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(54) **AIR CONDITIONER OUTDOOR UNIT AND AIR CONDITIONING DEVICE**

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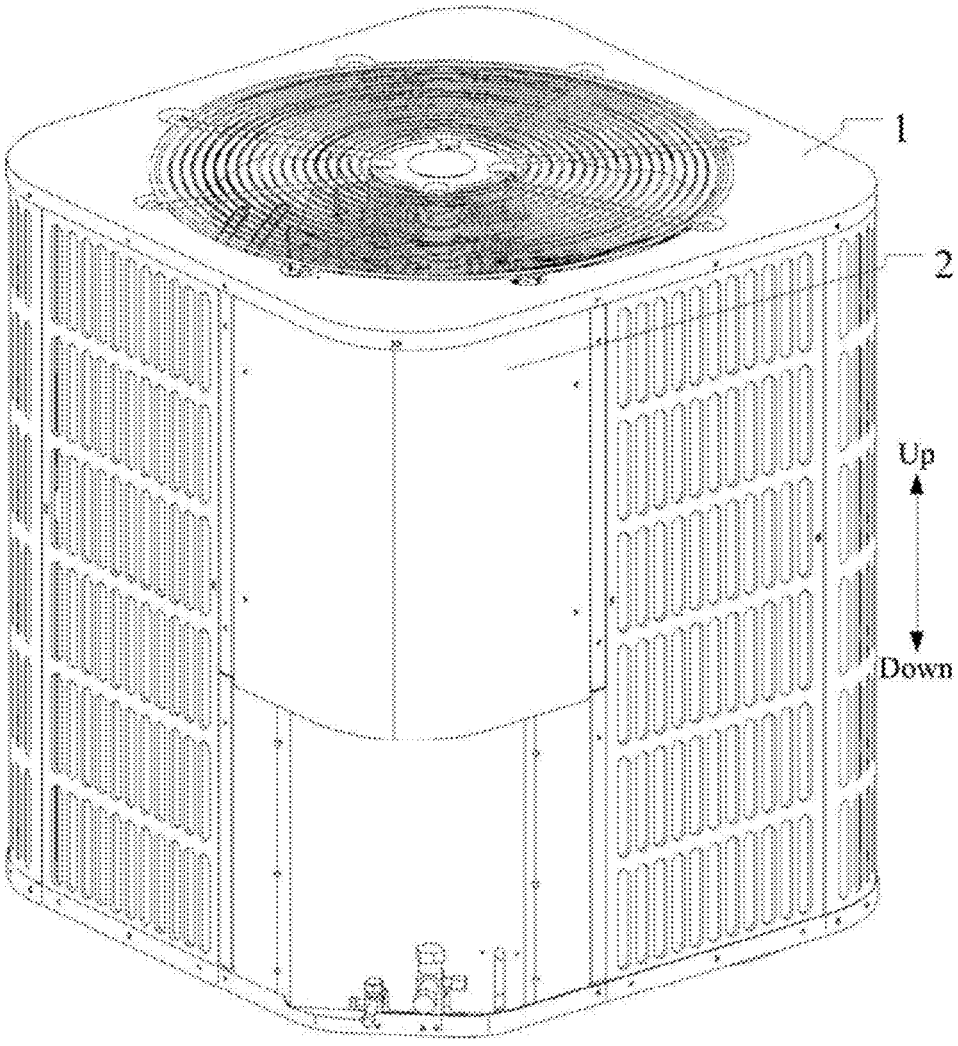
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(57) **ABSTRACT**

An air conditioner outdoor unit includes a housing including a heat-exchange air duct with a fan provided within the heat-exchange air duct, an electric control box connected to the housing, and a heat-dissipation air duct system configured to dissipate heat from the electric control box and including a heat-dissipation air duct arranged independent of the heat-exchange air duct and in communication with the heat-exchange air duct.



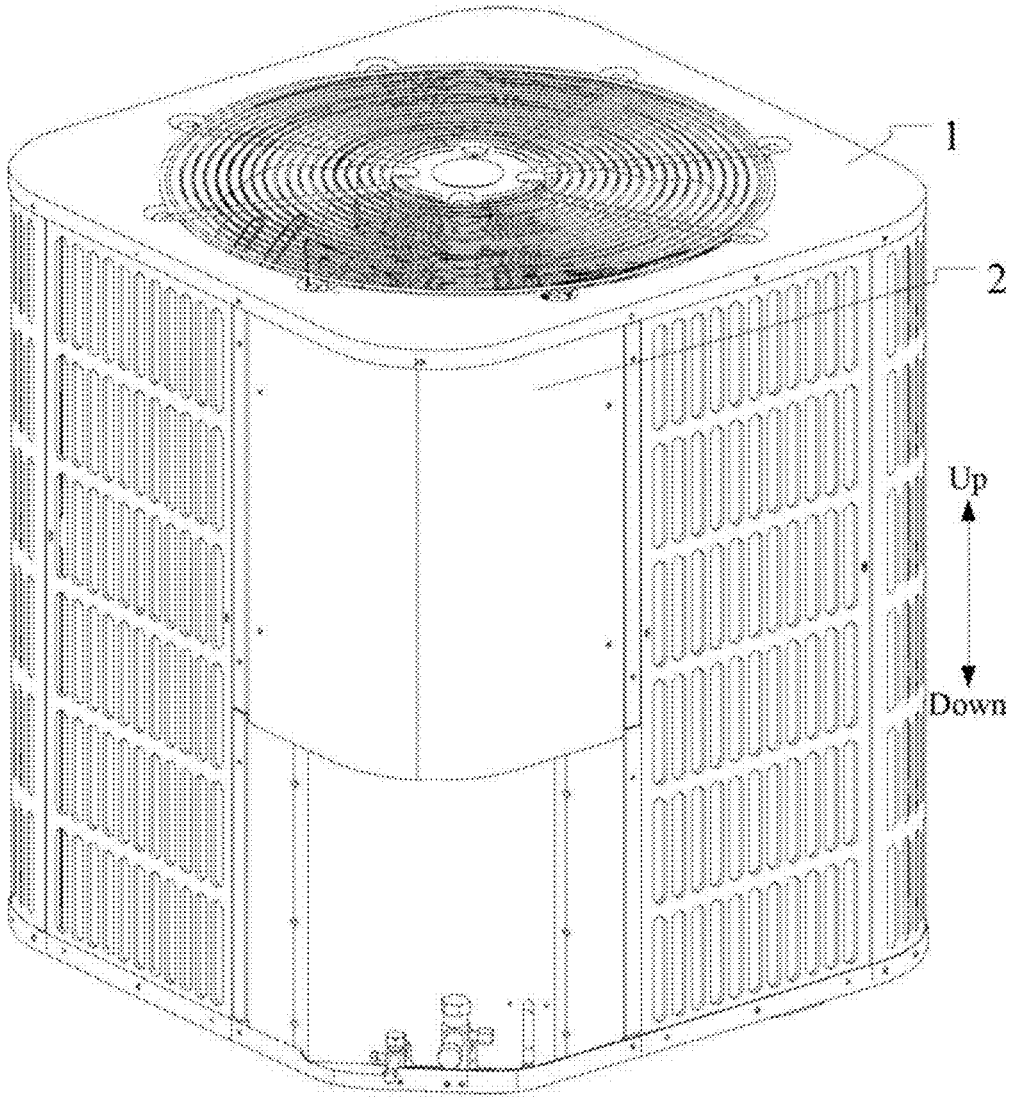


FIG. 1

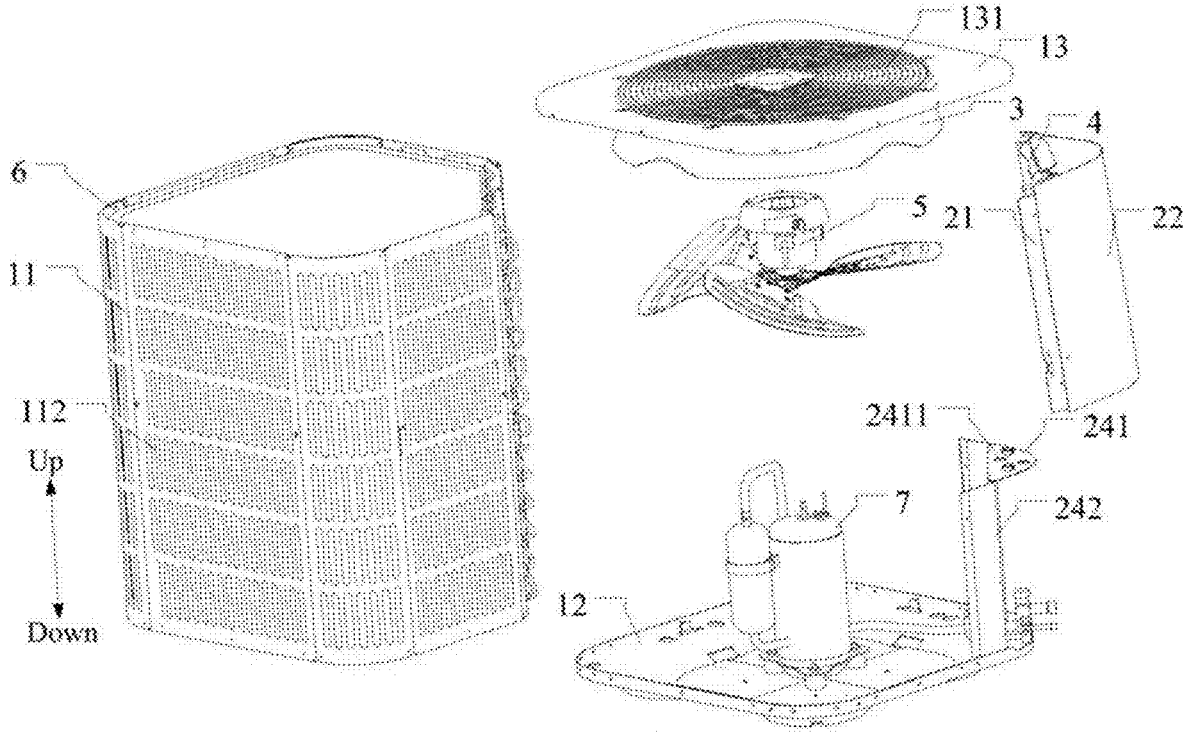


FIG. 2

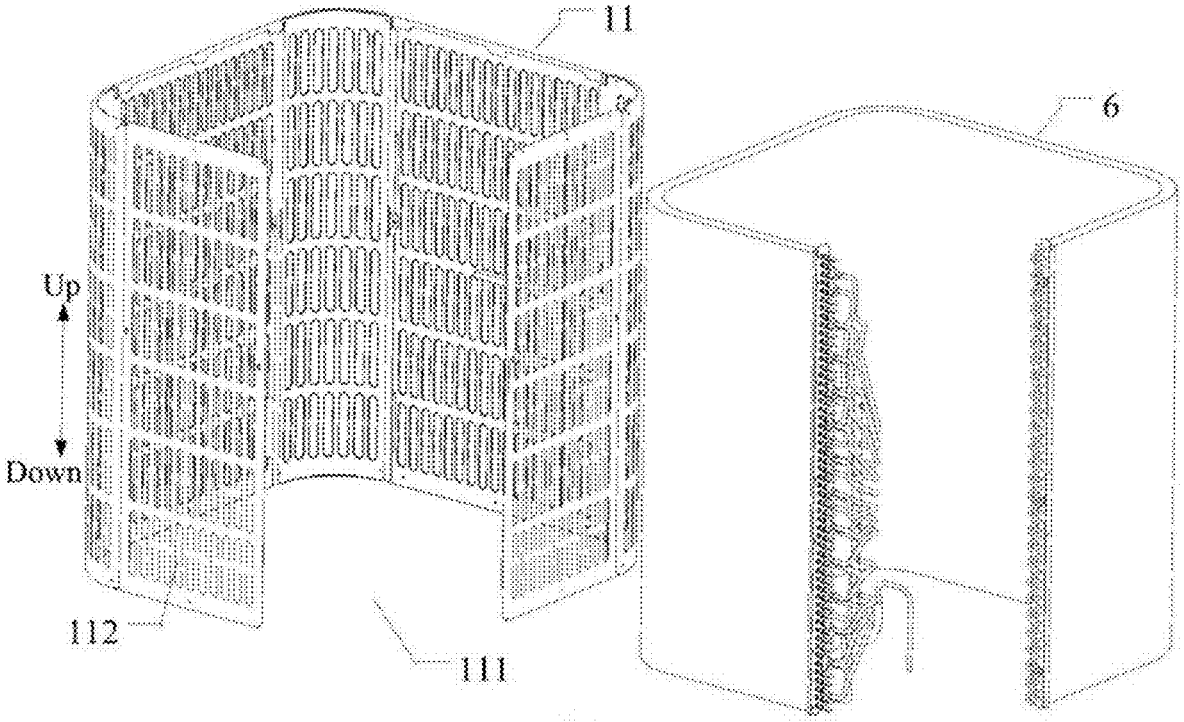


FIG. 3

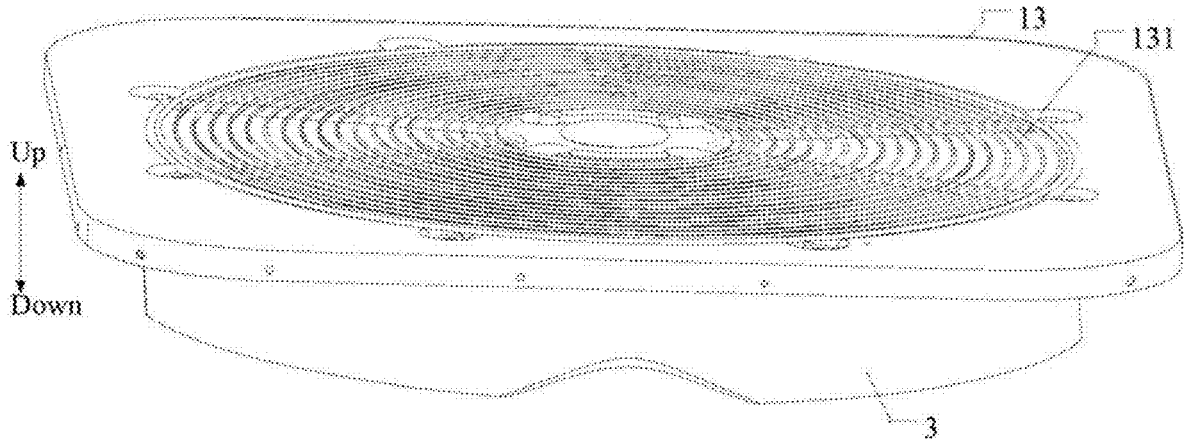


FIG. 4

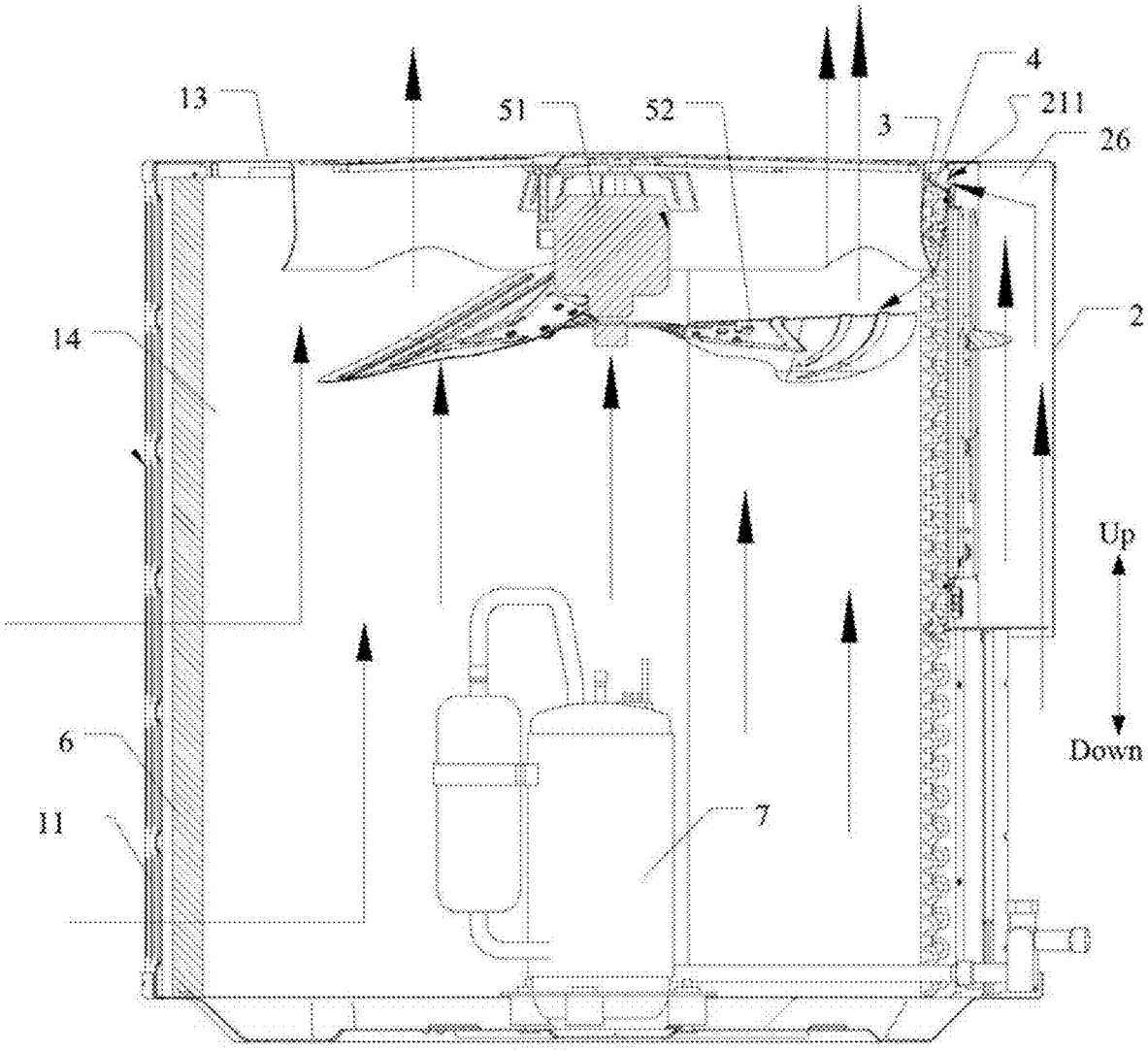


FIG. 5

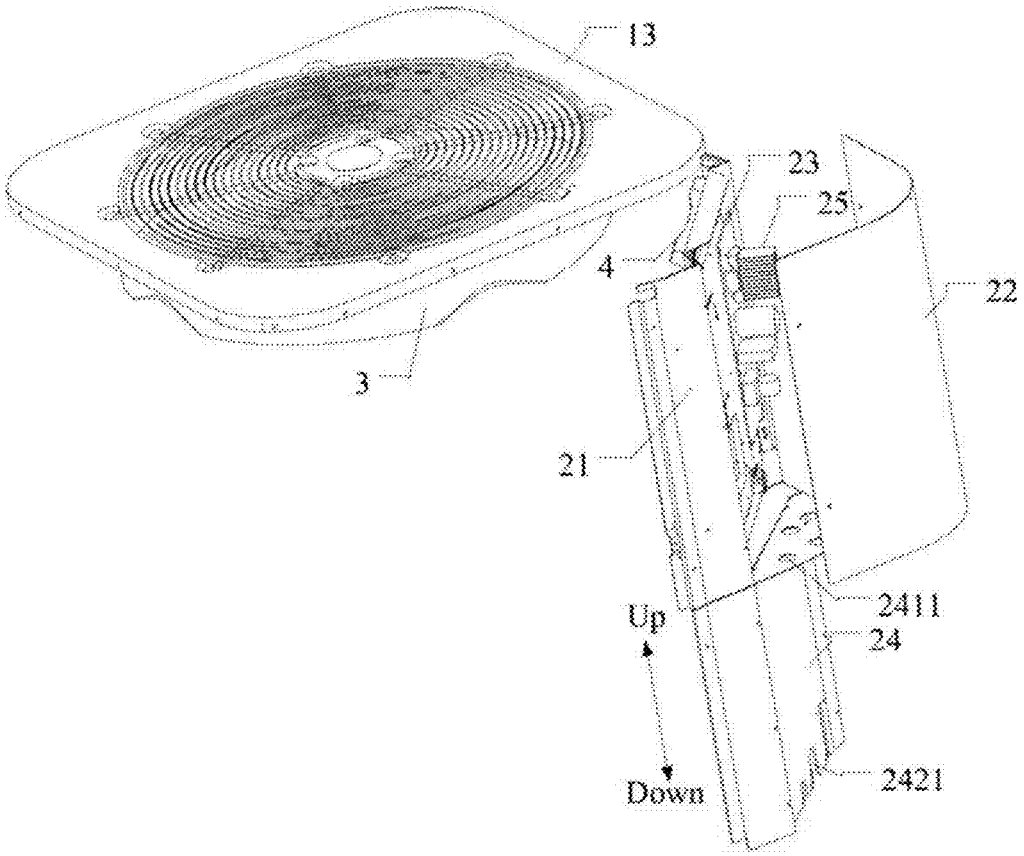


FIG. 6

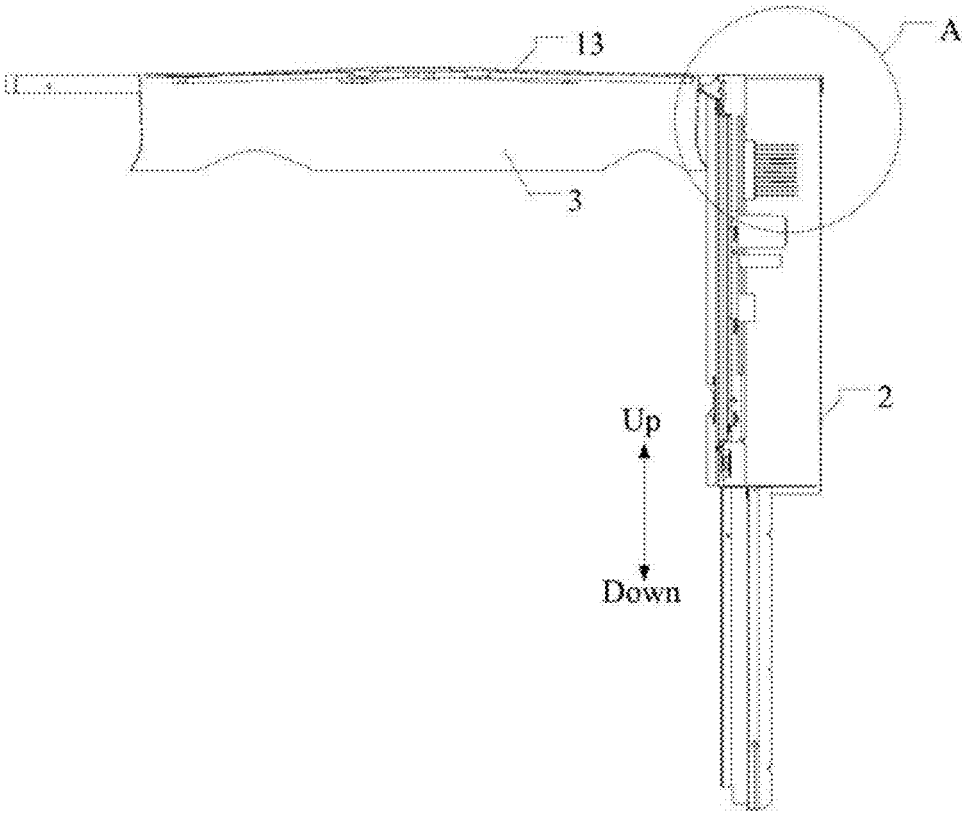


FIG. 7

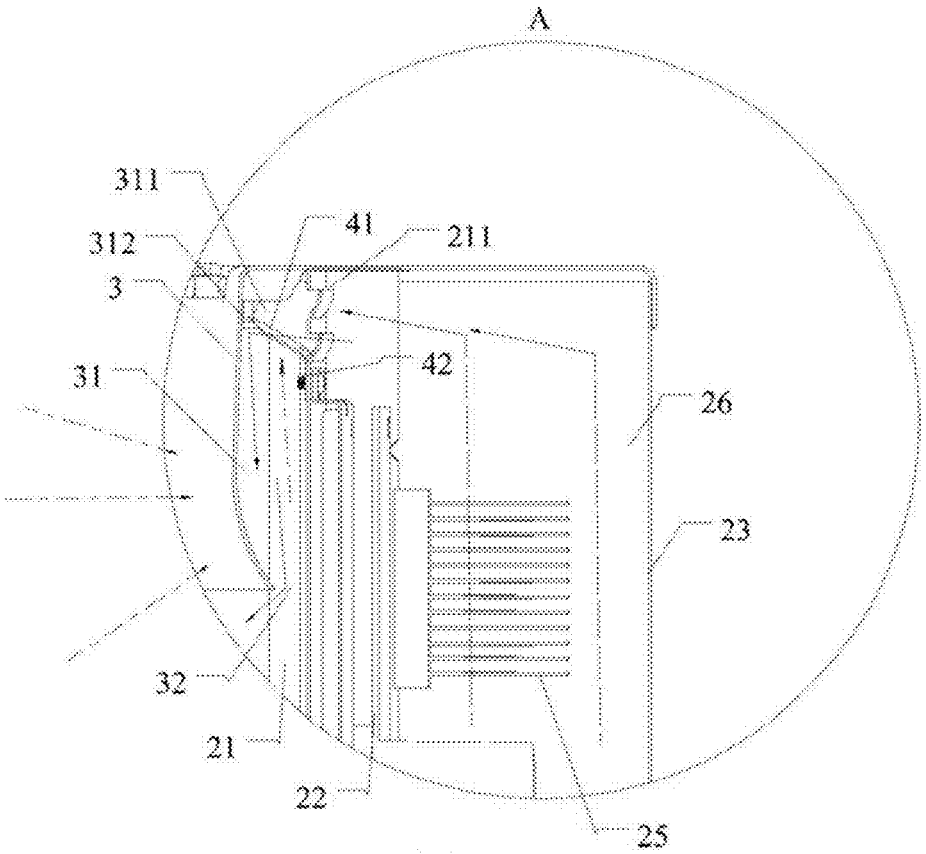


FIG. 8

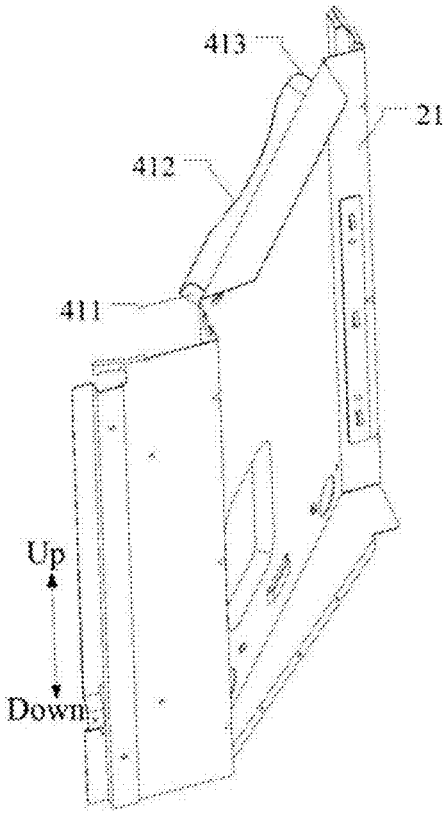


FIG. 9

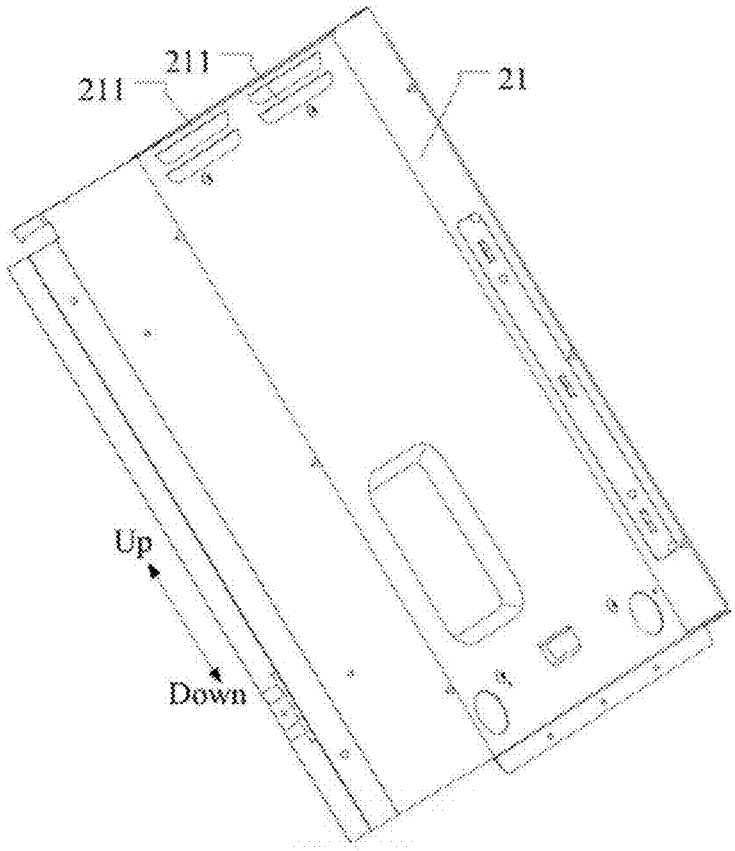


FIG. 10

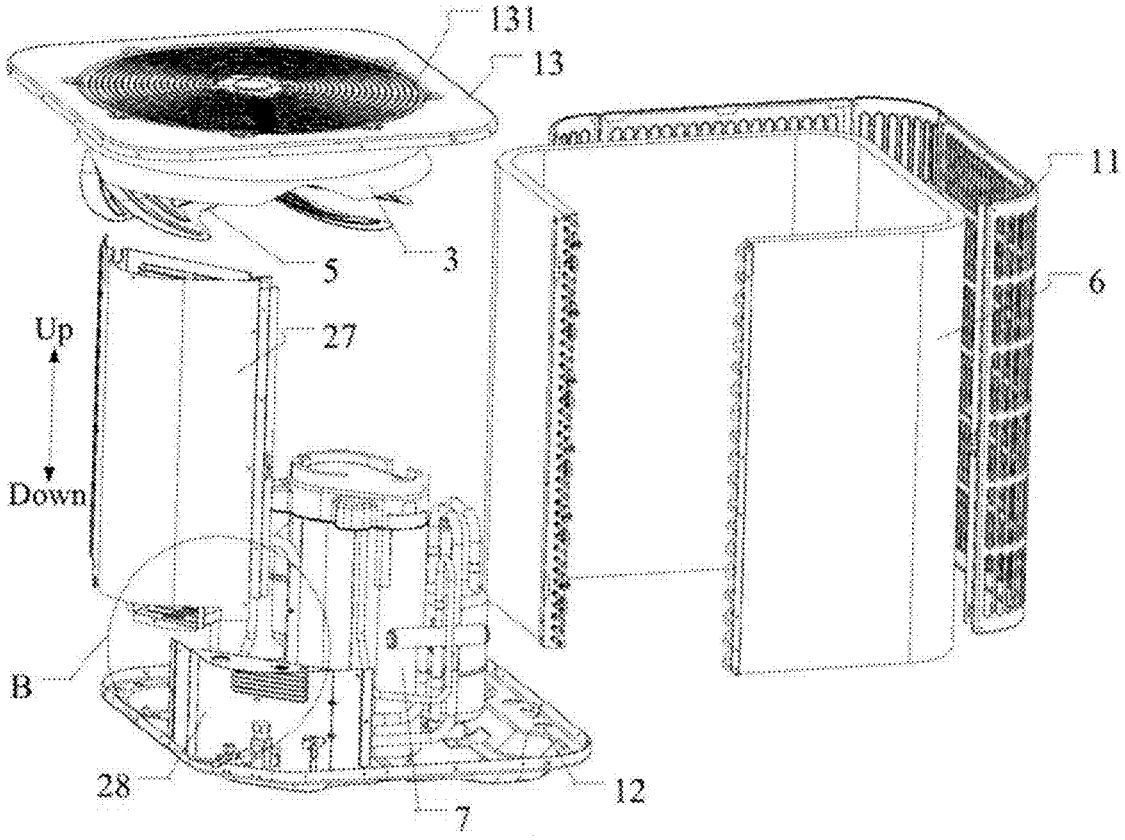


FIG. 11

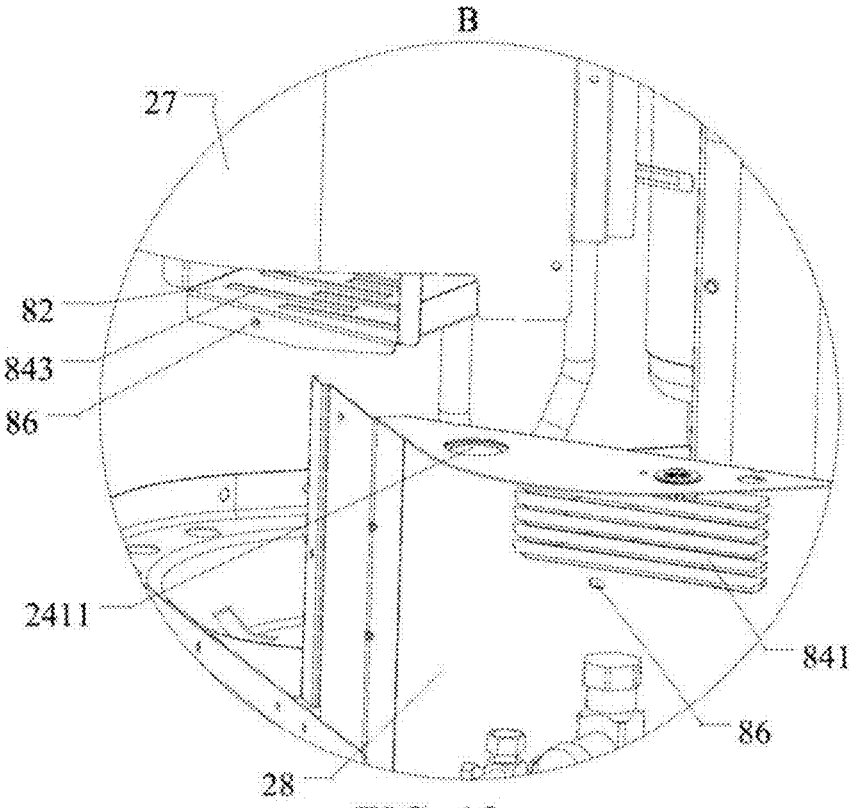


FIG. 12

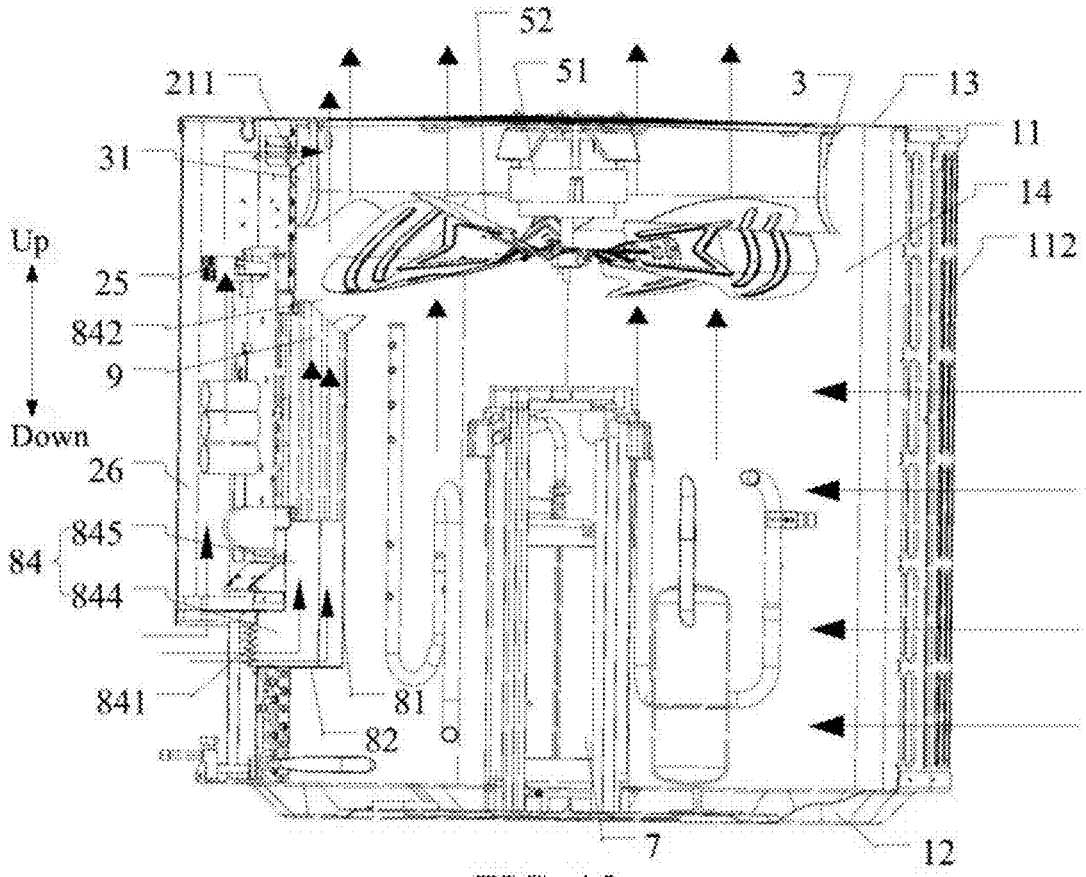

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211
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3
13
11
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Up
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842
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12

FIG. 13

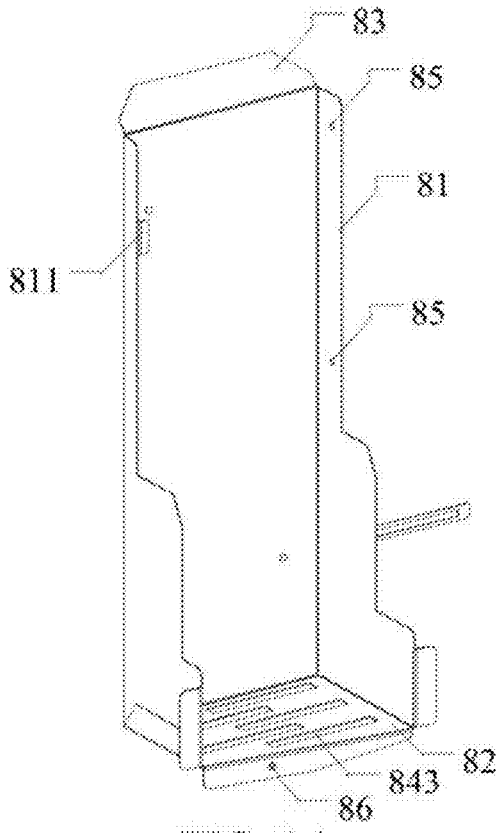


FIG. 14

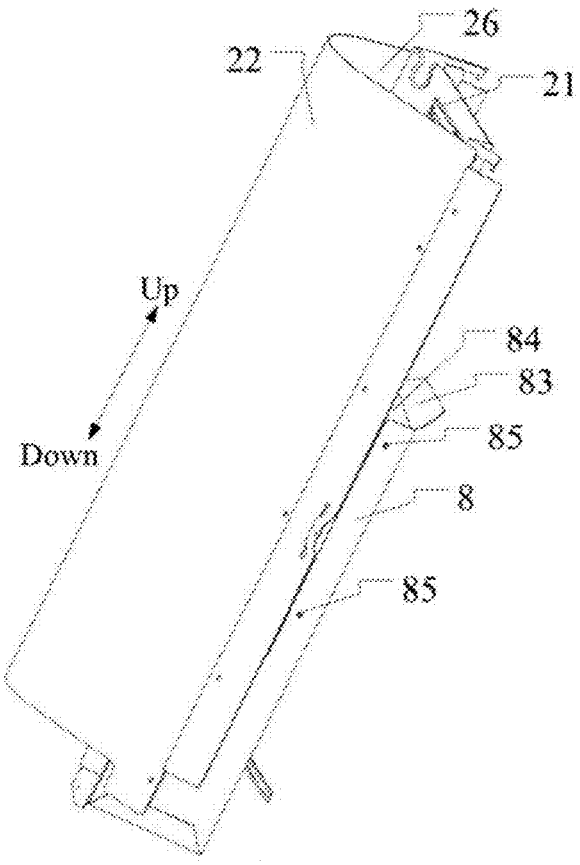


FIG. 15

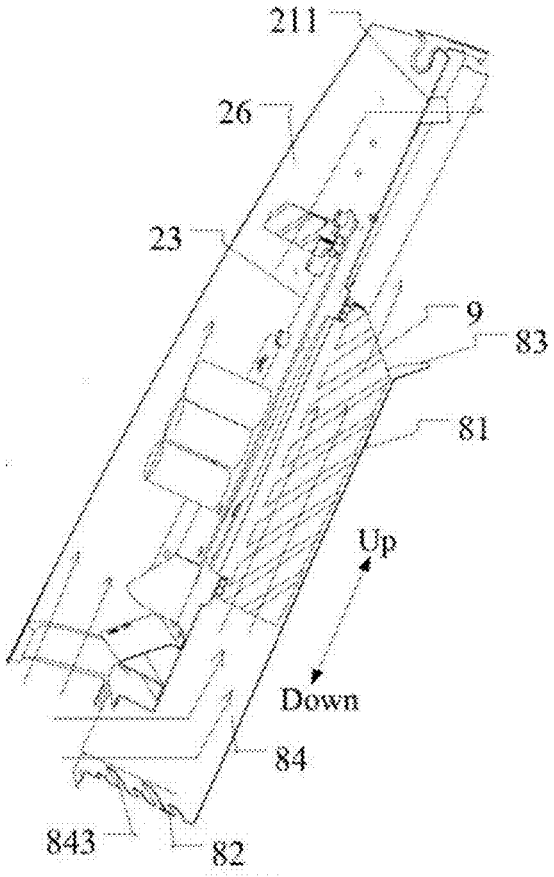


FIG. 16

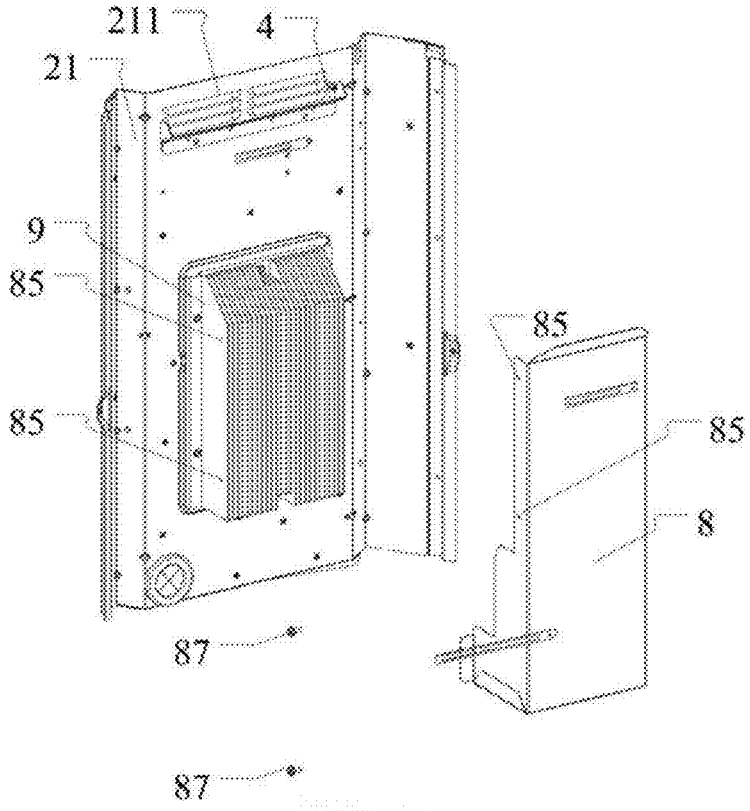


FIG. 17

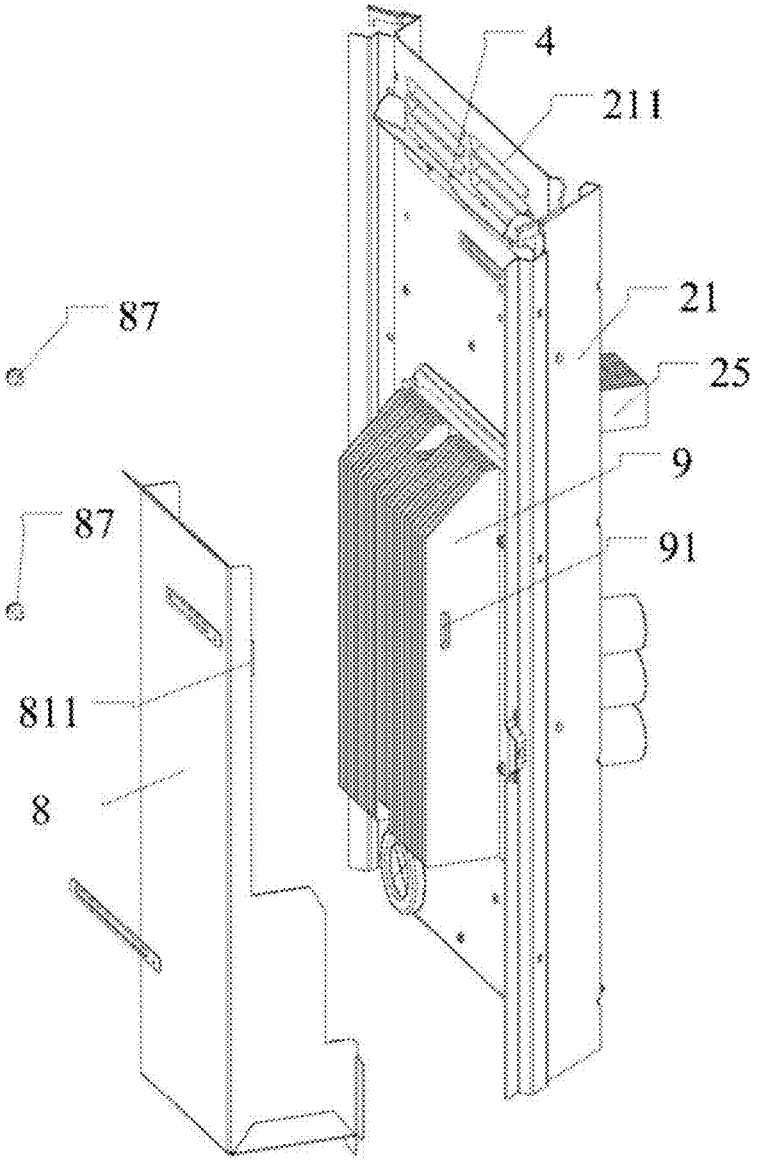


FIG. 18

AIR CONDITIONER OUTDOOR UNIT AND AIR CONDITIONING DEVICE

[0001] The present application claims priority to Chinese Patent Application No. 202211013911.9 filed to the CNIPA on Aug. 23, 2022 and entitled "Air conditioner outdoor unit and Air Conditioning Device" and Chinese Patent Application No. 202222228214.7 filed to the CNIPA on Aug. 23, 2022 and entitled "Air conditioner outdoor unit and Air Conditioning Device," the contents of which should be construed as being incorporated herein by reference.

TECHNICAL FIELD

[0002] Embodiments of the present disclosure relate to, but are not limited to, the field of air treatment device technologies, and in particular to an air conditioner outdoor unit and an air conditioning device.

BACKGROUND

[0003] At present, an electric control board of an air conditioner outdoor unit generates a lot of heat when it is in operation. If the electric control board has poor heat dissipation, it will limit the frequency of the compressor, affect the cooling effect, and lead to poor user experience at a minimum; even worse, it will lead to aging and failure incidents of components of the electric control board, which will affect the reliability of the air conditioner.

SUMMARY

[0004] The following is a summary of the subject matter described in detail herein. This summary is not intended to limit the protection scope of the claims.

[0005] Some embodiments of the present disclosure provide an air conditioner outdoor unit, including: a housing, which is provided with a heat-exchange air duct, a fan being provided within the heat-exchange air duct; an electric control box, which is connected to the housing; and a heat-dissipation air duct system, which is configured to dissipate heat from the electric control box, and includes at least one heat-dissipation air duct arranged independent of the heat-exchange air duct and in communication with the heat-exchange air duct.

[0006] Compared to a scheme in which the air flow in the heat-exchange air duct is directly used to dissipate heat from the electric control box without providing a separate heat-dissipation air duct, providing a heat-dissipation air duct which is independent of the heat-exchange air duct and is in communication with the heat-exchange air duct allows for the use of the pressure difference formed by the heat-exchange air duct to cause the heat-dissipation air duct to generate air flow to dissipate heat from the electric control box. Since the heat-dissipation air duct is independent of the heat-exchange air duct, the air flow field near the heat-dissipation air duct can be changed, so that the speed of the air flow flowing through the heat-dissipation air duct is increased, thereby improving the heat dissipation efficiency of the heat-dissipation air duct system, and further improving the heat dissipation effect of the heat-dissipation air duct system on the electric control box in various operation modes (including cooling mode). Compared to a scheme in which a water pump circulation system is used to dissipate heat from the electric control board, the present scheme has a simple structure and low cost.

[0007] In some embodiments, the heat-dissipation air duct system includes a first heat-dissipation air duct. The air conditioner outdoor unit further includes: a first air guide member which is provided in the heat-exchange air duct and together with the electric control box encloses a first heat-dissipation air duct in communication with the heat-exchange air duct; and a first radiator, which is positioned in the first heat-dissipation air duct and connected to the electric control box, and is configured to dissipate heat from the electric control box.

[0008] Compared to a scheme in which the first air guide member is not provided, in the present scheme, the first air guide member is added to form in the heat-exchange air duct a first heat-dissipation air duct for the heat dissipation of the first radiator. In this way, the air flow field near the first radiator can be changed, and the speed of the air flow flowing through the first radiator can be increased, thereby improving the heat dissipation efficiency of the first radiator, and further improving the heat dissipation effect on the electric control box in various operation modes (including cooling mode). Compared to a scheme in which a water pump circulation system is used to dissipate heat from the electric control board, the present scheme has a simple structure and low cost.

[0009] In some embodiments, the first heat-dissipation air duct is provided with a first air inlet and a first air outlet, the first air inlet is in communication with an external space, and the first air outlet is in communication with the heat-exchange air duct. Because the temperature of the outside air is lower than that in the heat-exchange air duct, it is beneficial to improving the heat dissipation efficiency of the first radiator, thereby improving the heat dissipation effect on the electric control box.

[0010] In some embodiments, the first air inlet is provided at a bottom of the first heat-dissipation air duct, and a top of the first heat-dissipation air duct is left open to form the first air outlet.

[0011] This facilitates not only the inhalation of cold air from the lower part into the first heat-dissipation air duct, but also the upward discharge of hot air after heat exchange with the first radiator, thereby improving the heat dissipation efficiency of the first radiator and further improving the heat dissipation effect on the electric control box. The top of the first heat-dissipation air duct is left open to form a first air outlet, which is beneficial to increasing the area of the first air outlet, thereby improving the air flow rate of the first heat-dissipation air duct, also beneficial to improving the heat dissipation efficiency of the first radiator and improving the heat dissipation effect on the electric control box.

[0012] In some embodiments, the first air inlet includes a plurality of strip-shaped holes provided in a shape of a louver.

[0013] This effectively prevents debris from entering the first heat-dissipation air duct. In addition, when there is debris blocked at the first air inlet, the louver structure can prevent the debris from completely sealing the first air inlet, so as to realize the normal flow of the heat dissipation air flow. In addition, designing the first air inlet in a shape of a louver is beneficial to increasing the area of the first air inlet, thereby improving the heat dissipation effect on the electric control box.

[0014] In some embodiments, the first air guide member is provided with a plate-like air guide part located at the first air outlet, and the air guide part extends obliquely in a

direction away from the electric control box and away from a bottom wall of the housing along a direction of airflow of the first heat-dissipation air duct. The arrangement of the air guide part can change the air flow field, which is conducive to increasing the air speed, thereby strengthening the heat dissipation effect.

[0015] In some embodiments, the bottom of the first heat-dissipation air duct is provided with a ventilation port, and the ventilation port is in communication with the heat-exchange air duct. The ventilation port can serve as a backup air inlet for the first heat-dissipation air duct. When the first air inlet is blocked by external debris such as leaves, the first heat-dissipation air duct be fed with air through the ventilation port, thereby ensuring continuous heat dissipation on the electric control box. This is beneficial to improving the safety and reliability of the use of the electric control box. In addition, the ventilation port can also be used for drainage, so that the water in the first heat-dissipation air duct can be discharged in time when exposed to outdoor rain.

[0016] In some embodiments, the first heat-dissipation air duct includes: a transverse section, one end of which is provided with the first air inlet; and a vertical section, which is in communication with the other end of the transverse section and extends in a direction toward a top wall of the housing. The first radiator is located in the vertical section, an end of the vertical section close to the top wall of the housing is left open to form the first air outlet, and an end of the vertical section away from the top wall of the housing is provided with the ventilation port. During use, the air flow enters the transverse section through the first air inlet, and then turns upward to be discharged through the vertical section. When the first air inlet is blocked by external leaves or other debris, the air flow enters the vertical section through the ventilation port and is discharged vertically upward.

[0017] In some embodiments, the electric control box includes an electric control part and an extension part, the electric control part is connected to the first radiator, the extension part is connected to a bottom wall of the housing, and the first air guide member includes a side enclosure plate and a bottom plate. The side enclosure plate is hooded over the first radiator and encloses the vertical section with the electric control part and the bottom plate, and an upper end of the side enclosure plate encloses the first air outlet with the electric control part. The bottom plate is connected to a lower end of the side enclosure plate. The bottom plate, a bottom wall of the electric control part and the extension part enclose the transverse section, the first air inlet is provided in the extension part, the bottom plate is lower than the first air inlet, and the ventilation port is provided in the bottom plate. The electric control part is the position where the electric control box generates more heat. Therefore, the electric control part is connected to the first radiator to ensure that the heat generated by the electric control box can be dissipated in time through the first radiator.

[0018] In some embodiments, one end of the side enclosure plate is snap-fitted to the first radiator, the other end of the side enclosure plate is connected to the first radiator by a first fastener, and the bottom plate is connected to the extension part by a second fastener

[0019] During the assembly process, the first air guide member can be pre-fixed by using the snap fit between the side enclosure plate and the first radiator, and then a first fastener and a second fastener can be used to realize the fastening connection of the first air guide member to ensure the positional stability of the first air guide member, thereby improving the reliability of the use of the first air guide member.

[0020] In some embodiments, the heat-dissipation air duct system includes a second heat-dissipation air duct, and the second heat-dissipation air duct is provided in the electric control box, so that heat in the electric control box can be dissipated through the second heat-dissipation air duct. In this way, the electric control box can have internal and external dual heat-dissipation air ducts, and the internal and external dual heat-dissipation air ducts are beneficial to improving the heat dissipation effect on the electric control box.

[0021] In some embodiments, the second heat-dissipation air duct is provided with a second air inlet and a second air outlet, the second air inlet is in communication with an external space, and the second air outlet is in communication with the heat-exchange air duct. In this way, the second heat-dissipation air duct, the first heat-dissipation air duct and the heat-exchange air duct can share a fan (i.e. the fan of the heat-exchange air duct), which is beneficial to simplifying the product structure and reducing the product cost.

[0022] In some embodiments, the air conditioner outdoor unit further includes: a second air guide member provided in the heat-exchange air duct and disposed opposite to the second air outlet. The second air guide member shields the second air outlet and an air guide space is formed between the second air guide member and the second air outlet, the air guide space has an air discharge port in communication with the heat-exchange air duct, and the air discharge port is located at a bottom of the air guide space. The second air inlet faces a bottom wall of the housing.

[0023] The second air guide member is provided in the heat-exchange air duct, which can play a shielding role for the second air outlet, and prevent rainwater from directly entering the second air outlet; and significantly increases the difficulty of rainwater reaching the second air outlet, thereby improving the rainproof effect of the electric control box, and is conducive to improving the reliability and safety of the electric control of the air conditioner outdoor unit. Moreover, this eliminates the need to reduce the area of the second air outlet, and thus it is beneficial to ensuring the heat dissipation effect on the electric control box.

[0024] In some embodiments, the air conditioner outdoor unit further includes: a water baffle provided in the air guide space. The water baffle plate shields the second air outlet and a first air-passing passage is formed between the water baffle plate and the second air outlet. A second air-passing passage is formed between the water baffle plate and the second air guide member. Along a direction of airflow, the first air-passing passage extends in a direction away from the air discharge port, and the second air-passing passage extends in a direction toward the air discharge port.

[0025] In this way, on the one hand, the water baffle plate can play a better blocking and intercepting role for the rainwater entering the air guide space, which is beneficial to preventing the rainwater entering the air guide space from reaching the second air outlet, thereby improving the rainproof effect of the electric control box. On the other hand, this increases the flow path of rainwater, and can increase the amount of loss of rainwater in the flow process, thereby

greatly reducing the amount of rainwater that can reach the second air outlet, and improving the rainproof effect of the electric control box.

[0026] In some embodiments, a bottom of the water baffle plate is lower than the second air outlet, and a top of the water baffle plate is not lower than the second air outlet; and a bottom of the second air guide member is lower than the bottom of the water baffle.

[0027] This ensures that the water baffle plate can completely shield the second air outlet, which is beneficial to improving the interception and blocking effect of the water baffle plate on rainwater. The bottom of the second air guide member is lower than the bottom of the water baffle plate, which is beneficial to increasing the vertical distance between the air discharge port and the second air outlet, prolonging the length of the path of the rainwater to reach the second air outlet, thereby improving the rainproof effect of the electric control box.

[0028] In some embodiments, the bottom of the water baffle plate is connected to the electric control box, and the top of the water baffle plate extends obliquely in a direction toward the second air guide member. In this way, the rainwater entering the air guide space will impact the water baffle plate head-on, so that it flows and drips downward along the water baffle plate, and does not easily cross the water baffle plate to reach the second air outlet. On the other hand, this arrangement can reduce the occupation of the air guide space by the water baffle plate, so that the effective air-passing space in the air guide space is relatively large, which is beneficial to reducing the air flow resistance and further beneficial to improving the heat dissipation effect on the electric control box.

[0029] In some embodiments, the second air guide member has a plate-like structure, and a bottom of the second air guide member extends obliquely in a direction toward the electric control box. In this way, on the one hand, it is beneficial to reducing the area of the air discharge port of the air guide space, thereby increasing the difficulty of rainwater entering the air guide space, thereby improving the rainproof effect of the electric control box. On the other hand, it is beneficial to guiding the rainwater to be flung downwardly along the second air guide member, reducing the risk of the rainwater splashing upward to enter the air guide space, and thus is beneficial to improving the rainproof effect of the electric control box.

[0030] In some embodiments, the second air outlet includes a plurality of strip-shaped holes provided in a shape of a louver, and an opening of the second air outlet faces upward. This is beneficial to increasing the area of the second air outlet, thereby improving the heat dissipation effect on the electric control box. The opening of the second air outlet faces upward, which is beneficial to the upward discharge of the air flow, thereby improving the heat dissipation effect on the electric control box. The louver can also play a certain role in blocking water, which is also conducive to increasing the difficulty for rainwater to enter the second air outlet upward, thereby improving the rainproof effect of the electric control box.

[0031] In some embodiments, the housing includes: a cabinet body connected to the electric control box, the cabinet body being provided with a third air inlet; a chassis connected to a bottom of the cabinet body and a bottom of the electric control box; and a top cover, which is provided on and covers a top of the cabinet body and a top of the electric control box. The top cover is provided with a third air outlet, and the second air guide member is connected to the top cover and arranged along a circumference of the third air outlet.

[0032] In this way, the air conditioner outdoor unit is a top air outlet type outdoor unit. Since the second air guide member is connected to the top cover and is arranged along a circumference of the third air outlet, it can guide the air flow in the heat-exchange air duct, so that the gas in the heat-exchange air duct flows to the third air outlet along the second air guide member and is discharged. Since the second air guide member shields the second air outlet, and an air guide space with an air discharge port facing downward is formed between the second air guide member and the second air outlet, rainwater can be effectively prevented from reaching the second air outlet and entering the electric control box, thereby ensuring the rainproof reliability of the electric control box.

[0033] In some embodiments, a side wall of the housing is provided with an installation notch. The electric control box includes: a box body which is connected to the housing and caps an upper part of the installation notch; a first cover plate that is provided on and covers the box body and encloses an installation space with the box body, a bottom of the installation space being left open; an electric control board provided within the installation space; and a second cover plate that caps a lower part of the installation notch and a bottom open end of the installation space. The second cover plate is provided with an avoidance notch for avoiding a refrigerant pipe.

[0034] The side wall of the housing is provided with an installation notch, and the electric control box is provided at the installation notch and caps the installation notch to ensure the integrity of the appearance of the air conditioner outdoor unit. The second cover plate also caps the bottom opening of the installation space to protect the electric control board. The second cover plate is provided with an avoidance notch to ensure that the refrigerant pipe connected to a compressor in the housing can be connected to an external refrigerant pipe, so as to realize communication with a refrigerant pipe of an air conditioning indoor unit.

[0035] In some embodiments, the air conditioner outdoor unit includes a first radiator connected to the box body, the box body, the first cover plate, and the electric control board form an electric control part of the electric control box, and the second cover plate forms an extension part of the electric control box.

[0036] In some embodiments, a second heat-dissipation air duct is provided within the electric control box, and the second heat-dissipation air duct is provided with a second air inlet in communication with an external space and a second air outlet in communication with the heat-exchange air duct. The second air outlet is provided in the box body. The second air inlet includes at least one of the following: an air intake port provided in the second cover plate, a wire pass-through hole provided in the second cover plate, an assembly gap between the second cover plate and the box body, and an assembly gap between the second cover plate and the first cover plate.

[0037] In some embodiments, the electric control box further includes a second radiator provided on the electric control board. A distance between the second radiator and the second air outlet is smaller than a distance between the second radiator and the second air inlet.

[0038] Because the air speed near the second air outlet is relatively high, providing the second radiator at a position close to the second air outlet is beneficial to quickly discharging the heat of the second radiator through the second air outlet, thereby improving the heat dissipation effect on the electric control box.

[0039] Some embodiments of the present disclosure further provide an air conditioning device including: an air conditioning indoor unit; and the air conditioner outdoor unit according to any one of the proceeding embodiments, connected to the air conditioning indoor unit.

[0040] Other aspects will become apparent after reading and understanding the drawings and detailed description.

BRIEF DESCRIPTION OF DRAWINGS

[0041] FIG. **1** is a schematic three-dimensional structural diagram of an air conditioner outdoor unit according to some embodiments of the present disclosure.

[0042] FIG. **2** is a schematic exploded structural diagram of the air conditioner outdoor unit shown in FIG. **1** (with a first air guide member omitted).

[0043] FIG. **3** is a schematic exploded structural diagram of a cabinet body and an outdoor heat exchanger in FIG. **2**.

[0044] FIG. **4** is a schematic structural diagram of a top cover and a second air guide member in FIG. **2**.

[0045] FIG. **5** is a schematic cross-sectional structural diagram of the air conditioner outdoor unit shown in FIG. **1** (with the first air guide member omitted), wherein a solid arrow schematically indicates a direction of air flow.

[0046] FIG. **6** is a schematic exploded structural diagram of the top cover, the second air guide member, an electric control board and a water baffle plate in FIG. **2**.

[0047] FIG. **7** is a schematic assembly diagram of the structure shown in FIG. **6**.

[0048] FIG. **8** is an enlarged schematic structural diagram of Part A in FIG. **7**, wherein the dashed arrows indicate rainwater, and the solid arrows indicate the direction of airflow.

[0049] FIG. **9** is a schematic three-dimensional structural diagram of a box body of an electric control box in FIG. **2**.

[0050] FIG. **10** is a schematic three-dimensional structural diagram of the box body shown in FIG. **9** from another perspective.

[0051] FIG. **11** is another schematic exploded structural diagram of the air conditioner outdoor unit shown in FIG. **1**.

[0052] FIG. **12** is an enlarged schematic structural diagram of Part B of FIG. **11**.

[0053] FIG. **13** is another schematic cross-sectional structural diagram of the air conditioner outdoor unit shown in FIG. **1**, wherein solid arrows indicate a direction of airflow.

[0054] FIG. **14** is a schematic three-dimensional structural diagram of a first air guide member according to some embodiments of the present disclosure.

[0055] FIG. **15** is a schematic structural diagram of an electric control part of an electric control box according to some embodiments of the present disclosure after being assembled with a first air guide member.

[0056] FIG. **16** is a schematic cross-sectional view of the structure shown in FIG. **15**, wherein solid arrows indicate a direction of airflow.

[0057] FIG. **17** is a schematic exploded structural diagram of the electric control part and the first air guide member shown in FIG. **15**.

[0058] FIG. **18** is a schematic view of the structure shown in FIG. **17** from another perspective.

[0059] In the drawings, components represented by reference signs are listed as follows:

[0060] **1** housing, **11** cabinet body, **111** installation notch, **112** third air inlet, **12** chassis, **13** top cover, **131** third air outlet, **14** heat-exchange air duct;

[0061] **2** electric control box, **21** box body, **211** second air outlet, **22** first cover plate, **23** electric control board, **24** second cover plate, **241** top plate, **2411** second air inlet, **242** side plate, **2421** avoidance notch, **25** second radiator, **26** second heat-dissipation air duct, **27** electric control part, **28** extension part;

[0062] **3** second air guide member, **31** air guide space, **311** first air-passing passage, **312** second air-passing passage, **32** air discharge port;

[0063] **4** water baffle plate, **41** water baffle part, **411** first sub-plate, **412** second sub-plate, **413** third sub-plate, **42** connection part;

[0064] **5** fan, **51** motor, **52** fan blade;

[0065] **6** outdoor heat exchanger;

[0066] **7** compressor;

[0067] **8** first air guide member, **81** side enclosure plate, **811** snap hook, **82** bottom plate, **83** air guide part, **84** first heat-dissipation air duct, **841** first air inlet, **842** first air outlet, **843** ventilation port, **844** transverse section, **845** vertical section, **85** first connection hole, **86** second connection hole, **87** first fastener;

[0068] **9** first radiator, **91** snap hole.

DETAILED DESCRIPTION

[0069] The principles and features of some embodiments of the present disclosure will be described below with reference to the accompanying drawings, and the examples given are only used to explain some embodiments of the present disclosure, and are not used to limit the scope of the present disclosure.

[0070] At present, in order to enhance the heat dissipation effect on the electric control board, the following two schemes are mainly adopted: 1) A first radiator is installed at the heat-generating part of the electric control board, the first radiator is provided in the air duct of the air conditioner outdoor unit, and the heat from the first radiator is carried away by the air flow flowing through the outdoor heat exchanger. Because the outdoor heat exchanger generates a large amount of heat when the air conditioner is refrigerating, it results in a high temperature of the air flow flowing through the first radiator of the electric control box, and poor heat dissipation. 2) There is also a scheme in which a water pump circulation system is used to dissipate heat from the electric control board, but this scheme has a complex structure and high cost.

[0071] Some embodiments of the present disclosure provide an air conditioner outdoor unit, including a housing **1**, an electric control box **2**, and a heat-dissipation air duct system (for example, including at least one of the following first heat-dissipation air duct **84** and second heat-dissipation air duct **26**).

[0072] Here, as shown in FIG. **13**, the housing **1** is provided with a heat-exchange air duct **14**. The heat-exchange air duct **14** is used to accommodate a fan **5** and an outdoor heat exchanger **6**. The electric control box **2** is connected to the housing **1**. The heat-dissipation air duct system is configured to dissipate heat from the electric

control box **2**. The heat-dissipation air duct system includes at least one heat-dissipation air duct (e.g., may include only the first heat-dissipation air duct **84** described below, may include only the second heat-dissipation air duct **26**, or may include the first heat-dissipation air duct **84** and the second heat-dissipation air duct **26**), and the heat-dissipation air duct is independent of and in communication with the heat-exchange air duct **14**.

[0073] Compared to a scheme in which the air flow in the heat-exchange air duct **14** is directly used to dissipate heat from the electric control box **2** without providing a separate heat-dissipation air duct, providing a heat-dissipation air duct which is independent of the heat-exchange air duct **14** and is in communication with the heat-exchange air duct **14** allows for the use of the pressure difference formed by the heat-exchange air duct **14** to cause the heat-dissipation air duct to generate air flow to dissipate heat from the electric control box **2**. Since the heat-dissipation air duct is independent of the heat-exchange air duct, the air flow field near the heat-dissipation air duct can be changed, so that the speed of the air flow flowing through the heat-dissipation air duct is increased, thereby improving the heat dissipation efficiency of the heat-dissipation air duct system, and further improving the heat dissipation effect of the heat-dissipation air duct system on the electric control box **2** in various operation modes (including cooling mode). Compared to a scheme in which a water pump circulation system is used to dissipate heat from the electric control board, the present scheme has a simple structure and low cost.

[0074] As shown in FIGS. **1**, **12**, and **13**, some embodiments of a first aspect of the present disclosure provide an air conditioner outdoor unit, including a housing **1**, an electric control box **2**, a first radiator **9**, and a first air guide member **8**.

[0075] As shown in FIG. **13**, the housing **1** is provided with a heat-exchange air duct **14**, and a fan **5** is provided within the heat-exchange air duct **14**. An outdoor heat exchanger **6** is provided within the heat-exchange air duct **14**, as shown in FIG. **11**. The electric control box **2** is connected to the housing **1**, and can be fixedly connected to the housing **1** by fasteners such as screws. As shown in FIGS. **13**, **15** and **16**, the first air guide member **8** is provided within the heat-exchange air duct **14**, and together with the electric control box **2** encloses a first heat-dissipation air duct **84** in communication with the heat-exchange air duct **14**. As shown in FIGS. **13** and **16**, the first radiator **9** is located in the first heat-dissipation air duct **84**, is connected to the electric control box **2**, and is configured to dissipate heat from the electric control box **2**.

[0076] An air conditioner outdoor unit according to some embodiments of the first aspect of the present disclosure includes a housing **1**, an electric control box **2**, a first radiator **9**, and a first air guide member **8**. A heat-exchange air duct **14** is provided within the housing **1**, and a fan **5** and an outdoor heat exchanger **6** can be installed within the heat-exchange air duct **14**. When the fan **5** works, a negative pressure can be generated inside the heat-exchange air duct **14**, so that the outside air can flow through the heat-exchange air duct **14** and exchange heat with the outdoor heat exchanger **6**, as shown in FIGS. **5** and **13**. The first radiator **9** is connected to the electric control box **2**, absorbs and dissipates the heat from the electric control box **2** into the surrounding air by heat conduction, and plays a heat dissipation role for the electric control box **2**. The first air guide member **8** is located in the heat-exchange air duct **14**, and encloses a first heat-dissipation air duct **84** with the electric control box **2**. The first heat-dissipation air duct **84** is used for supplying the air flow to exchange heat with the first radiator **9** to carry away the heat from the first radiator **9**. The first air guide member **8** separates the first radiator **9** from the outdoor heat exchanger **6** so that the first radiator **9** is located in a separate first heat-dissipation air duct **84**. Since the first heat-dissipation air duct **84** is in communication with the heat-exchange air duct **14**, the heat in the first heat-dissipation air duct **84** can be dissipated into the heat-exchange air duct **14**, as shown in FIG. **13**. In this way, the first heat-dissipation air duct **84** and the heat-exchange air duct **14** can share a fan **5**, which is beneficial to simplifying the product structure and reducing the product cost.

[0077] Compared to a scheme in which the first air guide member **8** is not provided, in the present scheme, the first air guide member **8** is added to form in the heat-exchange air duct **14** a first heat-dissipation air duct **84** for the heat dissipation of the first radiator **9**, so that the air flow field near the first radiator **9** can be changed, and the speed of the air flow flowing through the first radiator **9** can be increased, thereby improving the heat dissipation efficiency of the first radiator **9**, and further improving the heat dissipation effect on the electric control box **2** in various operation modes (including cooling mode). Compared to a scheme in which a water pump circulation system is used to dissipate heat from an electric control board **23**, the present scheme has a simple structure and low cost.

[0078] As shown in FIGS. **5** and **13**, a compressor **7**, piping and other structures may be provided in the heat-exchange air duct **14**.

[0079] Alternatively, the compressor **7**, piping and other structures may be provided in a compressor cavity, and the compressor cavity and the heat-exchange air duct **14** may be separated by a partition plate. The electric control box **2** may be provided in the compressor cavity or the heat-exchange air duct **14**.

[0080] In one example, the fan **5** is an axial flow fan, and the heat-exchange air duct **14** forms an axial flow air duct. The first radiator **9** includes a plurality of heat dissipation fins arranged side by side, and the top of the first radiator **9** extends obliquely downward along a direction toward a central axis of the fan **5** to avoid the fan **5**, as shown in FIG. **13**.

[0081] The first radiator **9** may be an aluminum radiator.

[0082] In some exemplary embodiments, as shown in FIG. **13**, the first heat-dissipation air duct **84** is provided with a first air inlet **841** and a first air outlet **842**, the first air inlet **841** is in communication with an external space, and the first air outlet **842** is in communication with the heat-exchange air duct **14**.

[0083] In this way, the first heat-dissipation air duct **84** is in communication with an external space through the first air inlet **841**, and the first heat-dissipation air duct **84** is in communication with the heat-exchange air duct **14** through the first air outlet **842**, so that the first air inlet **841**, the first heat-dissipation air duct **84**, the first air outlet **842**, and the heat-exchange air duct **14** communicate sequentially. During use, due to the negative pressure generated in the heat-exchange air duct **14**, the negative pressure is also generated in the first heat-dissipation air duct **84** in communication with the heat-exchange air duct **14**. So, the outside air can

enter the first heat-dissipation air duct **84** through the first air inlet **841**, exchange heat with the first radiator **9** in the first heat-dissipation air duct **84**, carry away the heat of the first radiator **9**, enter the heat-exchange air duct **14** through the first air outlet **842**, and is discharged out the housing **1** together with the air flow in the heat-exchange air duct **14**.

[0084] Furthermore, since the temperature of the outside air is lower than that in the heat-exchange air duct **14**, it facilitates the improvement of the heat dissipation efficiency of the first radiator **9**, and thus improves the heat dissipation effect on the electric control box **2**.

[0085] In some exemplary embodiments, as shown in FIG. **13**, the first air inlet **841** is disposed at the bottom of the first heat-dissipation air duct **84**, and the top of the first heat-dissipation air duct **84** is left open to form the first air outlet **842**.

[0086] According to the principle that the cold air sinks and the hot air rises, the first air inlet **841** is provided on a lower side and the first air outlet **842** is provided on an upper side. This not only facilitates the drawing of the lower cold air into the first heat-dissipation air duct **84**, but also facilitates the upward discharge of the hot air after heat exchange with the first radiator **9**, thereby improving the heat dissipation efficiency of the first radiator **9** and further improving the heat dissipation effect on the electric control box **2**.

[0087] The top of the first heat-dissipation air duct **84** is left open to form the first air outlet **842**, which is beneficial to increasing the area of the first air outlet **842**, thereby improving the air flow rate of the first heat-dissipation air duct **84**, and also beneficial to improving the heat dissipation efficiency of the first radiator **9**, and improving the heat dissipation effect on the electric control box **2**.

[0088] In some exemplary embodiments, as shown in FIGS. **13**, **16**, and **18**, the first air guide member **8** is provided with a plate-like air guide part **83**, and the air guide part **83** is located at the first air outlet **842**. The air guide part **83** extends obliquely in a direction away from the electric control box **2** and away from a bottom wall of the housing **1** along a direction of airflow of the first heat-dissipation air duct **84**.

[0089] The arrangement of the air guide part **83** can change the air flow field, which is beneficial to increasing the air speed, and thus enhancing the heat dissipation effect.

[0090] In some exemplary embodiments, the bottom of the first heat-dissipation air duct **84** is provided with a ventilation port **843**, as shown in FIGS. **12**, **14** and **16**, and the ventilation port **843** is in communication with the heat-exchange air duct **14**.

[0091] In the working process of the machine, because the outside atmospheric pressure is relatively high and the air pressure in the heat-exchange air duct **14** is relatively low, the air flow preferentially enters the first heat-dissipation air duct **84** through the first air inlet **841**. When the first air inlet **841** is blocked by external debris such as leaves, since the air pressure at the first air outlet **842** is lower than that at the ventilation port **843**, the air in the heat-exchange air duct **14** can enter the first heat-dissipation air duct **84** through the ventilation port **843**, enter the heat-exchange air duct **14** through the first air outlet **842**, and then be discharged from the heat-exchange air duct **14**.

[0092] Therefore, the ventilation port **843** can serve as a backup air inlet of the first heat-dissipation air duct **84**, and when the first air inlet **841** is blocked by external debris such as leaves, the first heat-dissipation air duct **84** can be fed with air through the ventilation port **843**, thereby ensuring continuous heat dissipation on the electric control box **2**. Thus, it is beneficial to improving the safety and reliability of the use of the electric control box **2**. In addition, the ventilation port **843** can also be used for drainage, so that the water in the first heat-dissipation air duct **84** can be discharged in time when exposed to outdoor rain.

[0093] In some embodiments, the first air inlet **841** includes a plurality of strip-shaped holes provided in a shape of a louver, in other words, the first air inlet may be provided in a louver structure, which can effectively prevent debris from entering the first heat-dissipation air duct **84**. In addition, when there is debris blocked at the first air inlet **841**, the louver structure can prevent the debris from completely sealing the first air inlet **841**, so as to realize the normal flow of the heat dissipation air flow.

[0094] In some exemplary embodiments, as shown in FIGS. **12**, **14**, and **16**, the ventilation port **843** includes a plurality of staggered strip-shaped holes. The ventilation port **843** is provided in a sheet metal member.

[0095] Employing staggered strip-shaped holes for the ventilation port **843** is not only beneficial to increasing the area of the ventilation port **843**, thereby increasing the air volume of the first heat-dissipation air duct **84** and improving the heat dissipation effect, but also beneficial to ensuring that the strength of the sheet metal member in which the ventilation port **843** is provided is improved.

[0096] Of course, the ventilation port **843** is not limited to the above-described form, or may take a form of neatly arranged strip-shaped holes, or may take a form of circular holes, rectangular holes, or the like.

[0097] In some exemplary embodiments, as shown in FIG. **13**, the first heat-dissipation air duct **84** includes a transverse section **844** and a vertical section **845**.

[0098] One end of the transverse section **844** is provided with a first air inlet **841**. The vertical section **845** is in communication with the other end of the transverse section **844** and extends in a direction toward a top wall of the housing **1**. The first radiator **9** is located within the vertical section **845**. One end of the vertical section **845** close to the top wall of the housing **1** is left open to form a first air outlet **842**, and one end of the vertical section **845** away from the top wall of the housing **1** is provided with a ventilation port **843**.

[0099] In the present scheme, the first heat-dissipation air duct **84** includes a transverse section **844** and a vertical section **845**, the transverse section **844** extends in a horizontal direction or substantially in the horizontal direction and the vertical section **845** extends in a vertical direction or substantially in the vertical direction such that the first heat-dissipation air duct **84** is L-shaped or substantially L-shaped. The first air outlet **842** is located at an upper end of the vertical section **845**, and the ventilation port **843** is located at a lower end of the vertical section **845**. During use, the air flow enters the transverse section **844** through the first air inlet **841**, and then turns upward to be discharged through the vertical section **845**. When the first air inlet **841** is blocked by external leaves or other debris, the air flow enters the vertical section **845** through the ventilation port **843** and is discharged vertically upward.

[0100] In some exemplary embodiments, as shown in FIG. **11**, the electric control box **2** includes an electric control part **27** and an extension part **28**. The electric control part **27** is

connected to the first radiator **9**. The extension part **28** is connected to the bottom wall of the housing **1**. As shown in FIGS. **13** and **14**, the first air guide member **8** includes a side enclosure plate **81** and a bottom plate **82**.

[0101] The side enclosure plate **81** is hooded over the first radiator **9**, and encloses the vertical section **845** with the electric control part **27** and the bottom plate **82**. An upper end of the side enclosure plate **81** encloses the first air outlet **842** with the electric control part **27**.

[0102] The bottom plate **82** is connected to a lower end of the side enclosure plate **81**. The bottom plate **82** and a bottom wall of the electric control part **27** and the extension part **28** enclose the transverse section **844**. The first air inlet **841** is provided in the extension part **28**. The bottom plate **82** is lower than the first air inlet **841**, and the ventilation port **843** is provided in the bottom plate **82**.

[0103] In this scheme, the electric control box **2** includes an electric control part **27** and an extension part **28**, and the extension part **28** is connected to the electric control board **23** and protrudes downward from the electric control part **27**, and is connected to the bottom wall of the housing **1**. The electric control part **27** is a main body portion of the electric control box **2**, and an installation space is provided therein, and electric control elements such as the electric control board **23** are located in the installation space. Therefore, the electric control part **27** is at a position where the electric control box **2** generates more heat. Therefore, the electric control part **27** is connected to the first radiator **9** to ensure that the heat generated by the electric control box **2** can be dissipated in time through the first radiator **9**.

[0104] The first air guide member **8** includes a side enclosure plate **81** and a bottom plate **82**, and the side enclosure plate **81** has a semi-enclosed structure, can be hooded over the first radiator **9**, and encloses the vertical section **845** with the electric control part **27** and the bottom plate **82**. The bottom plate **82** is connected to a lower end of the side enclosure plate **81**, and caps the lower open end of the side enclosure plate **81**, so that the ventilation port **843** is provided on the bottom plate **82**. The bottom plate **82** is lower than the first air inlet **841** and encloses the transverse section **844** with the electric control part **27** and the extension part **28**. The first air inlet **841** is provided on the extension part **28**, and the extension part **28** may be provided as a part of an exterior of the air conditioner outdoor unit in order to facilitate communication between the first air inlet **841** and an external space, and the extension part **28** may be provided as a plate-like structure.

[0105] In some exemplary embodiments, one end of the side enclosure plate **81** is snap-fitted to the first radiator **9**, the other end of the side enclosure plate **81** is connected to the first radiator **9** by a first fastener, and the bottom plate **82** is connected to the extension part **28** by a second fastener.

[0106] Here, as shown in FIG. **18**, one of one end of the side enclosure plate **81** and the first radiator **9** may be provided with a snap hook **811**, and the other one of one end of the side enclosure plate **81** and the first radiator **9** may be provided with a snap hole **91** correspondingly. The snap hook **811** is engaged with the snap hole **91**, which may realize the snap-fixing of the side enclosure plate **81** with the first radiator **9**. As shown in FIGS. **15** and **17**, the other end of the side enclosure plate **81** and the first radiator **9** may both be provided with a first connection hole **85**, and the other end of the side enclosure plate **81** and the first radiator **9** may be fixed together utilizing a first fastener (which may be, but is not limited to, a screw) to pass through the first connection hole **85**.

[0107] As shown in FIG. **14**, the bottom plate **82** and the electric control box **2** may both be provided with a second connection hole **86**, and the bottom plate **82** and the electric control box **2** may be fixed together utilizing a second fastener (which may be, but is not limited to, a screw) to pass through the second connection hole **86**.

[0108] During the assembly process, the pre-fixation of the first air guide member **8** can be realized by the snap fit between the side enclosure plate **81** and the first radiator **9**, and then the first fastener and the second fastener can be used to realize the fastening connection of the first air guide member **8** to ensure the stability of the position of the first air guide member **8**, thereby improving the reliability of the use of the first air guide member **8**.

[0109] In some exemplary embodiments, the first air inlet **841** includes a plurality of strip-shaped holes provided in a shape of a louver, as shown in FIG. **12**.

[0110] Designing the first air inlet **841** in a shape of a louver is beneficial to increasing the area of the first air inlet **841**, thereby improving the heat dissipation effect on the electric control box **2**.

[0111] Herein, the first air inlet **841** may be prepared by press molding.

[0112] Of course, the first air inlet **841** may be provided in another shape, such as a rectangular hole, a circular hole, etc.

[0113] In some exemplary embodiments, a second heat-dissipation air duct **26** is provided within the electric control box **2**, as shown in FIGS. **8**, **13**, and **15**.

[0114] In this scheme, the second heat-dissipation air duct **26** may be provided within the electric control box **2**, so that the heat in the electric control box **2** can be dissipated through the second heat-dissipation air duct **26**. In this way, the electric control box **2** has internal and external dual heat-dissipation air ducts, and the internal and external dual heat-dissipation air ducts are beneficial to improving the heat dissipation effect on the electric control box **2**.

[0115] In some exemplary embodiments, as shown in FIGS. **5**, **12**, and **13**, the second heat-dissipation air duct **26** is provided with a second air inlet **2411** and a second air outlet **211**. The second air inlet **2411** is in communication with an external space, and the second air outlet **211** is in communication with the heat-exchange air duct **14**.

[0116] In this scheme, the second heat-dissipation air duct **26** is in communication with an external space through the second air inlet **2411**, and the second heat-dissipation air duct **26** is in communication with the heat-exchange air duct **14** through the second air outlet **211**. Therefore, when the fan **5** operates to generate a negative pressure in the heat-exchange air duct **14**, a negative pressure is also generated inside the second heat-exchange air duct **26**, so that the outside air can enter the second heat-exchange air duct **26** through the second air inlet **2411**, be discharged out of the second heat-exchange air duct **26** through the second air outlet **211**, enter the heat-exchange air duct **14**, and merge with the air flow in the heat-exchange air duct **14** to be discharged out of the housing **1**.

[0117] Therefore, the second heat-dissipation air duct **26**, the first heat-dissipation air duct **84**, and the heat-exchange air duct **14** can share one fan **5** (that is, the fan **5** of the heat-exchange air duct **14**), which is beneficial to simplifying the product structure and reducing the product cost.

[0118] In some exemplary embodiments, the air conditioner outdoor unit may include a second air guide member **3**, as shown in FIGS. **2**, **4** to **7**. The second air guide member **3** is provided in the heat-exchange air duct **14** and is provided opposite to the second air outlet **211**. Further, as shown in FIG. **8**, the second air guide member **3** shields the second air outlet **211**, and an air guide space **31** is formed between the second air guide member **3** and the second air outlet **211**. The air guide space **31** has an air discharge port **32** in communication with the heat-exchange air duct **14**. The air discharge port **32** is located at the bottom of the air guide space **31**, as shown in FIG. **8**.

[0119] In this scheme, the second air guide member **3** is provided in the heat-exchange air duct **14**, and can play a shielding role for the second air outlet **211**, so as to prevent rainwater from directly entering the second air outlet **211** as shown in FIG. **8**. Since there is an air guide space **31** left between the second air guide member **3** and the second air outlet **211**, the gas discharged from the second air outlet **211** can merge with the gas in the heat-exchange air duct **14** through the air guide space **31** and then be discharged from the housing **1** together with the air flow in the heat-exchange air duct **14**, as shown in FIG. **5**. Since the air discharge port **32** of the air guide space **31** is located at the bottom of the air guide space **31**, the gas discharged from the second heat-dissipation air duct **26** can only flow downward, and can only merge with the gas in the heat-exchange air duct **14** after flowing out of the air guide space **31**.

[0120] On the contrary, as shown by the dotted arrows in FIG. **8**, if the rainwater is to enter the electric control box **2** through the second air outlet **211**, it needs to flow upward along the air guide space **31** against gravity to reach the second air outlet **211**, which greatly improves the difficulty for the rainwater to reach the second air outlet **211**, thereby improving the rainproof effect of the electric control box **2**, and is conducive to improving the reliability and safety of the electric control of the air conditioner outdoor unit. Moreover, this eliminates the need to reduce the area of the second air outlet **211**, and thus it is beneficial to ensuring the heat dissipation effect on the electric control box **2**.

[0121] The electric control board of the air conditioner outdoor unit is usually equipped with a compressor module and a fan module, which will generate a large amount of heat during the working process. In order to ensure the reliability and longevity of the electric control board for the long-term operation, the heat dissipation of the electric control board is particularly important.

[0122] At present, for the heat dissipation of the electric control board, air inlets and outlets are usually added to the electric control box to form an air field inside the electric control box. Through the air convection, the heat is dissipated from the electric control board. The overall structure of this method is relatively simple and the input cost is low, but the rainproof effect is not good, which is not conducive to the reliability and safety of the electric control.

[0123] For this reason, some products improve the rainproof effect by reducing the size of the air outlets and simply adding a water baffle plate over the air outlets. However, this approach is not conducive to better heat dissipation of the electric control board, and the reliability of the rainproof is not good. Especially for a top air outlet type air conditioner, only adding the water baffle plate cannot effectively prevent rainwater from entering the electric control box from above through the water baffle plate.

[0124] In short, a conventional rainproof structure simply provides a water baffle plate over the air outlet of the electric control box and reduces the area of the air outlet. However, part of the rainwater may still enter the electric control box through the air outlet when it flows downward through the water baffle plate, so the reliability of the rainproof is relatively low, and the heat dissipation effect on the electric control box is sacrificed due to the reduction of the area of the air outlet. However, the air conditioner outdoor unit according to some embodiments of the present disclosure can take into account the heat dissipation effect and the rainproof effect of the electric control box.

[0125] As shown in FIGS. **1** and **2**, some embodiments of a second aspect of the present disclosure provide an air conditioner outdoor unit, including a housing **1**, an electric control box **2**, and a second air guide member **3**.

[0126] Here, as shown in FIG. **5**, the housing **1** is provided with a heat-exchange air duct **14**. The heat-exchange air duct **14** is used to accommodate a fan **5** and an outdoor heat exchanger **6**.

[0127] The electric control box **2** is connected to the housing **1**. The electric control box **2** is provided with a second heat-dissipation air duct **26** (as shown in FIGS. **5** and **8**), a second air inlet **2411** (as shown in FIGS. **2** and **6**), and a second air outlet **211** (as shown in FIGS. **5**, **8** and **11**). As shown in FIG. **5**, the second heat-dissipation air duct **26** is in communication with the heat-exchange air duct **14** through the second air outlet **211**. The second heat-dissipation air duct **26** is in communication with an external space through the second air inlet **2411**. The second air inlet **2411** faces the bottom wall of the housing **1**.

[0128] As shown in FIG. **5**, the second air guide member **3** is provided in the heat-exchange air duct **14** and is disposed opposite to the second air outlet **211**. Further, the second air guide member **3** shields the second air outlet **211**, and an air guide space **31** is formed between the second air guide member **3** and the second air outlet **211**. The air guide space **31** has an air discharge port **32** in communication with the heat-exchange air duct **14**, and the air discharge port **32** is located at the bottom of the air guide space **31**, as shown in FIG. **8**.

[0129] The air conditioner outdoor unit according to an embodiment of the second aspect of the present disclosure includes a housing **1**, an electric control box **2**, and a second air guide member **3**. The housing **1** is provided with a heat-exchange air duct **14**, and a fan **5** and an outdoor heat exchanger **6** are installed in the heat-exchange air duct **14**. The operation of the fan **5** can cause a negative pressure to be generated in the heat-exchange air duct **14**, so that the outside air can flow through the heat-exchange air duct **14** and exchange heat with the outdoor heat exchanger **6**.

[0130] The electric control box **2** is provided with a second heat-dissipation air duct **26** and a second air inlet **2411** and a second air outlet **211** in communication with the second heat-dissipation air duct **26**. The second air inlet **2411** is in communication with an external space, and the second air outlet **211** is in communication with the heat-exchange air duct **14**, so that the second air inlet **2411**, the second heat-dissipation air duct **26**, the second air outlet **211**, and the heat-exchange air duct **14** communicate sequentially. During use, as shown in FIG. **5**, due to the negative pressure generated in the heat-exchange air duct **14**, a negative pressure is also generated in the second heat-dissipation air duct **26** in communication with the heat-

exchange air duct **14**. So, the outside air can enter the second heat-dissipation air duct **26** through the second air inlet **2411**, as shown in FIG. **5** and FIG. **8**, exchange heat with heat-generating components (such as a fan module and a compressor module) on the electric control board **23** in the electric control box **2**, carry away the heat generated by the heat-generating components, enter the heat-exchange air duct **14** through the second air outlet **211**, and be discharged from the housing **1** together with the air flow in the heat-exchange air duct **14**. Furthermore, since the second air inlet **2411** faces the bottom wall of the housing **1**, that is, the opening faces downward, the external air flow enters the second heat-dissipation air duct **26** from downward to upward, and rainwater can be prevented from entering the electric control box **2** through the second air inlet **2411**. Thus, it is only necessary to provide a waterproof structure at the second air outlet **211**.

[0131] Therefore, in the air conditioner outdoor unit according to embodiments of the second aspect of the present disclosure, the heat-exchange air duct **14** is used for heat exchange of the outdoor heat exchanger **6**, and the second heat-dissipation air duct **26** is used for heat dissipation of the electric control. However, the heat-exchange air duct **14** and the second heat-dissipation air duct **26** may share one fan **5** (i.e., the fan **5** in the heat-exchange air duct **14**), as shown in FIG. **5**, which is beneficial to simplifying the product structure and reducing the product cost.

[0132] The second air guide member **3** is provided in the heat-exchange air duct **14**, and can play a shielding role for the second air outlet **211**, so as to prevent rainwater from directly entering the second air outlet **211** as shown in FIG. **8**. Since there is an air guide space **31** left between the second air guide member **3** and the second air outlet **211**, the gas discharged from the second air outlet **211** can merge with the gas in the heat-exchange air duct **14** through the air guide space **31** and then be discharged from the housing **1** together with the air flow in the heat-exchange air duct **14**, as shown in FIG. **5**. Since the air discharge port **32** of the air guide space **31** is located at the bottom of the air guide space **31**, the gas discharged from the second heat-dissipation air duct **26** can only flow downward, and can only merge with the gas in the heat-exchange air duct **14** after flowing out of the air guide space **31**.

[0133] On the contrary, as shown by the dotted arrows in FIG. **8**, if the rainwater is to enter the electric control box **2** through the second air outlet **211**, it needs to flow upward along the air guide space **31** against gravity to reach the second air outlet **211**, which greatly improves the difficulty for the rainwater to reach the second air outlet **211**, thereby improving the rainproof effect of the electric control box **2**, and is conducive to improving the reliability and safety of the electric control of the air conditioner outdoor unit. Moreover, this eliminates the need to reduce the area of the second air outlet **211**, and thus it is beneficial to ensuring the heat dissipation effect on the electric control box **2**.

[0134] The embodiments of the first aspect and the embodiments of the second aspect of the present disclosure may employ one or more of the following exemplary embodiments, respectively.

[0135] In some exemplary embodiments, the housing **1** includes a cabinet body **11**, a chassis **12**, and a top cover **13**, as shown in FIGS. **2** and **11**.

[0136] Herein, the cabinet body **11** is connected to the electric control box **2**. The cabinet body **11** is provided with a third air inlet **112**, as shown in FIG. **3**. The chassis **12** is connected to the bottom of the cabinet body **11** and the bottom of the electric control box **2**. The top cover **13** is provided on and covers the top of the cabinet body **11** and the top of the electric control box **2**. The top cover **13** is provided with a third air outlet **131**, as shown in FIGS. **2** and **4**. As shown in FIGS. **2**, **4**, **5**, and **7**, the second air guide member **3** is connected to the top cover **13** and is provided along a circumference of the third air outlet **131**.

[0137] In this scheme, the housing **1** includes a cabinet body **11**, a chassis **12** and a top cover **13**, and the cabinet body **11**, the chassis **12** and the top cover **13** are connected to enclose the heat-exchange air duct **14**. The cabinet body **11** forms the side wall of the housing **1**, and forms a heat-exchange air duct **14** with upper and lower openings. The chassis **12** plays a supporting role for structures such as the cabinet body **11**, the compressor **7** inside, and the outdoor heat exchanger **6**, and caps the bottom opening of the heat-exchange air duct **14**. The top cover **13** is provided on and covers the top of the cabinet body **11**, and caps the top opening of the heat-exchange air duct **14**.

[0138] Since the cabinet body **11** is provided with the third air inlet **112** and the top cover **13** is provided with the third air outlet **131**, the air flow enters the heat-exchange air duct **14** from the side of the housing **1** and is discharged upward from the top of the housing **1**, so the air conditioner outdoor unit according to some embodiments of the present disclosure is a top air outlet type outdoor unit, as shown in FIGS. **5** and **13**. Since the second air guide member **3** is connected to the top cover **13** and is provided along the circumference of the third air outlet **131**, it can guide the air flow in the heat-exchange air duct **14**, so that the gas in the heat-exchange air duct **14** flows to the third air outlet **131** along the second air guide member **3** and is discharged.

[0139] On the contrary, rainwater also tends to enter the heat-exchange air duct **14** along the third air outlet **131** and flows downward along the second air guide member **3**. Since the second air guide member **3** shields the second air outlet **211**, and the air guide space **31** with the air discharge port **32** facing downward is formed between the second air guide member **3** and the second air outlet **211**, rainwater can be effectively prevented from reaching the second air outlet **211** and entering the electric control box **2**, thereby ensuring the reliability of the rainproof of the electric control box **2**.

[0140] The first heat-dissipation air duct **84** is not in communication with the internal space of the electric control box **2**. Even if rainwater enters inside the first heat-dissipation air duct **84**, it will not affect the electric control elements in the electric control box **2**, and thus will not affect the safety and reliability of the use of the electric control box **2**.

[0141] In some examples, as shown in FIGS. **5** and **13**, the fan **5** includes a motor **51** and fan blades **52**, and the second air guide member **3** is hooded over the motor **51**, so the second air guide member **3** can provide better protection for the motor **51**.

[0142] In some exemplary embodiments, the third air inlet **112** is a grille hole provided in the cabinet body **11**, as shown in FIGS. **2** and **3**. As shown in FIGS. **2** and **4**, the third air outlet **131** is a mesh cover hole provided in the top cover **13** (a mesh cover may be provided on the top cover **13** to utilize the mesh cover for air outlet). The area of the mesh cover is smaller than the area of the top cover **13**, the electric control box **2** is also located on the lower side of the top cover **13**,

and the top of the electric control box **2** is sealed, shielded and protected by the top cover **13**.

[0143] This is beneficial to increasing the area of the third air inlet **112** and the third air outlet **131**, thereby improving the heat exchange effect of the air conditioner outdoor unit and is beneficial to improving the cooling and heating efficiency of the air conditioning device.

[0144] In some examples, the top cover **13** is integrally formed with the second air guide member **3**, and an air outlet mesh cover is installed in the middle of the top cover **13**.

[0145] In some exemplary embodiments, as shown in FIGS. **2** and **5**, the air conditioner outdoor unit may include a water baffle plate **4** provided within the air guide space **31**. As shown in FIG. **8**, the water baffle plate **4** shields the second air outlet **211**, and a first air-passing passage **311** is formed between the water baffle plate **4** and the second air outlet **211**; and a second air-passing passage **312** is formed between the water baffle plate **4** and the second air guide member **3**. As shown in FIG. **8**, along a direction of airflow, the first air-passing passage **311** extends in a direction away from the air discharge port **32**, and the second air-passing passage **312** extends in a direction toward the air discharge port **32**.

[0146] In this scheme, since the air discharge port **32** is located at the bottom of the air guide space **31**, a direction away from the air discharge port **32** is an upward direction, and a direction toward the air discharge port **32** is a downward direction. Accordingly, along the direction of airflow, the first air-passing passage **311** extends upward and the second air-passing passage **312** extends downward.

[0147] In this way, if the rainwater is to reach the second air outlet **211**, it must first flow upward and over the water baffle plate **4** and then flow downward to reach the second air outlet **211**. In this way, on the one hand, the water baffle plate **4** can play a better blocking and intercepting role for the rainwater entering the air guide space **31**, which is beneficial to preventing the rainwater entering the air guide space **31** from reaching the second air outlet **211**, thereby improving the rainproof effect of the electric control box **2**. On the other hand, this increases the flow path of rainwater, and can increase the amount of loss of rainwater in the flow process, thereby greatly reducing the amount of rainwater that can reach the second air outlet **211**, and improving the rainproof effect of the electric control box **2**.

[0148] In some exemplary embodiments, as shown in FIG. **8**, the bottom of the water baffle plate **4** is lower than the second air outlet **211**, that is, the lower end of the water baffle plate **4** is lower than the lowest point of the second air outlet **211**. The top of the water baffle plate **4** is not lower than the second air outlet **211**, that is, the upper end of the water baffle plate **4** is not lower than the highest point of the first air outlet **842**. The bottom of the second air guide member **3** is lower than the bottom of the water baffle plate **4**, that is, the lower end of the second air guide member **3** is lower than the lower end of the water baffle plate **4**.

[0149] This ensures that the water baffle plate **4** can completely shield the second air outlet **211**, which is beneficial to improving the interception and blocking effect of the water baffle plate **4** on rainwater. The bottom of the second air guide member **3** is lower than the bottom of the water baffle plate **4**, which is beneficial to increasing the vertical distance between the air discharge port **32** and the second air outlet **211**, prolonging the length of the path of the rainwater to reach the second air outlet **211**, thereby improving the rainproof effect of the electric control box **2**.

[0150] In some exemplary embodiments, as shown in FIG. **8**, the bottom of the water baffle plate **4** is connected to the electric control box **2**, and the top of the water baffle plate **4** extends obliquely in a direction toward the second air guide member **3**.

[0151] In this way, the rainwater entering the air guide space **31** will impact the water baffle plate **4** head-on, so that it flows and drips downward along the water baffle plate **4**, and does not easily cross the water baffle plate **4** to reach the second air outlet **211**.

[0152] On the other hand, this arrangement can reduce the occupation of the air guide space **31** by the water baffle plate **4**, so that the effective air-passing space in the air guide space **31** is relatively large, which is beneficial to reducing the air flow resistance, and further beneficial to improving the heat dissipation effect on the electric control box **2**.

[0153] In some examples, as shown in FIG. **8**, the water baffle plate **4** includes a water baffle part **41** and a connection part **42**. As shown in FIG. **9**, the water baffle part **41** includes a first sub-plate **411**, a second sub-plate **412**, and a third sub-plate **413**, and the first sub-plate **411**, the second sub-plate **412**, and the third sub-plate **413** are sequentially connected to enclose a U-shaped structure. The first sub-plate **411** and the third sub-plate **413** are located on two sides of the second air outlet **211** in a lengthwise direction. The second sub-plate **412** is disposed at an angle and faces the air discharge port **32** of passing air, so that a plate surface of the second sub-plate **412** facing the air discharge port **32** forms a water baffle surface. The connection part **42** is located below the second air outlet **211**, and is connected to the lower end of the second sub-plate **412**. The connection part **42** and the electric control box **2** are connected by means of fasteners or the like to realize the connecting function between the water baffle plate **4** and the electric control box **2**.

[0154] In some exemplary embodiments, the second air guide member **3** has a plate-like structure, and the bottom of the second air guide member **3** extends obliquely in a direction toward the electric control box **2**, as shown in FIG. **8**.

[0155] In this way, on the one hand, it is beneficial to reducing the area of the air discharge port **32** of the air guide space **31**, thereby increasing the difficulty of rainwater entering the air guide space **31**, thereby improving the rainproof effect of the electric control box **2**. On the other hand, it is beneficial to guiding the rainwater to be flung downwardly along the second air guide member **3**, reducing the risk of the rainwater splashing upward to enter the air guide space **31**, and thus it is beneficial to improving the rainproof effect of the electric control box **2**.

[0156] Herein, the bottom of the second air guide member **3** may extend obliquely along a straight line, or may bend along a curve and extend obliquely (as shown in FIG. **8**).

[0157] In some exemplary embodiments, the second air outlet **211** includes a plurality of strip-shaped holes provided in a shape of a louver, as shown in FIGS. **10**, **17**, and **18**, and the opening of the second air outlet **211** faces upward.

[0158] Designing the second air outlet **211** in a shape of a louver is beneficial to increasing the area of the second air outlet **211**, thereby improving the heat dissipation effect on the electric control box **2**. The opening of the second air outlet **211** faces upward, which is beneficial to the upward

discharge of the air flow, thereby improving the heat dissipation effect on the electric control box **2**. The louver can also play a certain water-blocking role, which is also beneficial to increasing the difficulty of rainwater entering the second air outlet **211** upward, thereby improving the rainproof effect of the electric control box **2**.

[0159] Herein, the second air outlet **211** may be prepared by press molding.

[0160] Of course, the second air outlet **211** may be provided in another shape, such as a rectangular hole, a circular hole, etc.

[0161] In some exemplary embodiments, as shown in FIG. **3**, the side wall of the housing **1** is provided with an installation notch **111**. The electric control box **2** includes a box body **21**, a first cover plate **22**, an electric control board **23**, and a second cover plate **24**, as shown in FIG. **6**.

[0162] Here, the box body **21** is connected to the housing **1** and caps an upper part of the installation notch **111**. The first radiator **9** is connected to the box body **21**. The first cover plate **22** is provided on and covers the box body **21**, and encloses an installation space with the box body **21**. The bottom of the installation space is left open. The electric control board **23** is provided in the installation space. The second cover plate **24** caps a lower part of the installation notch **111** and the bottom open end of the installation space. The second cover plate **24** is provided with an avoidance notch **2421** for avoiding a refrigerant pipe.

[0163] The box body **21**, the first cover plate **22**, and the electric control board **23** form an electric control part **27**. The second cover plate **24** forms an extension part **28**.

[0164] In this scheme, the side wall of the housing **1** is provided with an installation notch **111**, and the electric control box **2** is provided at the installation notch **111** and caps the installation notch **111** to ensure the integrity of the appearance of the air conditioner outdoor unit. Herein, the box body **21** is connected to the first cover plate **22**, and the box body **21** and the first cover plate **22** enclose an installation space, and the electric control board **23** is installed in the installation space and can be fixed on the box body **21**. The box body **21** and the second cover plate **24** are vertically distributed. The box body **21** caps an upper part of the installation notch **111**, and the second cover plate **24** caps a lower part of the installation notch **111**. Further, the second cover plate **24** also caps the bottom opening of the installation space to protect the electric control board **23**. The second cover plate **24** may include a top plate **241** that caps the bottom opening of the installation space and a side plate **242** that caps the lower part of the installation notch **111**, as shown in FIG. **2**. As shown in FIG. **6**, the second cover plate **24** is provided with an avoidance notch **2421** to ensure that the refrigerant pipe connected to the compressor **7** in the housing **1** can be connected to an external refrigerant pipe, thereby realizing communication with a refrigerant pipe of an air conditioning indoor unit. The avoidance notch **2421** may be provided at the bottom of the second cover plate **24**.

[0165] In some exemplary embodiments, as shown in FIGS. **5**, **8**, **13**, **15**, and **16**, the electric control box **2** is provided with a second heat-dissipation air duct **26**, and the second heat-dissipation air duct **26** is provided with a second air inlet **2411** in communication with an external space and a second air outlet **211** in communication with the heat-exchange air duct **14**.

[0166] As shown in FIG. **12**, the second air inlet **2411** may be provided in the second cover plate **24**. As shown in FIGS. **10**, **17**, and **18**, the second air outlet **211** may be provided in the box body **21**.

[0167] The second air inlet **2411** may include at least one of the following: an air intake port provided in the second cover plate **24** (as shown in FIGS. **2** and **6**), a wire pass-through hole provided in the second cover plate **24**, an assembly gap between the second cover plate **24** and the box body **21**, and an assembly gap between the second cover plate **24** and the first cover plate **22**.

[0168] Since the box body **21** is located between the heat-exchange air duct **14** and the installation space, locating the second air outlet **211** on the box body **21** enables the second air outlet **211** to be communicated with the heat-exchange air duct **14** and the second heat-dissipation air duct **26**.

[0169] The second air inlet **2411** may be provided in a variety of forms. For example, it may be an air intake port separately provided on the second cover plate **24**, or it may utilize a wire pass-through hole on the second cover plate **24** to realize the air inlet function, or it may utilize an assembly gap between the second cover plate **24** and the box body **21** to realize the air inlet function, or it may utilize an assembly gap between the second cover plate **24** and the first cover plate **22** to realize the air inlet function, or any combination thereof may be used. It can be reasonably set according to the needs during the production process.

[0170] In some exemplary embodiments, as shown in FIGS. **6** and **8**, the electric control box **2** may include a second radiator **25** provided on the electric control board **23**. The distance between the second radiator **25** and the second air outlet **211** is smaller than the distance between the second radiator **25** and the second air inlet **2411**.

[0171] In other words, the second radiator **25** is provided at a position close to the second air outlet **211**. Since the air speed in the vicinity of the second air outlet **211** is relatively high, providing the second radiator **25** at a position close to the second air outlet **211** is beneficial to quickly discharging the heat of the second radiator **25** through the second air outlet **211**, thereby improving the heat dissipation effect on the electric control box **2**.

[0172] Herein, the second radiator **25** may include, but is not limited to, a plurality of heat dissipation fins arranged side by side. The second radiator **25** may be an aluminum radiator. The second radiator **25** is smaller in size than the first radiator **9**. The second radiator **25** may be provided in a fan module of the electric control board **23**.

[0173] The principles of heat dissipation and rainproof of the air conditioner outdoor unit are as follows.

[0174] As shown in FIGS. **5** and **13**, when the machine is in operation, the motor **51** drives the fan blades **52** to rotate, so that a negative pressure is formed inside the housing **1**, and the outside air flows through the outdoor heat exchanger **6** through the third air inlet **112** on the cabinet body **11**, realizes heat exchange with the outdoor heat exchanger **6**, and is finally discharged through the third air outlet **131** on the top cover **13**.

[0175] As shown in FIG. **13**, due to the formation of the negative pressure inside the housing **1**, a negative pressure is also formed inside the electric control box **2** and the first heat-dissipation air duct **84**, causing the outside air at a lower temperature to enter the first heat-dissipation air duct **84** from the first air inlet **841**, enter the interior of the electric

control box **2** from the second air inlet **2411**, enter the interior of the housing **1** through the first air outlet **842** and the second air outlet **211**, and is finally discharged from the housing **1** through the third air outlet **131** under the action of the fan blades **52**. Therefore, when the machine is in operation, under the action of the fan blades **52**, the external air flow continuously enters the interior of the electric control box **2** and the interior of the first heat-dissipation air duct **84** and is finally discharged, thereby realizing continuous heat dissipation of the interior of the electric control box **2**.

[0176] As shown in FIG. **8**, when the machine is placed in an outdoor rainy environment, the rainwater is first blocked by the second air guide member **3**. The water droplets that bypass the second air guide member **3** then move upward until they are blocked by the water baffle plate **4**, preventing the scattered water droplets from entering the electric control box **2**. In addition, since the second air outlet **211** of the electric control box **2** is designed as a louver structure with an upward opening, it is able to better block the water droplets from entering the interior of the electric control box **2**.

[0177] In this way, by the second air guide member **3**, the water baffle plate **4**, the second air outlet **211** of the louver structure, and the positional cooperation of the three, water droplets can be effectively blocked from entering the interior of the electric control box **2** when exposed to rain. Moreover, due to the large gap between the second air outlet **211**, the water baffle plate **4**, and the second air guide member **3**, there is less resistance to the air flow, which can improve the efficiency of heat dissipation of the electric control.

[0178] Some embodiments of the third aspect of the present disclosure further provide an air conditioning device (not shown in the drawings), including an air conditioning indoor unit and an air conditioner outdoor unit as in any of the above embodiments of the first aspect and embodiments of the second aspect, which is connected to the air conditioning indoor unit.

[0179] The air conditioning device according to embodiments of the third aspect of the present disclosure has all beneficial effects because it includes the air conditioner outdoor unit according to any one of the above-described embodiments, which will not be repeated herein.

[0180] In summary, the air conditioner outdoor unit and the air conditioning device according to embodiments of the present disclosure can effectively solve the contradiction between heat dissipation and rainproof of the electric control box. A fan can be used to synchronously realize the heat dissipation on the electric control box and the heat exchange of the outdoor heat exchanger, with a simple and compact structure. Relying on the second air guide, the water baffle plate and louver heat dissipation holes (that is, the second air outlet in a form of louver) and the position coordination of the three, external rainwater is effectively blocked from entering the inside of the electric control box, which strengthens the reliability and safety of the machine and the electric control box for outdoor use, and is conducive to prolonging the service life of the machine. Moreover, the waterproof structure can be designed with a heat dissipation hole with a larger area, which effectively improves the heat dissipation efficiency of the electric control and enhances the reliability of the use of the electric control board.

[0181] In the description of the embodiments of the present disclosure, it is to be understood that orientation or positional relationships indicated by terms "center," "longitudinal," "transverse," "length," "width," "thickness," "upper," "lower," "front," "rear," "left," "right," "vertical," "horizontal," "top," "bottom," "inner," "outer," "clockwise," "counterclockwise," "axial," "radial," "circumferential," and the like are based on those shown in the drawings and are intended only for ease of description of the embodiments of the present disclosure and simplification of the description, and are not intended to indicate or imply that the device or element referred must have a particular orientation, or is constructed and operated in a particular orientation and therefore cannot be construed as limitations on the present disclosure.

[0182] Furthermore, the terms "first" and "second" are used for descriptive purposes only and cannot be understood as indicating or implying relative importance or implying the number of technical features indicated. Thus, the features defined with "first" or "second" may explicitly or implicitly include at least one of the features. In the description of the embodiments of the present disclosure, "a plurality of/multiple" means at least two, e.g. two, three, and the like unless explicitly and specifically defined otherwise.

[0183] In the embodiments of the present disclosure, unless otherwise expressly specified and limited, terms "mounted," "connected," "connection," "fixed" and the like are understood in a broad sense. For example, it may be a fixed connection, a detachable connection, or an integrated structure. The connection may be a mechanical connection or an electrical connection, may be a direct connection or an indirect connection through an intermediate medium, or may be an internal connection between two elements or an interactive relationship between two elements, unless otherwise expressly defined. For those of ordinary skills in the art, the meanings of the above terms in the embodiments of the present disclosure can be understood according to situations.

[0184] In embodiments of the present disclosure, unless otherwise explicitly specified and defined, the first feature being "above" or "below" the second feature may be the first feature being in direct contact with the second feature, or the first feature being in indirect contact with the second feature through an intermediate medium. Moreover, the first feature being "above," "on" and "over" the second feature may be the first feature being directly above or obliquely above the second feature, or simply indicate that a horizontal height of the first feature is greater than that of the second feature. The first feature being "below," "under" and "underneath" the second feature may be that the first feature is directly below or obliquely below the second feature, or simply mean that the horizontal height of the first feature is less than that of the second feature.

[0185] In the description of this specification, descriptions with reference to terms "one embodiment," "some embodiments," "example," "specific example," or "some examples," and the like mean that specific features, structures, materials, or characteristics described in connection with the embodiment or example are included in at least one embodiment or example of the present disclosure. In this specification, schematic description of the above terms needs not be directed to the same embodiments or examples. Further, the features, structures, materials or characteristics described may be combined in a suitable manner in any one or more embodiments or examples. Further, one skilled in the art may combine different embodiments or examples

described in this specification and features of different embodiments or examples if there is no conflict.

[0186] Although some embodiments of the present disclosure have been shown and described above, the above-described embodiments are exemplary and cannot be construed as limitations on the present disclosure, and changes, modifications, substitutions and variants may be made to the above-described embodiments within the scope of the present disclosure by those of ordinary skills in the art.

1.-**24**. (canceled)

25. An air conditioner outdoor unit comprising:

a housing, including a heat-exchange air duct, a fan being provided within the heat-exchange air duct;

an electric control box, connected to the housing; and

a heat-dissipation air duct system, configured to dissipate heat from the electric control box, and including a heat-dissipation air duct arranged independent of the heat-exchange air duct and in communication with the heat-exchange air duct.

26. The air conditioner outdoor unit according to claim **25**, further comprising:

an air guide member, disposed in the heat-exchange air duct and together with the electric control box enclosing the heat-dissipation air duct; and

a radiator, positioned in the heat-dissipation air duct, connected to the electric control box, and configured to dissipate heat from the electric control box.

27. The air conditioner outdoor unit according to claim **26**, wherein the heat-dissipation air duct is provided with an air inlet and an air outlet, the air inlet is in communication with an external space, and the air outlet is in communication with the heat-exchange air duct.

28. The air conditioner outdoor unit according to claim **27**, wherein:

the air inlet is provided at a bottom of the heat-dissipation air duct, and a top of the heat-dissipation air duct is left open to form the air outlet;

the air inlet includes a plurality of strip-shaped holes provided in a shape of a louver; and

the bottom of the heat-dissipation air duct is provided with a ventilation port, and the ventilation port is in communication with the heat-exchange air duct.

29. The air conditioner outdoor unit according to claim **28**, wherein the air guide member is provided with a plate-like air guide part located at the air outlet, and the air guide part extends obliquely in a direction away from the electric control box and away from a bottom wall of the housing along a direction of airflow in the heat-dissipation air duct.

30. The air conditioner outdoor unit according to claim **28**, wherein the heat-dissipation air duct includes:

a transverse section, one end of the traverse section being provided with the air inlet; and

a vertical section, in communication with another end of the transverse section and extending in a direction toward a top wall of the housing, the radiator being located in the vertical section, an end of the vertical section close to the top wall of the housing being left open to form the air outlet, and an end of the vertical section away from the top wall of the housing being provided with the ventilation port.

31. The air conditioner outdoor unit according to claim **30**, wherein:

the electric control box includes an electric control part and an extension part, the electric control part is connected to the radiator, the extension part is connected to a bottom wall of the housing;

the air guide member includes a side enclosure plate and a bottom plate;

the side enclosure plate is hooded over the radiator and encloses the vertical section with the electric control part and the bottom plate, and an upper end of the side enclosure plate encloses the air outlet with the electric control part; and

the bottom plate is connected to a lower end of the side enclosure plate, the bottom plate, a bottom wall of the electric control part, and the extension part enclose the transverse section, the air inlet is provided in the extension part, the bottom plate is lower than the air inlet, and the ventilation port is provided in the bottom plate.

32. The air conditioner outdoor unit according to claim **31**, wherein one end of the side enclosure plate is snap-fitted to the radiator, another end of the side enclosure plate is connected to the radiator by a first fastener, and the bottom plate is connected to the extension part by a second fastener.

33. The air conditioner outdoor unit according to claim **1**, wherein:

the heat-dissipation air duct is a first heat-dissipation air duct; and

the heat-dissipation air duct system further includes a second heat-dissipation air duct provided in the electric control box.

34. The air conditioner outdoor unit according to claim **33**, wherein:

the second heat-dissipation air duct is provided with an air inlet and an air outlet, the air inlet is in communication with an external space, and the air outlet is in communication with the heat-exchange air duct; and

the air outlet includes a plurality of strip-shaped holes provided in a shape of a louver, and an opening of the air outlet faces upward.

35. The air conditioner outdoor unit according to claim **34**, further comprising:

an air guide member provided in the heat-exchange air duct and disposed opposite to the air outlet;

wherein:

the air guide member shields the air outlet and an air guide space is formed between the air guide member and the air outlet;

the air guide space has an air discharge port in communication with the heat-exchange air duct;

the air discharge port is located at a bottom of the air guide space;

the air inlet faces a bottom wall of the housing; and

the air guide member has a plate-like structure, and a bottom of the air guide member extends obliquely in a direction toward the electric control box.

36. The air conditioner outdoor unit according to claim **35**, further comprising:

a water baffle plate provided in the air guide space;

wherein:

the water baffle plate shields the air outlet and a first air-passing passage is formed between the water baffle plate and the air outlet;

a second air-passing passage is formed between the water baffle plate and the air guide member; and

along a direction of airflow, the first air-passing passage extends in a direction away from the air discharge port, and the second air-passing passage extends in a direction toward the air discharge port.

37. The air conditioner outdoor unit according to claim **36**, wherein:

a bottom of the water baffle plate is lower than the air outlet, and a top of the water baffle plate is not lower than the air outlet; and

a bottom of the air guide member is lower than the bottom of the water baffle plate.

38. The air conditioner outdoor unit according to claim **37**, wherein the bottom of the water baffle plate is connected to the electric control box, and the top of the water baffle plate extends obliquely in a direction toward the air guide member.

39. The air conditioner outdoor unit according to claim **35**, wherein the housing includes:

a cabinet body connected to the electric control box and provided with an air inlet;

a chassis connected to a bottom of the cabinet body and a bottom of the electric control box; and

a top cover, provided on and covering a top of the cabinet body and a top of the electric control box, the top cover being provided with an air outlet, and the air guide member being connected to the top cover and arranged along a circumference of the air outlet.

40. The air conditioner outdoor unit according to claim **25**, wherein:

a side wall of the housing is provided with an installation notch; and

the electric control box includes:

a box body connected to the housing and capping an upper part of the installation notch;

a first cover plate provided on and covering the box body and enclosing an installation space with the box body, a bottom of the installation space being left open;

an electric control board provided within the installation space; and

a second cover plate capping a lower part of the installation notch and a bottom open end of the installation space, the second cover plate being provided with an avoidance notch for avoiding a refrigerant pipe.

41. The air conditioner outdoor unit according to claim **40**, further comprising:

a radiator connected to the box body;

wherein the box body, the first cover plate, and the electric control board form an electric control part of the electric control box, and the second cover plate forms an extension part of the electric control box.

42. The air conditioner outdoor unit according to claim **40**, wherein:

the heat-dissipation air duct is a first heat-dissipation air duct;

a second heat-dissipation air duct is provided within the electric control box, and the second heat-dissipation air duct is provided with an air inlet in communication with an external space and an air outlet in communication with the heat-exchange air duct;

the air outlet is provided in the box body; and

the air inlet includes at least one of an air intake port provided in the second cover plate, a wire pass-through hole provided in the second cover plate, an assembly gap between the second cover plate and the box body, or an assembly gap between the second cover plate and the first cover plate.

43. The air conditioner outdoor unit according to claim **42**, wherein the electric control box further includes:

a radiator provided on the electric control board, a distance between the radiator and the air outlet being smaller than a distance between the radiator and the air inlet.

44. An air conditioning device comprising:

an air conditioning indoor unit; and

an air conditioner outdoor unit connected to the air conditioning indoor unit and including:

a housing, including a heat-exchange air duct, a fan being provided within the heat-exchange air duct;

an electric control box, connected to the housing; and

a heat-dissipation air duct system, configured to dissipate heat from the electric control box, and including a heat-dissipation air duct arranged independent of the heat-exchange air duct and in communication with the heat-exchange air duct.

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