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HEAT EXCHANGER OF AIR CONDITIONER

BACKGROUND OF THE INVENTION

5 Field of the Invention

The present invention relates to a split and wall hanging type air conditioner, and more particularly, the present invention relates to a heat exchanger of a split and wall hanging type air conditioner, which includes an upright
10 cooling fin section, a first inclined cooling fin section and a second inclined cooling fin section, and in which the second inclined cooling fin section is connected to an upper end of the first inclined cooling fin section such that it is inclined from a plane of the first inclined cooling fin
15 section and extends downward from the upper end of the first inclined cooling fin section while an air flow preventing mold is intervened therebetween, to thereby reduce the volume and size of an air conditioner body in which the heat exchanger is mounted.

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Description of the Prior Art

Generally, an air conditioner performs a cooling function based on a phenomenon that a liquid absorbs heat when it evaporates. The air conditioner may be designed to include a
25 dehumidifier and/or an air filter for removing moisture and/or



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dust contained in an air.

Referring to FIG. 1, there is shown a diagram for illustrating principles of a cooling circuit of an air conditioner. When a refrigerant enters an expansion valve as
5 a liquid under high pressure and passes through a metering orifice within the expansion valve, the refrigerant is forced through the small orifice and sprayed out into a heat exchanger. Therefore, as the pressure of the refrigerant is lowered, the refrigerant is evaporated while it absorbs heat
10 through pipes of the heat exchanger, by which a physical state of the refrigerant is changed from a liquid to a vapor. At this time, by directing warm air toward the pipes of the heat exchanger via a blower, the temperature of the warm air is lowered to be capable of cooling a room.

15 When the refrigerant passes through a compressor, its pressure is increased. As the heat-laden, high pressure refrigerant vapor enters a condenser, it is cooled by an ambient air to be condensed back to a liquid.

Accordingly, the refrigerant performs a cooling function
20 as it is circulated in the cooling circuit while being changed in its physical state from a liquid to a vapor and back to a liquid again to complete a cooling cycle.

On the other hand, an air conditioner can be divided into a tower type air conditioner and a wall hanging type air
25 conditioner. Further, the air conditioner consists of an

indoor unit including a heat exchanger and a blower, and an outdoor unit including a compressor and a condenser.

The present invention relates to a wall hanging type air conditioner and more particularly, to an indoor unit of a wall hanging type air conditioner, which includes a heat exchanger and a blower.

In more detail, an air conditioner body, a grille body, an insert grille, a drain assembly mounted to the grille body, and an air flow direction adjustor for adjusting air flow direction upward or downward, are disposed outside a wall hanging type indoor unit constituting an air conditioner. Further, a control box, a heat exchanger, a fan motor, and a blower connected to the fan motor to be driven thereby, are disposed inside the wall hanging type indoor unit constituting the air conditioner.

Accordingly, a refrigerant is flowed into an evaporator from an outdoor unit, and the blower connected to the fan motor is rotated to supply cooled air into a room through the air flow direction adjustor.

The heat exchanger includes an upright cooling fin section having a plurality of cooling fins which extend vertically, a first inclined cooling fin section connected to an upper end of the upright cooling fin section such that it is inclined from a plane of the upright cooling fin section and extends upward from the upper end of the upright cooling

fin section, and a second inclined cooling fin section connected to an upper end of the first inclined cooling fin section such that it is inclined from a plane of the first inclined cooling fin section and extends horizontally.

5 However, the heat exchanger of the prior art, constructed as mentioned above, suffers from defects in that since the second inclined cooling fin section is connected to the first inclined cooling fin section while extending horizontally, the heat exchanger occupies excessive space. Hence, the volume of
10 the air conditioner body in which the heat exchanger is mounted is increased, whereby space utilizing efficiency is deteriorated.

SUMMARY OF THE INVENTION

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Accordingly, the present invention has been made in an effort to solve the problems occurring in the prior art, and an object of the present invention is to provide a heat exchanger of an air conditioner, in which a second inclined
20 cooling fin section is connected to an upper end of a first inclined cooling fin section such that it is inclined from a plane of the first inclined cooling fin section and extends downward from the upper end of the first inclined cooling fin section, to decrease space which is occupied by cooling fins
25 of the heat exchanger, whereby reducing the volume of an air

conditioner body in which the heat exchanger is mounted while maintaining a heat exchanging property as it is.

In order to achieve the above object, according to the present invention, there is provided an air conditioner comprising: an upright cooling fin section vertically installed in the air conditioner; a first inclined cooling fin section connected to an upper end of the upright cooling fin section such that it is inclined from a plane of the upright cooling fin section and extends upward from the upper end of the upright cooling fin section, wherein the connection between the first inclined cooling fin section and the upright cooling fin section forms a body; and a second inclined cooling fin section connected separately fixed to an upper end of the first inclined from a plane of the first inclined cooling fin section and extends downward from the upper end of the first inclined cooling fin section, to decrease space which is occupied by the cooling fin sections.

BRIEF DESCRIPTION OF THE DRAWINGS

The above objects, and other features and advantages of the present invention will become more apparent after a reading of the following detailed description when taken in conjunction with the drawings, in which:

FIG 1 is a diagram illustrating principles of a cooling circuit of a conventional air conditioner;

FIG 2 is a perspective view illustrating cooling fin sections of an air conditioner in accordance with an

embodiment of the present invention, which are assembled with one another; and

FIG. 3 is a side view of the cooling fin sections of FIG. 2.

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DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Reference will now be made in greater detail to a preferred embodiment of the invention, an example of which is illustrated in the accompanying drawings. Wherever possible, the same reference numerals will be used throughout the drawings and the description to refer to the same or like parts.

Referring to FIGS. 2 and 3, an air conditioner in accordance with an embodiment of the present invention includes a heat exchanger 10 which has a cooling fin part 10a. The cooling fin part 10a includes an upright cooling fin section 12 having a plurality of cooling fins which extend vertically, a first inclined cooling fin section 16 connected to an upper end of the upright cooling fin section 12 such that it is inclined from a plane of the upright cooling fin section 12 and extends upward from the upper end of the upright cooling fin section 12, and a second inclined cooling fin section 20 connected to an upper end of the first inclined cooling fin section 16 such that it is inclined from a plane

of the first inclined cooling fin section 16 and extends downward from the upper end of the first inclined cooling fin section 16.

5 A first air flow preventing mold 14 is intervened between the upright cooling fin section 12 and the first inclined cooling fin section 16, and a second air flow preventing mold 18 is intervened between the first and second inclined cooling fin sections 16 and 20.

10 Here, the drawing reference numeral 22 represents an inlet tube through which a liquid refrigerant under high pressure is supplied into the heat exchanger 10, and the drawing reference numeral 24 represents an outlet tube through which the liquid refrigerant under low pressure is discharged out of the heat exchanger 10.

15 Due to the fact that the first inclined cooling fin section 16 and the second inclined cooling fin section 20 are slopingly connected to the upright cooling fin section 12 and the first inclined cooling fin section 16, respectively, while air flow preventing molds 14 and 18 are intervened
20 therebetween, respectively, an area which is occupied by the heat exchanger 10, that is, an area which is occupied by an entire indoor unit of the air conditioner, is reduced.

At this time, although the second inclined cooling fin section 20 is slopingly connected to the first inclined
25 cooling fin section 16 such that it extends downward from the

upper end of the first inclined cooling fin section 16, because space through which room air flows is wide enough, performance of the air conditioner is not deteriorated.

5 In other words, since only an angle over which the first and second inclined cooling fin sections 16 and 20 are combined with each other is changed while the construction of respective cooling fin sections 12, 16 and 20 is maintained as it is, an area through which the room air flows is not changed. Therefore, an amount of air flowing through the
10 cooling fin part 10a is also not changed.

Accordingly, it is possible to maintain the amount of cooling air as it is, and by reducing the volume of an air conditioner body, transportation and installation of the air conditioner can be conveniently and easily carried out.

15 As described above, according to the present invention, advantages are provided in that since a second cooling fin section is connected to an upper end of a first inclined cooling fin section such that it is inclined from a plane of the first inclined cooling fin section and extends downward
20 from the upper end of the first inclined cooling fin section while an air flow preventing mold is intervened between the first and second inclined cooling fin sections, the volume and size of an air conditioner body in which the heat exchanger is mounted, are reduced.

25 In the drawings and specification, there have been

disclosed typical preferred embodiments of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being set forth in the following claims.

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WHAT IS CLAIMED IS:

1. An air conditioner comprising:
an upright cooling fin section vertically installed in the air conditioner;
a first inclined cooling fin section connected to an upper end of the upright cooling fin section such that it is inclined from a plane of the upright cooling fin section and extends upward from the upper end of the upright cooling fin section, wherein the connection between the first inclined cooling fin section and the upright cooling fin section forms a body; and
a second inclined cooling fin section [connected] separately fixed to an upper end of the first inclined from a plane of the first inclined cooling fin section and extends downward from the upper end of the first inclined cooling fin section, to decrease space which is occupied by the cooling fin sections.
2. The air conditioner as claimed in claim 1, wherein a first air flow preventing mold is further intervened between the upright cooling fin section and the first inclined cooling fin section, and a section air flow preventing mold is further intervened between the first and second inclined cooling fin sections.