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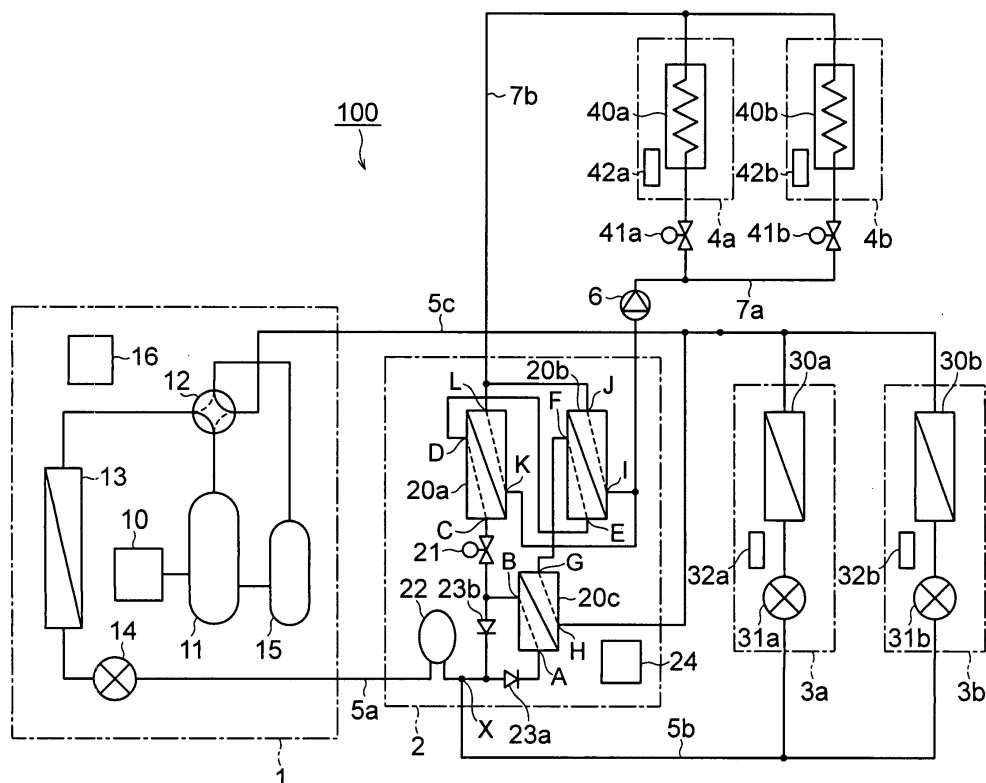
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(54) Air conditioner

(57) An air conditioner 100 comprising an outdoor unit 1 having a compressor 11, a direct expansion type indoor unit including indoor heat exchangers 30a, 30b for directly heat-exchanging refrigerant discharged from the compressor 11 with indoor air through liquid pipes 5a, 5b and a gas pipe 5c, a chiller unit 2 for heat-exchanging the refrigerant with water to generate cold water or

hot water, and fan coil units 4a, 4b having water heat exchangers 40a, 40b for circulating the cold water or hot water generated in the chiller unit 2 by driving a circulating pump 6 and heat-exchanging the cold water or hot water with indoor air. When the air conditioner falls into an out-of-gas state, the circulating pump 6 is driven, and a motor-driven expansion valve 21 is opened to avoid the out-of-gas state and also prevent freezing of the cold/hot water.

FIG. 1



Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to an air conditioner, and particularly to an air conditioner using an absorption type refrigerating machine and a fan coil unit.

2. Description of the Related Art

[0002] In order to carry out air conditioning operation on a room by using as a heat source machine an absorption type cold/hot water machine or a chiller heat source machine, it is required that a water pipe is laid in a building, a fan coil unit is connected to the water pipe and cold water or hot water generated by the heat source machine is circulated in the water pipe by a circulating pump to carry out the air conditioning operation. Furthermore, in order to carry out air conditioning operation on a room by using as a heat source machine an outdoor unit having a compressor for compressing refrigerant and discharging the refrigerant thus compressed, it is required that a refrigerant pipe is laid in a building, an indoor unit is connected to the refrigerant pipe and the refrigerant discharged from the compressor of the heat source is circulated in the refrigerant pipe to carry out the air conditioning operation.

[0003] In the case where the absorption type cold/hot water machine or the chiller heat source machine is used as a heat source machine, facilities such as a cooling water system, etc. are also required. Therefore, it is sufficient to use only one heat source machine, however, the number of places to which maintenance is required is larger than the case where the outdoor unit having the compressor is used as a heat source machine, and also it is impossible to dispersively set up the heat source machine.

[0004] When the air conditioning operation using the absorption type cold/hot water machine or the chiller heat source machine as a heat source machine is replaced by the air conditioning operation using the outdoor unit having the compressor as a heat source machine, the laying of the water pipe in the building must be replaced by the laying of the refrigerant pipe in the building, that is, the pipe laying is carried out again by using a water pipe, and also the fan coil unit must be replaced by the indoor unit.

[0005] Accordingly, there has been proposed a chiller heat source machine which is constructed by connecting an outdoor unit having a compressor and a chiller unit containing a water heat exchanger or the like and generates cold water or hot water with refrigerant discharged from the compressor of the outdoor unit (see JP-A-08-233405).

[0006] However, even in the case of the chiller heat source machine as described above, it is impossible that a direct expansion type indoor unit for directly heat-ex-

changing the refrigerant discharged from the compressor with indoor air is disposed in juxtaposition with the fan coil unit although the air conditioning can be carried out on a room by the fan coil unit while supplying cold water or hot water.

SUMMARY OF THE INVENTION

[0007] Therefore, an object of the present invention is to provide an air conditioner that is equipped with a heat source machine having a compressor therein and supplies heat source from both of a refrigerant pipe and a water pipe to carry out air conditioning operation.

[0008] In order to attain the above object, according to a first aspect of the present invention, there is provided an air conditioner comprising: a heat source machine containing a compressor for compressing refrigerant; a direct expansion type indoor unit having an indoor heat exchanger for directly heat-exchanging the refrigerant discharged from the compressor with indoor air through a refrigerant pipe comprising a liquid pipe and a gas pipe; a chiller unit for heat-exchanging the refrigerant with water to generate cold water or hot water; and a fan coil unit having a water heat exchanger for circulating the cold water or hot water generated in the chiller unit by driving a circulating pump and heat-exchanging the cold water or hot water thus circulated with the indoor air.

[0009] According to a second aspect of the present invention, in the above air conditioner, one end of the liquid pipe is connected to the heat source machine while the other end of the liquid pipe is passed through a receiver tank provided in the chiller unit and branched into two parts, one part being connected to one end side of a water heat exchanger provided in the chiller unit and the other part being connected to the indoor unit, and one end of the gas pipe is connected to the heat source machine while the other end of the gas pipe is branched into two parts, one part being connected to the other end side of the water heat exchanger and the other part being connected to the indoor unit.

[0010] According to a third aspect of the present invention, in the above air conditioner, a plurality of indoor units are connected to one another in parallel through the liquid pipe and the gas pipe.

[0011] According to a fourth aspect of the present invention, in the above air conditioner, one end of the liquid pipe is connected to the heat source machine while the other end of the liquid pipe is passed through a receiver tank provided in the chiller unit and branched into two parts, one part being connected to one end side of a water heat exchanger provided in the chiller unit and the other part being connected to the plural indoor units in parallel, and one end of the gas pipe is connected to the heat source machine while the other end of the gas pipe is branched into two parts, one part being connected to the other end side of the water heat exchanger and the other part being connected to the plural indoor units in parallel.

[0012] According to a fifth aspect of the present invention, in the above air conditioner, the chiller unit has a refrigerant/water heat exchanger for heat-exchanging the refrigerant discharged from the compressor with water to generate cold water or hot water.

[0013] According to a sixth aspect of the present invention, in the above air conditioner, the chiller unit has a control valve between the refrigerant/water heat exchanger and a branch point at which the refrigerant pipe is branched into one part extending to the refrigerant/water heat exchanger and the other part extending to the indoor unit, and when an out-of-gas state of refrigerant circulated into the indoor unit is detected while the driving of the circulating pump is stopped, the control valve is opened and the circulated pump is driven.

[0014] According to a seventh aspect of the present invention, in the above air conditioner, the refrigerant/water heat exchanger and the control valve are connected to the indoor unit in parallel through the liquid pipe extending from the other end side of the receiver tank and the gas pipe.

[0015] According to an eighth aspect of the present invention, in the above air conditioner, the compressor of the heat source machine is driven by an engine for generating driving force by combusting fuel such as gas or the like.

[0016] According to the present invention, the air conditioner is provided with the fan coil unit for circulating cold/hot water in a water pipe to carry out air conditioning operation and also the indoor unit for directly heat-exchanging the refrigerant discharged from the compressor with indoor air. Therefore, the fan coil unit which has been hitherto connected to the water pipe can be directly successively used, and also the air conditioning area can be expanded or the air conditioning performance can be improved by newly laying a refrigerant pipe. Furthermore, the newly laid pipe is the refrigerant pipe, and thus the laying cost in a building can be suppressed to a low cost.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]

Fig. 1 is a diagram showing the construction of an air conditioner according to the present invention; and

Fig. 2 is a flowchart showing a control operation avoiding an out-of-gas state.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0018] A preferred embodiment according to the present invention will be described hereunder with reference to the accompanying drawings.

[0019] Fig. 1 is a diagram showing the construction of an air conditioner according to the present invention.

[0020] An air conditioner 100 comprises an outdoor

unit 1 containing an engine 10, a compressor 11, etc., a chiller unit 2 for heat-exchanging refrigerant discharged from the compressor 11 with water in a water heat exchanger to generate cold water or hot water, and direct expansion type of plural indoor units 3a, 3b for directly heat-exchanging the refrigerant from the compressor 1 with indoor air, which are connected to one another through liquid pipes 5a, 5b and a gas pipe 5c, and further comprises fan coil units 4a, 4b which are connected to the chiller unit 2 through water pipes 7a, 7b and circulate the cold water or hot water generated in the chiller unit 2 by a circulating pump 6 to heat-exchange the cold water or hot water with the indoor air.

[0021] In the outdoor unit 1 are accommodated an engine 10 for combustion fuel such as gas or the like to generate driving force, a compressor 11 which is driven by the driving force generated in the engine 10, a four-way valve 12 for changing the circulating direction of refrigerant discharged from the compressor 11, an outdoor heat exchanger 13 for carrying out the exchange between the refrigerant and outside air, an outdoor expansion valve 14 for reducing the pressure of the refrigerant, an accumulator 15 for conducting gas-liquid separation on the refrigerant sucked into the compressor 11, and an outdoor controller 16 for controlling the outdoor unit 1 and carrying out communications with a chiller controller 24 of the chiller unit 2 and indoor controllers 32a, 32b.

[0022] In the chiller unit 2 are accommodated a plurality of refrigerant/water heat exchangers 20a, 20b as plate type heat exchangers, a refrigerant heat exchanger 20c, a motor-driven expansion valve 21 for controlling the flow amount of refrigerant flowing through the refrigerant/water heat exchangers 20a, 20b and the refrigerant heat exchanger 20c, a receiver tank 22 for temporarily stocking the refrigerant, check valves 23a, 23b, and the chiller controller 24 for adjusting the opening degree of the motor-driven expansion valve 21, controlling the operation of the circulating pump 6 and carrying out communications with the outdoor controller 16 of the outdoor unit 1 and the fan coil controllers 42a, 42b of the fan coil units 4a, 4b.

[0023] The connection of the refrigerant pipe in the chiller unit 2 will be described.

[0024] A liquid pipe 5a extending from the outdoor unit 1 is connected to one end of the receiver tank 22, and the other end of the receiver tank 22 is branched to two parts at a branch point X. One branched part of the receiver tank 22 extends as a liquid pipe 5b and is connected to the indoor units 3a, 3b described later, and the other branched part of the receiver tank 22 is connected through the check valve 23 to a refrigerant port A of the refrigerant heat exchanger 20c. That is, the chiller unit 2 is connected to the indoor units 3a, 3b in parallel through the liquid pipe 5b and the gas pipe 5c at the other end side of the receiver tank 22.

[0025] The check valve 23a is disposed so that the refrigerant flows from the receiver tank 22 through the check valve 23a to the refrigerant heat exchanger 20c,

and the other end of the receiver tank 22 is connected to the check valve 23b whose one end is connected to a refrigerant port B of the refrigerant heat exchanger 20c. The check valve 23b is disposed so that the refrigerant flows from the refrigerant port B of the refrigerant heat exchanger 20c through the check valve 23b to the other end of the receiver tank 22. Furthermore, the refrigerant port B of the refrigerant heat exchanger 20c is connected through the motor-driven expansion valve 21 to a refrigerant port C of the refrigerant/water heat exchanger 20a, and a refrigerant port D of the refrigerant/water heat exchanger 20a is connected to a refrigerant port E of the refrigerant/water heat exchanger 20b. A refrigerant port F of the refrigerant/water heat exchanger 20b is connected to a refrigerant port of the refrigerant heat exchanger 20c, and a refrigerant port H of the refrigerant heat exchanger 20c is connected to the refrigerant pipe 5c extending from the outdoor unit 1. That is, the refrigerant/water heat exchanger 20a, 20b are connected to each other in series in the refrigerant circuit.

[0026] The chiller unit 2 is provided with the water pipes 7a, 7b for circulating cold water or hot water generated in the chiller unit 2 into the fan coil units 4a, 4b described later. One end of the water pipe 7a is branched into two parts which are connected to cold/hot water ports I, K of the refrigerant/water heat exchangers 20a, 20b, and the other end of the water pipe 7a is branched into two parts through the circulating pump 6, the two parts thus branched being connected to one ends of the water heat exchangers 40a, 40b of the fan coil units 4a, 4b through cold/hot water valves 41a, 41b, respectively. Furthermore, one end of the water pipe 7b is branched and then connected to cold/hot water ports J, L of the refrigerant/water heat exchangers 20a, 20b while the other end of the water pipe 7b is branched and then connected to the other ends of the water heat exchangers 40a, 40b of the fan coil units 4a, 4b. That is, the refrigerant/water heat exchangers 20a, 20b are connected to each other in parallel through the water pipes 7a, 7b connected to the fan coil units 4a, 4b.

[0027] By constructing the air conditioner 100 as described above, the air conditioner 100 can perform both the air conditioning operation carried out by heat-exchanging the cold/hot water circulated in the water pipes 7a, 7b with indoor air and the air conditioning operation carried out by directly heat-exchanging the refrigerant discharged from the compressor 11 with the indoor air. Therefore, when a heat source machine such as an absorption type refrigerating machine or the like is replaced by the air conditioner of this embodiment, water pipes which have been laid in a building can be successively used. Furthermore, even when an air conditioning area is newly enlarged or the air conditioning performance is improved, a refrigerant pipe for circulating refrigerant discharged from the compressor 11 may be laid, so that the laying cost of the pipe can be reduced to a small level.

[0028] In the indoor units 3a, 3b are accommodated indoor heat exchanges 30a, 30b for directly heat-ex-

changing the refrigerant discharged from the compressor 11 of the outdoor unit 1 with indoor air, and indoor expansion valves 31a, 31b for controlling the amounts of the refrigerant flowing into the indoor heat exchangers 20a, 20b, etc., which are connected to each other through the refrigerant pipes. Furthermore, in the indoor units 3a, 3b are also accommodated the indoor controllers 32a, 32b for controlling the indoor units 3a, 3b respectively and carrying out communications with the outdoor controller 16 of the outdoor unit 1.

[0029] In the indoor units 3a, 3b are accommodated the indoor heat exchangers 30a, 30b for directly heat-exchanging the indoor air with the refrigerant discharged from the compressor 11 of the outdoor unit 1, and the indoor expansion valves 31a, 31b for controlling the amounts of the refrigerant flowing into the indoor heat exchangers 20a, 20b, which are connected to each other through the refrigerant pipes. Furthermore, in the indoor units 3a, 3b are also accommodate the indoor controllers 32a, 32b for controlling the indoor units 3a, 3b respectively and carrying out communications with the outdoor controller 16 of the outdoor unit 1.

[0030] In the fan coil units 4a, 4b are accommodated the water heat exchangers 40a, 40b for heat-exchanging indoor air with cold water or hot water generated in the chiller unit 2 and circulated by the circulating pump 6, and the cold/hot water valves 41a, 41b for controlling flow of the cold water or hot water flowing into the water heat exchangers 40a, 40b, which are connected to each other through the water pipes, and in the fan coil units 4a, 4b are also accommodated the fan coil controllers 42a, 42b for controlling the fan coil units 4a, 4b respectively and carrying out communications with the chiller controller 24 of the chiller unit 2, respectively.

[0031] Accordingly, at the refrigerant circuit side to which the refrigerant is supplied from the outdoor unit 1, a passage along which the refrigerant supplied from the chiller unit 2 to the using side heat exchangers 30 is heat-exchanged with the cold/hot water can be set to a long value, and thus the heat exchange efficiency between the refrigerant and the cold/hot water can be enhanced. In addition, at the cold/hot water circuit side, the flow rate of the cold/hot water in the refrigerant/water heat exchangers 20a, 20b and the respective pipe-connected cold/hot water pipes can be reduced without reducing the flow amount of the cold/hot water supplied from the chiller unit 2 to the fan coil units 4a, 4b, so that corrosion of the pipes, etc. by the cold/hot water can be suppressed.

[0032] When the driving of the air conditioner 100 is started by the outdoor controller 16, combustion gas of the mixture of fuel such as gas or the like from a fuel supply device (not show) and atmospheric air is supplied to start the driving of the engine 10. The driving of the engine 10 generates driving force, and the compressor 11 is driven by the driving force thus generated to compress and discharge the refrigerant from the compressor 11, and also the driving of the circulating pump 6 is started

by the chiller controller 24 of the chiller unit 2. Under cooling operation, the four-way valve 12 is set as indicated by a solid line by the outdoor controller 16 of the outdoor unit 1, and the opening degrees of the indoor expansion valves 31a, 31b are set on the basis of an air conditioning load calculated by the indoor controllers 32a, 32b.

[0033] Furthermore, the opening degree of the motor-driven expansion valve 21 of the chiller unit 2 is controlled, and also the cold/hot water valves 41a, 41b of the fan coil units 4a, 4b, are opened, so that the refrigerant discharged from the compressor 11 flows through the four-way valve 12 into the outdoor heat exchanger 13, and the refrigerant is heat-exchanged with outside air and condensed in the outdoor heat exchanger 13. The pressure of the refrigerant thus condensed is reduced in the outdoor expansion valve 14, and the pressure-reduced refrigerant flows into the receiver tank 22 of the chiller unit 2 and is temporarily stocked in the receiver tank 22. Thereafter, the refrigerant flows out from the receiver tank 22 and then it is distributed into two passages. The refrigerant in one distributed passage flows through the refrigerant pipe 5b to the indoor units 3a, 3b. The refrigerant in the other distributed passage flows through the check valve 23a to one port of the refrigerant heat exchanger 20c.

[0034] The refrigerant flowing into the refrigerant heat exchanger 20c is heat-exchanged with the refrigerant flowing through the refrigerant/water heat exchangers 20a, 20b, and then the refrigerant thus heat-exchanged passes through the motor-driven expansion valve 21 and flows into the refrigerant/water heat exchangers 20a, 20b successively to be evaporated, so that cold water is generated. Furthermore, the refrigerant flows into the other port of the refrigerant heat exchanger 20c and flows out to the refrigerant pipe 5c.

[0035] Furthermore, the refrigerant passing through the refrigerant pipe 5b and flowing into the indoor units 3a, 3b is branched in accordance with the opening degrees of the indoor expansion valves 31a, 31b and then flows into the indoor units 3a, 3b. The refrigerant flowing into the indoor units 3a, 3b is evaporated, and flows out to the refrigerant pipe 5c.

[0036] The refrigerant thus evaporated flows in the refrigerant pipe 5c while being confluent with the evaporated refrigerant flowing through the chiller unit 2, and is returned to the outdoor unit 1. The refrigerant thus returned to the outdoor unit 1 passes through the four-way valve 12 and the accumulator 15 and is returned to the compressor 11.

[0037] The cold water generated in the chiller unit 2 flows through the water pipe 7a by the driving of the circulating pump 6, and is branched into two streams. These refrigerant streams are passed through the cold/hot water valves 41a, 41b and heat-exchanged with indoor air in the water heat exchangers 40a, 40b, and then the refrigerant thus heat-exchanged with the indoor air is passed through the cold/hot water pipe 7b and returned

to the chiller unit 2.

[0038] When the indoor units 3a, 3b are stopped or the thermo-off operation is set, the indoor expansion valves 31a, 31b of the indoor units 3a, 3b are fully closed, and all the refrigerant discharged from the compressor 11 passes from the receiver tank 22 of the chiller unit 2 through the check valve 23a to the refrigerant heat-exchanger 20c, flows through the refrigerant/water heat exchangers 20a, 20b and then returns to the compressor 11.

[0039] Furthermore, when the fan coil units 4a, 4b are stopped or set to the thermo-off operation, the cold/hot water valves 41a, 41b of the fan coil units 4a, 4b are closed, and also the motor-driven valve 21 of the chiller unit 2 is closed, so that all the refrigerant discharged from the compressor 11 is distributed to the indoor units 3a, 3b.

[0040] In this case, plate type heat exchangers are used as the refrigerant/water heat exchangers 20a, 20b, and they have high heat-exchanger capabilities. Therefore, there is a risk that the refrigerant which flows from the gas pipe 5c side into the refrigerant/water heat exchangers 20a, 20b and is heat-exchanged with water trapped in the water pipes 7a, 7b to be condensed and then circulated in the refrigerant pipes 5a to 5c runs short temporarily, that is, an out-of-gas state may temporarily occur.

[0041] In this case, by opening the motor-driven expansion valve 21, the refrigerant trapped in the refrigerant/water heat exchangers 20a, 20b is enforced to flow out therefrom, whereby the out-of-gas state can be overcome.

[0042] At this time, it is preferable that the circulating pump 6 is also driven to prevent the water trapped in the refrigerant/water heat exchangers 20a, 20b from being frozen.

[0043] The control described above will be described with reference to Fig. 2.

[0044] First, it is judged whether the air conditioner 100 is driven or not (step S1). If the air conditioner 100 is not driven, the judgment of step S1 is repeated. If the air conditioner 100 is driven, it is judged whether both the fan coil units 4a, 4b are at a stop or under the thermo-off operation (step S2). If anyone of the fan coil units 4a, 4b is under the thermo-on operation, the judgment of step S2 is repeated. If both the fan coil units 4a, 4b are at a stop or under the thermo-off operation, it is judged on the basis of detection signals from sensors provided to the outdoor unit 1 and/or the indoor units 3a, 3b whether the air conditioner is under out-of-gas state or not (step S3). The signal is output from temperature sensors, pressure sensors, etc. provided to the outdoor unit 1 and/or the indoor units 3a, 3b. Specifically, in the case of the outdoor unit 1, the signals represent the temperature and pressure at the inlet/outlet ports of the outdoor heat exchanger 13 or the opening degree of the outdoor expansion valve 14 or the like. In the case of the indoor units 3a, 3b, the signals represent the temperature at the suction ports of the indoor units 3a, 3b, the temperature at the discharge

ports of the indoor units 3a, 3b, the pressure at the inlet/outlet ports of the indoor heat exchangers 30a, 30b, or the opening degrees of the indoor expansion valves 31a, 31b.

[0045] If the air conditioner is not under the out-of-gas state, the processing returns to step S2 to repeat the judgment as to the driving state of the fan coil units 4a, 4b. If the air conditioner is under the out-of-state, the circulating pump is forcedly driven by the chiller controller 24 (step S4), and the motor-driven expansion valve 21 is opened (step S5).

[0046] Accordingly, the refrigerant which is condensed and trapped in the refrigerant/water heat exchangers 20a, 20b, etc. is pushed out from the inside of the chiller unit 2 to the liquid pipe 5a or the gas pipe 5c. Therefore, the out-of-gas state can be overcome.

[0047] The present invention is not limited to the above embodiment, and various modifications may be made without departing from the subject matter of the present invention.

Claims

1. An air conditioner comprising:

a heat source machine containing a compressor for compressing refrigerant;
a direct expansion type indoor unit having an indoor heat exchanger for directly heat-exchanging the refrigerant discharged from the compressor with indoor air through a refrigerant pipe comprising a liquid pipe and a gas pipe;
a chiller unit for heat-exchanging the refrigerant with water to generate cold water or hot water; and
a fan coil unit having a water heat exchanger for circulating the cold water or hot water generated in the chiller unit by driving a circulating pump and heat-exchanging the cold water or hot water thus circulated with the indoor air.

2. The air conditioner according to claim 1, wherein one end of the liquid pipe is connected to the heat source machine while the other end of the liquid pipe is passed through a receiver tank provided in the chiller unit and branched into two parts, one part being connected to one end side of a water heat exchanger provided in the chiller unit and the other part being connected to the indoor unit, and one end of the gas pipe is connected to the heat source machine while the other end of the gas pipe is branched into two parts, one part being connected to the other end side of the water heat exchanger and the other part being connected to the indoor unit.

3. The air conditioner according to claim 1, wherein a plurality of indoor units are connected to one another

in parallel through the liquid pipe and the gas pipe.

4. The air conditioner according to claim 3, wherein one end of the liquid pipe is connected to the heat source machine while the other end of the liquid pipe is passed through a receiver tank provided in the chiller unit and branched into two parts, one part being connected to one end side of a water heat exchanger provided in the chiller unit and the other part being connected to the plural indoor units in parallel, and one end of the gas pipe is connected to the heat source machine while the other end of the gas pipe is branched into two parts, one part being connected to the other end side of the water heat exchanger and the other part being connected to the plural indoor units in parallel.

5. The air conditioner according to claim 1, wherein the chiller unit has a refrigerant/water heat exchanger for heat-exchanging the refrigerant discharged from the compressor with water to generate cold water or hot water.

6. The air conditioner according to claim 5, wherein the chiller unit has a control valve between the refrigerant/water heat exchanger and a branch point at which the refrigerant pipe is branched into one part extending to the refrigerant/water heat exchanger and the other part extending to the indoor unit, and when an out-of-gas state of refrigerant circulated into the indoor unit is detected while the driving of the circulating pump is stopped, the control valve is opened and the circulated pump is driven.

7. The air conditioner according to claim 6, wherein the refrigerant/water heat exchanger and the control valve are connected to the indoor unit in parallel through the liquid pipe extending from the other end side of the receiver tank and the gas pipe.

8. The air conditioner according to claim 1, wherein the compressor of the heat source machine is driven by an engine for generating driving force by combusting fuel such as gas or the like.

FIG. 1

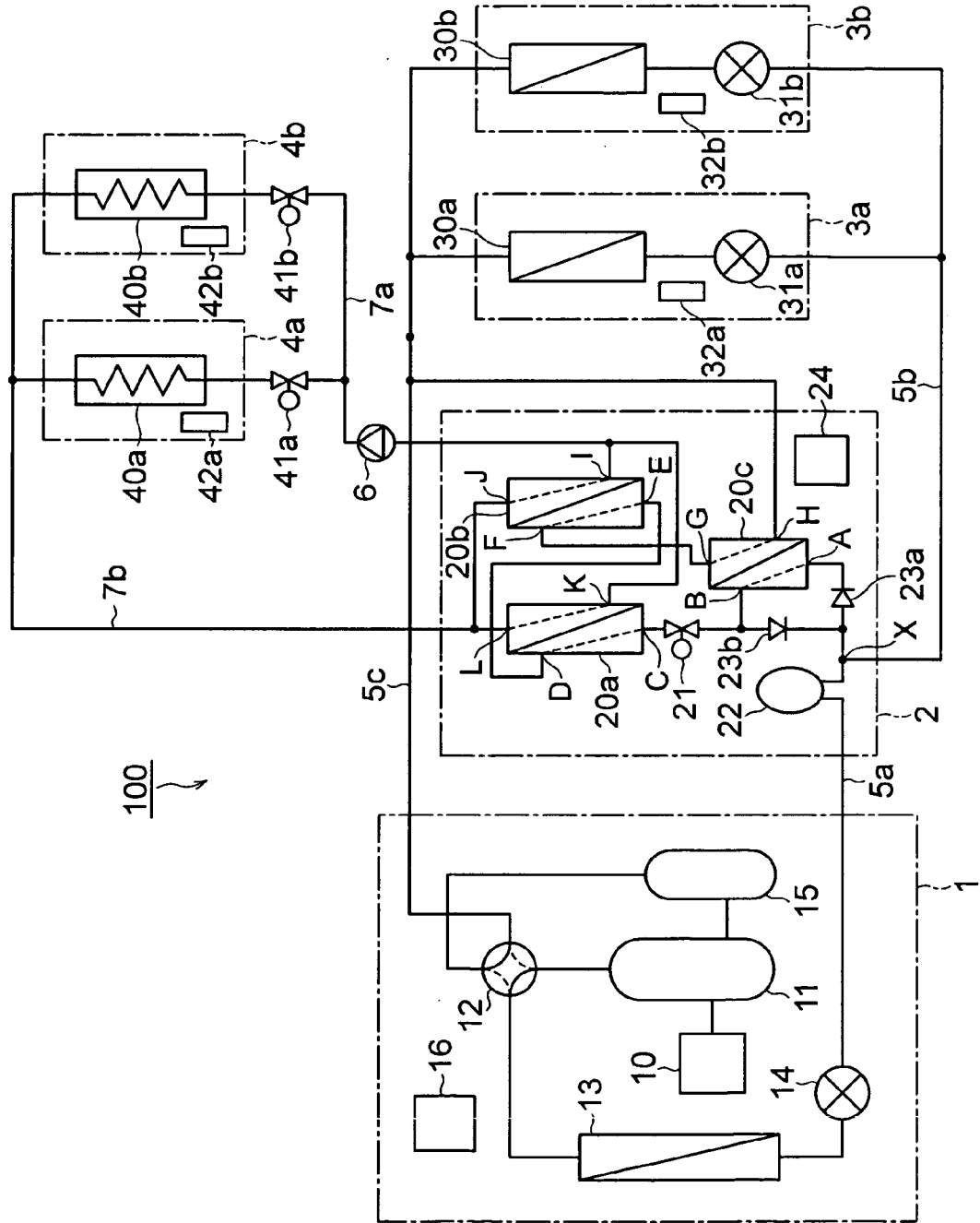
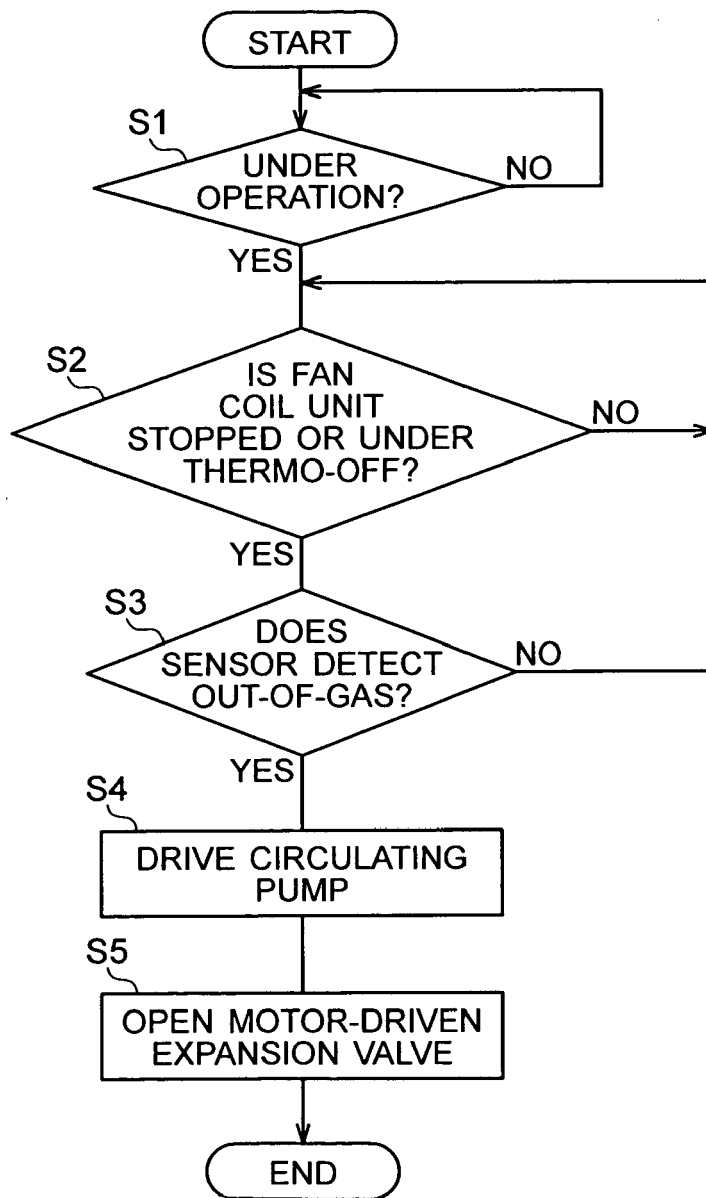


FIG. 2





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
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Place of search The Hague		Date of completion of the search 24 August 2005	Examiner Gonzalez-Granda, C
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 05 00 9355

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