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1. TITLE OF THE INVENTION

AIR CONDITIONER

2. FIELD OF THE INVENTION AND RELATED ART STATEMENT

5 The present invention relates to an air conditioner.

FIGS. 4 to 6 show an example of a conventional air conditioner. FIG. 4 is a front view schematically showing the air conditioner with a portion broken away, FIG. 5 is a sectional view taken along the line B-B of FIG. 4, and FIG. 6 is a sectional view taken along the line C-C of FIG. 4.

The interior of a casing 1 of an air conditioner is partitioned into right and left portions by a partition plate 2, and a machine room 3 is formed in one portion, while a heat exchange room 4 is formed in the other portion.

15 In the machine room 3, an inverter-driven compressor 5, accumulator 8, four-way valve, refrigerant pipes, etc. are arranged, and at the upper part of the machine room 3 is disposed a control box 6. Radiation fins 7 for heat generating equipment such as a power transistor housed in the control box 6 protrude in the heat exchange room 4.

20 In the heat exchange room 4, an L-shaped heat exchanger 9, a pair of fans 10a and 10b, which are arranged vertically, etc. are disposed, and the L-shaped heat exchanger 9 faces an air intake 11 formed in a back face 1a of the casing 1 and an air intake 12 formed in a left side face 1b.

The fans 10a and 10b are arranged so as to face air outlets 13a and 13b, respectively, formed in a front panel 1c of the casing 1.

When the fans 10a and 10b are driven by motors 14a and 14b, respectively, fresh air is taken in the heat exchange room 4 through the air intakes 11 and 12. The air is heat exchanged with a refrigerant in a process in which it passes through the heat exchanger 9, by which the temperature is raised or lowered, and then the air, energized by the fans 10a and 10b, is discharged through the air outlets 13a and 13b.

At the same time, the radiation fins 7 are cooled by the fresh air passing through the gaps therebetween.

In the above-described air conditioner, the control box occupies a large space in the machine room 3, so that the space for laying refrigerant pipes becomes insufficient. As a result, there arises a problem in that the machine room 3, in turn, the casing 1 becomes large.

3. OBJECT AND SUMMARY OF THE INVENTION

The present invention was made to solve the above problems, and accordingly an object thereof is to provide an air conditioner in which a machine room can be made small.

To achieve the above object, the present invention provides an air conditioner in which the interior of a casing

is partitioned into a heat exchange room and a machine room, a heat exchanger, fan, etc. are arranged in the heat exchange room, and a compressor, control box, etc. are arranged in the machine room, the air conditioner being characterized in that
5 the control box is disposed extending to the heat exchange room side beyond the partition plate, and the end thereof is fixed to the top of the heat exchanger via a bracket.

This configuration provides enough space in the machine room, and the strength and stability of control box is kept
10 by the bracket.

If an air vent hole is provided at the end of the control box on the heat exchange room side, the heat in the control box can be released into the heat exchange room through the air vent hole.

15 If radiation fins for cooling heat generating equipment inside the control box are protrusively provided on the lower surface of the control box on the heat exchange room side, the heat generated by the heat generating equipment can be dissipated via the radiation fins to the air passing through
20 the heat exchange room.

4. BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front sectional view schematically showing an air conditioner in accordance with one embodiment of the
25 present invention;

FIG. 2 is a sectional view taken along the line A-A of FIG. 1;

FIG. 3 is an enlarged perspective view showing a principal portion of an air conditioner in accordance with one embodiment of the present invention;

FIG. 4 is a partially broken front view schematically showing a conventional air conditioner;

FIG. 5 is a sectional view taken along the line B-B of FIG. 4; and

FIG. 6 is a sectional view taken along the line C-C of FIG. 4.

5. DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

FIGS. 1 to 3 show one embodiment of the present invention. FIG. 1 is a front sectional view schematically showing an air conditioner, FIG. 2 is a sectional view taken along the line A-A of FIG. 1, and FIG. 3 is a perspective view showing a portion near a bracket of the air conditioner.

As shown in FIGS. 1 and 2, at the upper part of a machine room 3 and a heat exchange room 4, a control box 20, which is short vertically and long sideways, is arranged horizontally on both sides of a partition plate 2.

This control box 20 contains a power transistor 22, control board 23, capacitors 24, and the like. At the right end of the control box 20 is attached a terminal board 26

that hangs down.

The left end face of the control box 20 is formed with an air vent hole 25 as shown in FIG. 3.

5 Radiation fins 27 for cooling heat generating equipment such as the power transistor 22 protrude from the lower left end face of the control box 20 and extend downward.

 Since other configuration is similar to the configuration of the conventional air conditioner shown in FIGS. 4 to 6, the same reference numerals are applied to
10 elements of this embodiment which correspond to the elements of the conventional air conditioner, and the explanation thereof is omitted.

 Since the control box 20 extends to the heat exchange room 4 side beyond the partition plate 2, a space occupied by
15 the control box 20 in the machine room 3 is reduced. Therefore, the machine room 3, and in turn, the casing 1 can be made small.

 The left end of the control box 20 is fixed to the top of a heat exchanger 9 via a bracket 21. Thereby, the
20 strength and stability of the control box 20 can be improved, and in the case where plural heat exchangers 9 are arranged in rows, they can be fastened by the bracket 21.

 During the operation of the air conditioner, fresh air taken in the heat exchange room 4 through an air intake 12
25 passes through the heat exchanger 9, and then passes between

the radiation fins 27, so that these radiation fins can dissipate the heat generated by the heat generating equipment to the outside.

Also, the heat generated by the heat generating
5 equipment is dissipated from the control box 20 into the heat exchange room 4 through the air vent hole 25, which can prevent the heat generating equipment from overheating.

In the present invention, since the control box is disposed extending to the heat exchange room side beyond the
10 partition plate, a space occupied by the control box in the machine room can be reduced. Accordingly, the machine room, and in turn, the casing can be made small.

Also, since the end of the control box is fixed to the top of the heat exchanger via the bracket, the strength and
15 stability of the control box can be improved, and in the case where plural heat exchangers are arranged in rows, they can be fastened by the bracket.

Further, if an air vent hole is provided at the end of the control box on the heat exchange room side, the heat in
20 the control box can be released into the heat exchange room through the air vent hole.

If radiation fins for cooling the heat generating equipment inside the control box are protrusively provided on the lower surface of the control box on the heat exchange
25 room side, the heat generated by the heat generating

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equipment can be dissipated via the radiation fins to the air passing through the heat exchange room.



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CLAIMS

1. An air conditioner in which the interior of a casing is partitioned into a heat exchange room and a machine room, a heat exchanger, fan, etc. are arranged in said heat exchange room, and a compressor, control box, etc. are arranged in said machine room,

said air conditioner being characterized in that said control box is disposed extending to the heat exchange room side beyond said partition plate, and the end thereof is fixed to the top of said heat exchanger via a bracket.

2. An air conditioner according to claim 1, wherein an air vent hole is provided at the end of said control box on the heat exchange room side.

3. An air conditioner according to claim 1, wherein radiation fins for cooling heat generating equipment inside said control box are protrusively provided on the lower surface of said control box on the heat exchange room side.