, the term "substantially" when used before a directional designation indicates approximations to the referred direction, e.g., an angle in relative to a normal plane, which may vary by (+) or (-) 10%, 5% or 1%, or between any sub-range or sub-value thereof.

FIG. 1 shows an outdoor unit 1 of an air conditioner with casing partially removed. In some embodiments,, the air conditioner, such as the split-type air conditioner, is provided with the outdoor unit 1 and an indoor unit (not shown) , and configured to cool or heat an interior space. The outdoor unit 1 comprises a heat exchange chamber 50

comprising a fan 51 and a heat exchanger 52. The heat exchange chamber 50 is partially formed by a partition 53 configured to separate and create another chamber in which a compressor is provided. In the present invention, the upper portion of the partition 53 is provided with an assemblable chamber 10 for housing an electrical component which will be described in further details.

FIG. 2 shows a perspective view of the assemblable chamber 10 of the outdoor unit 1. As illustrated in FIG. 2, the assemblable chamber 10 comprises a front plate 11, a cover plate 12, a side plate 13, and a bottom plate 14, which are connected in a disengageable manner to form the assemblable chamber 10.

The assemblable chamber 10 can be partially disassembled by removing specific fasteners or disengaging specific parts. As shown, a first connector 112 is configured to engage the front plate 11 with the bottom plate 14. Therefore, the first connector 112 can be removed to disengage the front plate 11 from the bottom plate 14. Further, the cover plate 12 is provided with a front receiving part 123 for receiving with the front plate 11. From the configuration, the front plate 11 can be removed from the cover plate 12 by removing the front plate 11 from the front receiving part 123. Specifically, the front plate 11 can be removed from the cover plate 12 after the first connector 112 is removed. Additionally, the cover plate 12 is provided with a side receiving part 124 for receiving with the side plate 13. Hence, the side plate 13 can be removed from the cover plate 12 by removing the side plate 13 from the side receiving part 124. A second connector 125 is configured to engage the bottom plate 14 and the cover plate 12. Specifically, the second connector 125 is engaged with the cover plate 12 on the front receiving part 123. More specifically, the front plate 11 is not engaged with the second connector 125. Therefore, the second connector 125 can be removed to disengage the bottom plate 14 from the cover plate 12. Since the second connector 125 is not engaged with the front plate 11, the front plate 11 can be disengaged regardless of the engagement of the second connector 125. It should be noted that each of the first connector 112 and the second connector 125 can be provided in multiple locations. For example, the second connector 125 may further be

provided to engage the bottom plate 14 and the cover plate 12 at a side opposite to the front receiving part 123.

As described, either one of the front plate 11, the side plate 13, and the bottom plate 14 can be disengaged with the cover plate 12. The partial disassembling improves the flexibility of the connection of the front plate 11, the cover plate 12, the side plate 13, and the bottom plate 14, and increases ease of access when conducting maintenance to any parts of the assemblable chamber 10 or components inside the assemblable chamber 10.

Furthermore, the front plate 11 comprises holes 111 for providing ventilation for the components within the assemblable chamber 10. As shown, the holes 111 are distributed across the front plate 11. Additionally, the bottom plate 14 is also provided with holes 111 for providing ventilation. Similarly, holes 111 are distributed across the bottom plate 14.

FIG. 3 shows the front plate 11 of the assemblable chamber 10. The front plate 11 is provided with holes 111 in at least two surfaces. Particularly, the holes 111 are mainly distributed across the front plate 11 on a front surface 113 which is substantially directed towards a front portion of the outdoor unit as shown in FIG. 1. Additionally, the holes 111 are distributed across the front plate 11 on a side surface 114 which is substantially perpendicular to the front surface 113. Due to the placement of the front plate 11 on the outdoor unit as shown in FIG. 1, the holes 111 on the front surface 113 and the side surface 114 are distributed on a front portion of the assemblable chamber 10 in relative to the direction of the outdoor unit 1.

In a preferred embodiment, the holes 111 are configured to have a minimal width while allowing sufficient ventilation. Preferably, each hole 111 has a size of not more than 3 mm. Preferably, each hole 111 has a size ranging from 0.5 to 3 mm. Preferably, each hole 111 has a size ranging from 1 to 3 mm. Preferably, each hole 111 has a size ranging from 2 to 3 mm. Preferably, each hole 111 has a size ranging from 2.5 to 3 mm. More precisely, each hole 111 is a circular hole with a diameter of approximately 2.8 mm.

FIG. 4 shows an exploded view of the outdoor unit 1. As illustrated, the heat exchange chamber 50 is structured so that the cover plate 12 of the assemblable chamber

10 forms part of the heat exchange chamber 50. Particularly, the cover plate 12 forms part of the heat exchange chamber 50 at the upper portion of the partition 53. In other words, the cover plate 12 of the assemblable chamber 10 is connected to the partition 53 to form one wall of the heat exchange chamber 50. The wall separates between the heat exchange chamber 50 and another chamber in which the compressor 60 is provided.

Moreover, the front plate 11 of the assemblable chamber 10 is substantially directed towards a front portion of the outdoor unit 1. As the holes 111 are arranged on the front plate 11, the ventilation can be provided in the direction towards the front portion of the outdoor unit 1. As previously described in FIG. 2, the bottom plate 14 is also provided with holes 111. Therefore, when the bottom plate 14 is engaged with the front plate 11, the holes 111 are provided in a front portion of the assemblable chamber 10 in relative to the direction of the outdoor unit 1.

FIG. 5 shows the assemblable chamber 10 including the electrical component 20 and the component plate 30. The component plate 30 is disposed within the assemblable chamber 10. In other words, the component plate 30 is disposed within an enclosure formed by the front plate 11, the cover plate 12, the side plate 13, and the bottom plate 14. In a specific embodiment, the enclosure is formed by only the front plate 11, the cover plate 12, the side plate 13, and the bottom plate 14. The component plate 30 is engaged with the cover plate 12. Preferably, the component plate 30 is supported only by the cover plate 12. The component plate 30 is not directly engaged with the front plate 11, the side plate 13 and/or the bottom plate 14.

The component plate 30 is detachably engaged with and supports the electrical component 20. As a result, the front plate 11, the cover plate 12, the side plate 13, the bottom plate 14 and the component plate 30 are configured to be assembled so that the electrical component 20 is housed within the assemblable chamber 10.

FIG. 6 shows the component plate 30 comprising a first surface and a second surface substantially opposite to the first surface. Here, in FIG. 6, the first surface is primarily shown on where the electrical component 20 is located. Specifically, the component plate 30 is engaged with the electrical component 20 on the first surface. The

component plate 30 further comprises an opening 32 which penetrates between the first surface and the second surface. The opening 32 is located at one edge of the component plate 30 to facilitate the placement of the electrical component 20.

FIG. 7 shows the second surface of the component plate 30. As described, the opening 32 is provided on the second surface. Additionally, the component plate 30 comprises a tortuous path 31 defined by a plurality of wall members 311 arranged on the second surface. Preferably, the plurality of wall members 311 protrude from the second surface. More specifically, the wall members 311 are simultaneously formed with the component plate 30, extending from its the second surface. The tortuous path 31 is configured to prolong the path of air flow while ensuring adequate air movement therein. In other words, the wall members 311 are arranged to form twists and turns within the tortuous path 31. Hence, the tortuous path 31 can be likened to a maze-like passage. Furthermore, the tortuous path 31 and the opening 32 can be provided in multiple locations on the second surface.

In a preferred embodiment, the tortuous path 31 is configured to be in an L-shape along two peripheral sides of the component plate 30. With its L-shape, the tortuous path 31 comprises a first end located near the opening 32 and a second end positioned on the opposite side.

As shown in FIG. 5, the cover plate 12 is further provided with an aperture 121. The aperture 121 can be configured as ventilation holes. When viewed with FIG. 7, upon assembling the component plate 30 with the cover plate 12, the second end of the tortuous path 31 is adjacent to the aperture 121 of the cover plate 12.

With the combination of the tortuous path 31, the opening 32, and the aperture 121, a route is created, facilitating communication between the interior and exterior of the assemblable chamber 10. When heat is generated from the electrical component 20 located on the first surface of the component plate 30, the heat will be directed to the opening 32 and through the tortuous path 31 and the aperture 121 to exterior of the assemblable chamber 10. Additionally, when taking into account the holes 111 arranged on the front

plate 11 and the bottom plate 14, a complete airflow path is effectively established with both inlet (e.g., the aperture 121) and outlet (e.g., the holes 111).

When viewed with FIG. 4, as the cover plate 12 forms part of the heat exchange chamber 50, it will be more apparent that the aperture 121 is communicated with the heat exchange chamber 50. Since the fan 51 is provided in the heat exchange chamber 50, the fan 51 generates relatively high airflow within the heat exchange chamber when operational. With the airflow, the route will facilitate the heat transfer from the electrical component 20.

By introducing twists and turns, the tortuous path 31 effectively minimizes the ingress of raindrops and prevents the formation of dew droplets that could potentially harm the electrical component 20, while offering the sufficient route for the heat to exit the assemblable chamber 10. In certain conditions, the tortuous path 31 may result in lower heat dissipation. However, the inventors have discovered that the present invention, including the tortuous path 31, is able to balance the heat dissipation to achieve within the sufficient range, taking into consideration the protection of the components.

In FIG. 5, the component plate 30 comprises a heat regulator 33 and the cover plate 12 further comprises a slot 122. Preferably, the heat regulator 33 comprises a plurality of fins for conducting heat out of the assemblable chamber 10. More specifically, the heat regulator 33 is a heat sink. The heat regulator 33 is configured to be fitted into the slot 122 so as to enclose the assemblable chamber 10. As shown in FIG. 1, the heat regulator 33 is extended into the heat exchange chamber 50. As previously described, the airflow generated from the fan 50 facilitates the heat transfer of the heat regulator 33.

Turning to FIG. 6, the electrical component 20 comprises an electric circuit board that is part of a control unit for controlling the air conditioner. More specifically, the electric circuit board is a printed circuit board (PCB). As the electrical component 20 is primarily in the form of a board, the component plate 30 can be configured to facilitate detachable engagement with the electrical component 20. The engagement is configured to minimize the gap between the electrical component 20 (specifically, the electric circuit board) and the component plate 30.

The detachable engagement of the component plate 30 and the electrical component 20 in the preferred embodiment is further described.

Firstly, the component plate 30 further comprises a groove 34 provided at a bottom portion of the component plate 30 for supporting the electrical component 20. Preferably, the component plate 30 comprises more than one groove 34 at the bottom portion. More preferably, the component plate 30 comprises four grooves 34 distributed at the bottom portion of the component plate 30.

Secondly, the component plate 30 further comprises a hook 35 provided at an upper portion of the component plate 30 for detachably engaging with the electrical component 20. Preferably, the component plate 30 comprises more than one hook 35. More preferably, the component plate 30 comprises two hooks 35.

Thirdly, the component plate 30 further comprises a protrusion 36 provided at the upper portion of the component plate 30 for receiving with the electrical component 20. Preferably, the component plate 30 comprises more than one protrusion 36 at the upper portion. More preferably, the component plate 30 comprises two protrusions 36 at the opposite sides of the upper portion. Even more precisely, the protrusion 36 is a stand bolt.

It should be reiterated that all the groove 34, the hook 35, and the protrusion 36 are described herein as the most preferred embodiment. The present invention includes possible variations including the combinations of one of the groove(s) 34, the hook(s) 35, and the protrusion(s) 36. The engagement, particularly at the hook 35 and the protrusion 36, is achieved through snap-fit without the need for fasteners.

Furthermore, the method of engaging the electrical component 20 with the component plate 30 comprises the following steps:

- placing the electrical component 20, specifically the bottom edge of the electric circuit board, in the grooves 34 provided at a bottom portion of the component plate 30;

- engaging the electrical component 20 with the hooks 35 at the upper portion of the component plate 30; and

- engaging the electrical component 20 with the protrusions 36 provided at the upper portion of the component plate 30.

Preferably, the steps are performed in the above order.

With the above embodiments, the electrical component 20 can be securely supported and housed within the assemblable chamber 10. By addressing potential heat issues as well as mitigating the risk of moisture-related problems of the electrical component 20 within the assemblable chamber 10, the present invention facilitates the efficient operation of the outdoor unit 1.

Although specific embodiments of the invention have been disclosed and described, as well as illustrated in the accompanying drawings, these are simply for the purpose of a better understanding of the principles of the present invention and are not meant to impose a limitation on the scope and spirit of the teaching of the present invention. Adaption and modification to various structures, such as design or material of the invention, are possible and apparent to a skilled person without departing from the scope of the present invention, which is to be determined by the claims.

CLAIMS

1. An assemblable chamber (10) for an outdoor unit (1) comprising:

an electrical component (20) housed within the assemblable chamber (10); and

a component plate (30) disposed within the assemblable chamber (10) and detachably engaged with the electrical component (20) on the component plate (30);

wherein the assemblable chamber (10) comprises a front plate (11) comprising holes (111) for providing ventilation for the electrical components (20) housed within the assemblable chamber (10).

2. The assemblable chamber (10) of claim 1, further comprising a cover plate (12), a side plate (13), and a bottom plate (14), wherein the front plate (11), the cover plate (12), the side plate (13), and the bottom plate (14) are connected to form the assemblable chamber (10) in a disengageable manner.

3. The assemblable chamber (10) of claim 1 or 2, wherein the component plate (30) comprises:

a first surface and a second surface opposite to the first surface;

an opening (32) penetrating from the first surface toward the second surface and formed at one edge of the component plate (30); and

a tortuous path (31) defined by a plurality of wall members (311) protruded from the second surface;

wherein the electrical component (20) is located on the first surface.

4. The assemblable chamber (10) of claim 3, wherein the tortuous path (31) is configured to be in an L-shape along two peripheral sides of the component plate (30).

5. The assemblable chamber (10) of claim 3 or 4, wherein the tortuous path (31) comprises a first end located near the opening (32) and a second end located adjacent to an aperture (121) of the cover plate (12).

6. The assemblable chamber (10) of any one of claims 2 to 5, wherein the component plate (30) comprises a heat regulator (33) fitted into a slot (122) of the cover plate (12).

7. The assemblable chamber (10) of claim 6, wherein the heat regulator (33) comprises a plurality of fins.

8. The assemblable chamber (10) of any one of claims 2 to 7, wherein the component plate (30) is not directly engaged with the front plate (11), the side plate (13), and the bottom plate (14).

9. The assemblable chamber (10) of any one of claims 1 to 8, wherein the component plate (30) further comprises a groove (34) provided at a bottom portion of the component plate (30) for supporting the electrical component (20).

10. The assemblable chamber (10) of any one of claims 1 to 9, wherein the component plate (30) further comprises a hook (35) provided at an upper portion of the component plate (30) for detachably engaging with the electrical component (20).

11. The assemblable chamber (10) of any one of claims 1 to 10, wherein the component plate (30) further comprises a protrusion (36) provided at the upper portion of the component plate (30) for receiving with the electrical component (20).

12. The assemblable chamber (10) of any one of claims 2 to 11, wherein the bottom plate (14) is provided with holes (111) for providing ventilation for the electrical component (20).

13. The assemblable chamber (10) of any one of claims 1 to 12, wherein the holes (111) are distributed across the front plate (11) or the bottom plate (14).

14. The assemblable chamber (10) of any one of claims 1 to 13, wherein each hole (111) has a size of not more than 3 mm.

15. The assemblable chamber (10) of any one of claims 1 to 14, wherein the electrical component (20) comprises an electric circuit board that is part of a control unit for controlling an air conditioner.

16. An outdoor unit (1) comprising the assemblable chamber (10) of any one of claims 1 to 15, wherein the front plate (11) is substantially directed towards a front portion of the outdoor unit (1).

17. The outdoor unit (1) of claim 16 further comprising a heat exchange chamber (50) on which a fan (51) and a heat exchanger (52) are provided, wherein the heat exchange chamber (50) is structured so that the cover plate (12) of the assemblable chamber (10) forms part of the heat exchange chamber (50).