US 20240271817A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2024/0271817 A1

(43) Pub. Date: Aug. 15, 2024

FAN et al.

(54) **AIR-CONDITIONING APPARATUS**

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(21) Appl. No.: **18/251,198**

(22) PCT Filed: **Jan. 13, 2021**

(86) PCT No.: **PCT/JP2021/000802**

§ 371 (c)(1),
(2) Date: **Apr. 28, 2023**

**Publication Classification**

(51) **Int. Cl.**

| | |
|---|---|
| ***F24F 11/84*** | (2006.01) |
| ***F24F 1/0063*** | (2006.01) |
| ***F24F 110/10*** | (2006.01) |

(52) **U.S. Cl.**

CPC ............ ***F24F 11/84*** (2018.01); ***F24F 1/0063*** (2019.02); *F24F 2110/10* (2018.01)

(57) **ABSTRACT**

An air-conditioning apparatus includes: a housing; a first heat exchanger; a second heat exchanger; a first fan; a second fan; a control valve; and a controller that controls the control valve and the first and second fans. The housing includes a first air outlet and a second air outlet. The controller sets in the air-conditioning target space, a first area associated with the first air outlet and a second area associated with the second area, detects whether a person or persons are present or no person is present in each of the first and second areas, and controls the control valve and the first and second fans such that air conditioning is performed in the first area and an air-blowing operation is performed in the second area, when detecting that the person or persons are present in the first area and no person is present in the second area.

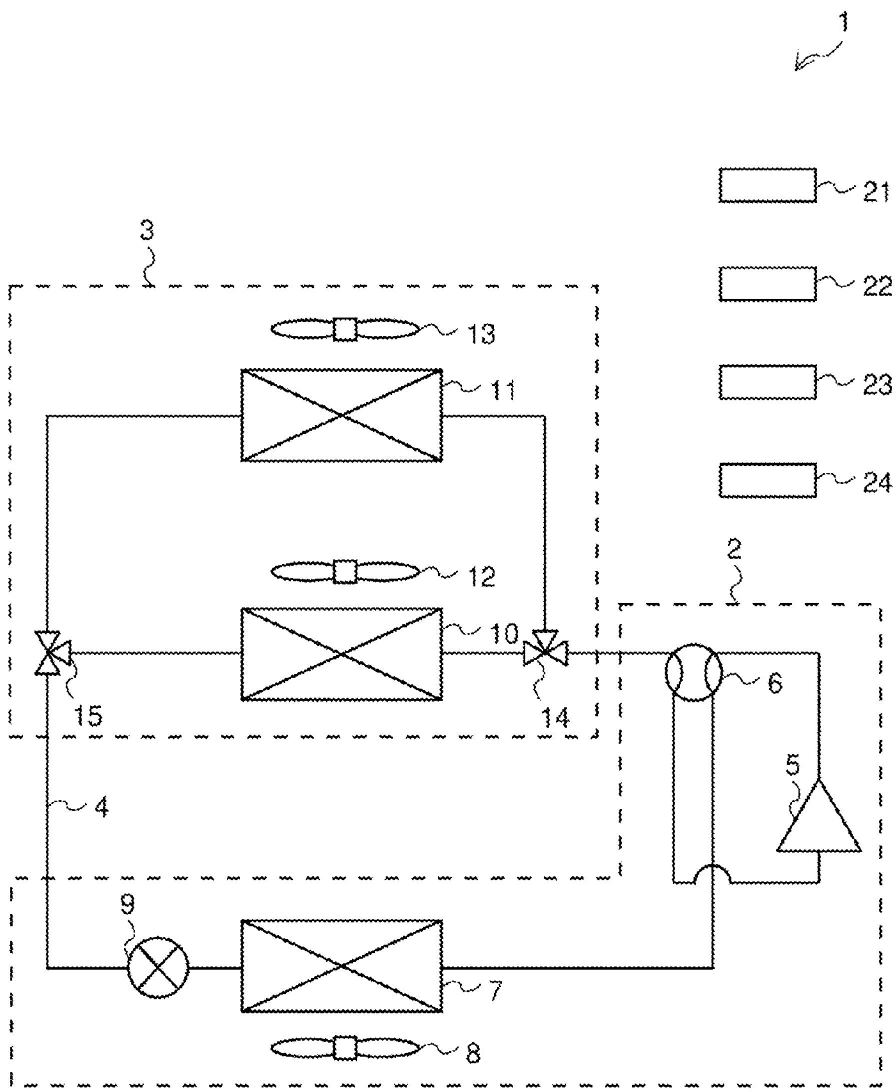


FIG. 1

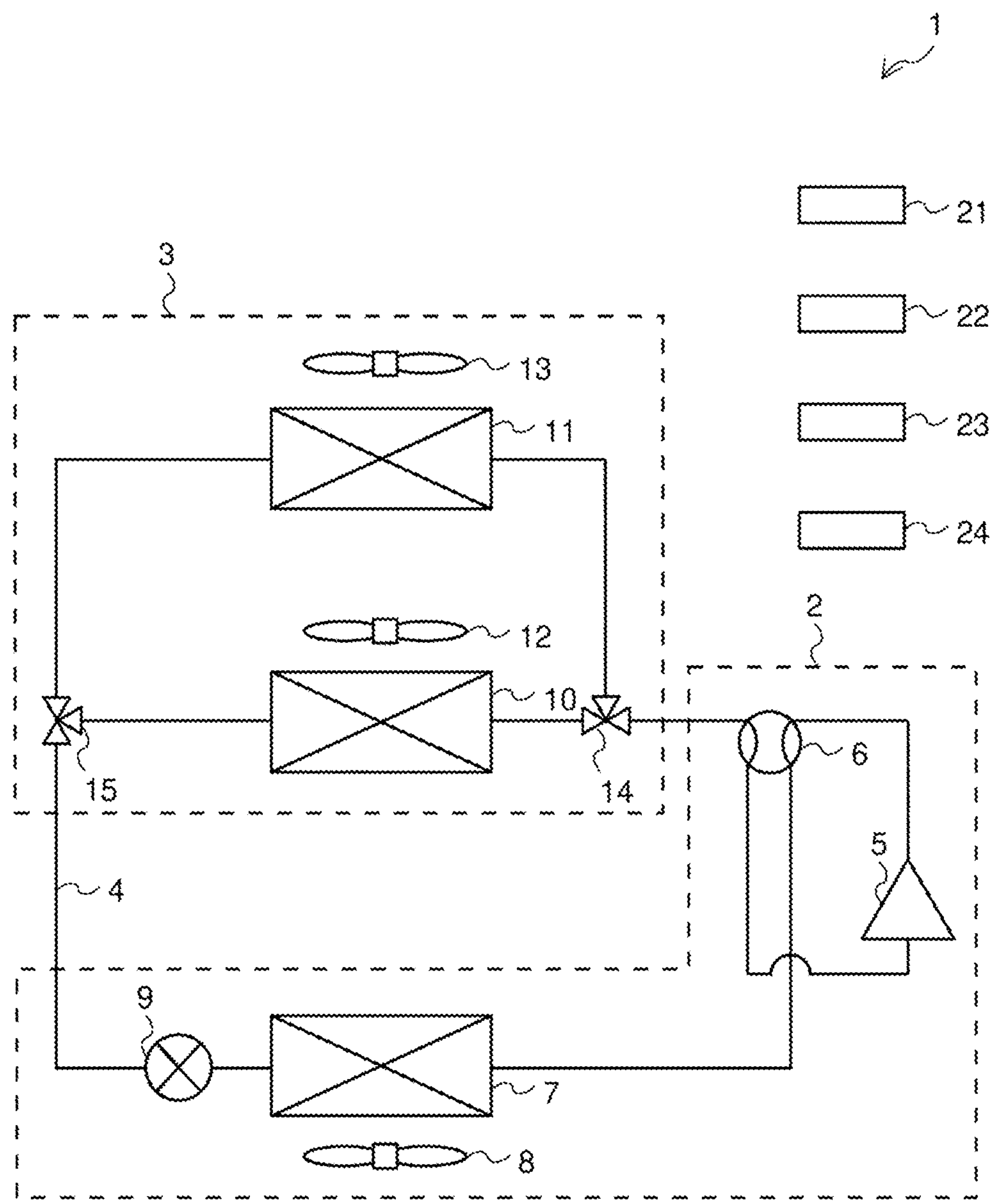


FIG. 2

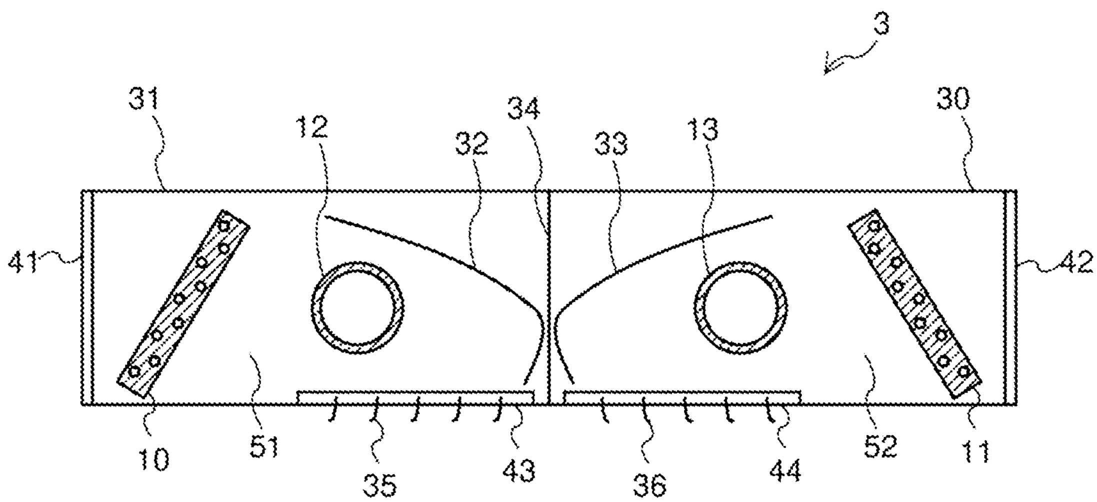


FIG. 3

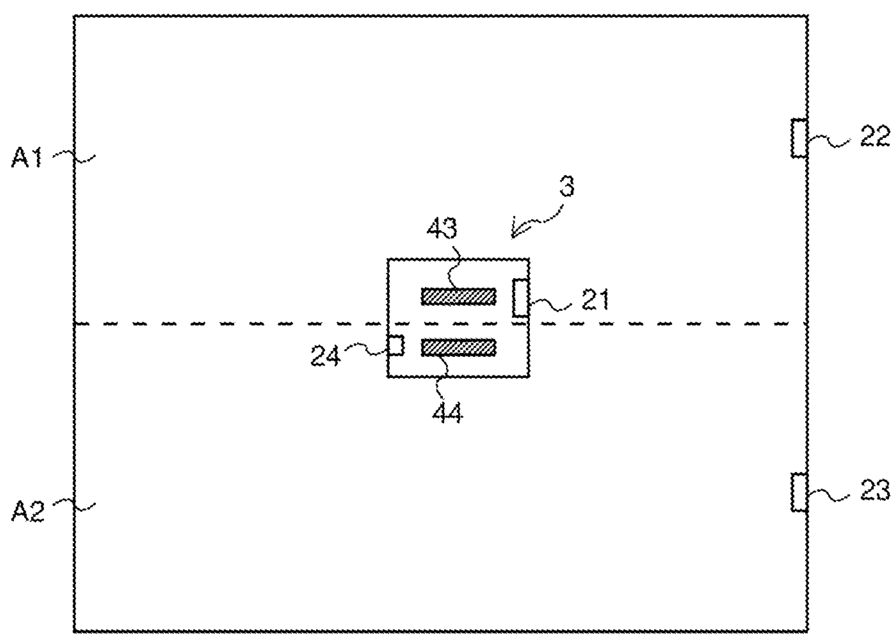


FIG. 4

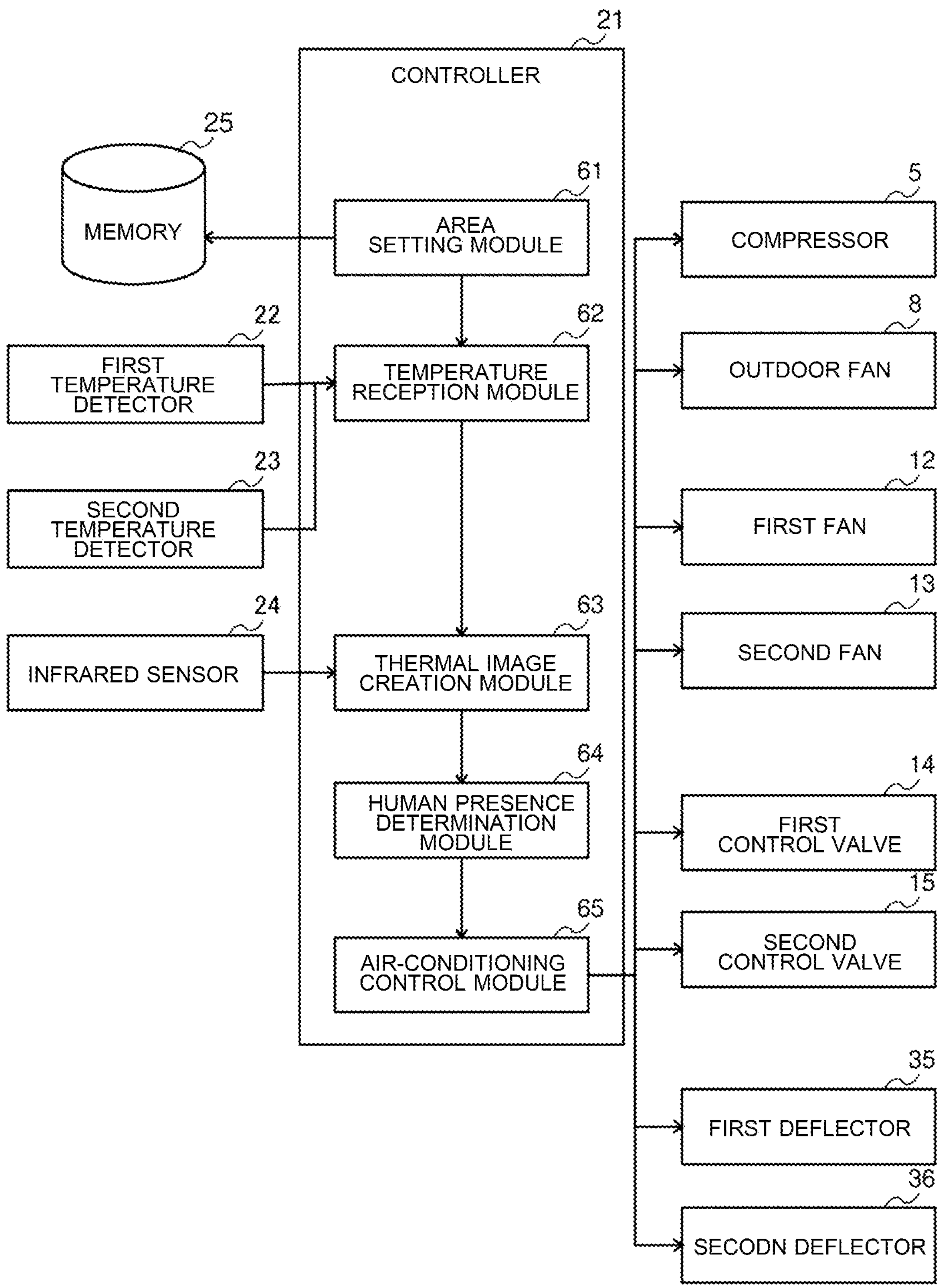

21
CONTROLLER
25
MEMORY
61
AREA SETTING MODULE
22
FIRST TEMPERATURE DETECTOR
62
TEMPERATURE RECEPTION MODULE
23
SECOND TEMPERATURE DETECTOR
24
INFRARED SENSOR
63
THERMAL IMAGE CREATION MODULE
64
HUMAN PRESENCE DETERMINATION MODULE
65
AIR-CONDITIONING CONTROL MODULE
5
COMPRESSOR
8
OUTDOOR FAN
12
FIRST FAN
13
SECOND FAN
14
FIRST CONTROL VALVE
15
SECOND CONTROL VALVE
35
FIRST DEFLECTOR
36
SECODN DEFLECTOR

FIG. 5

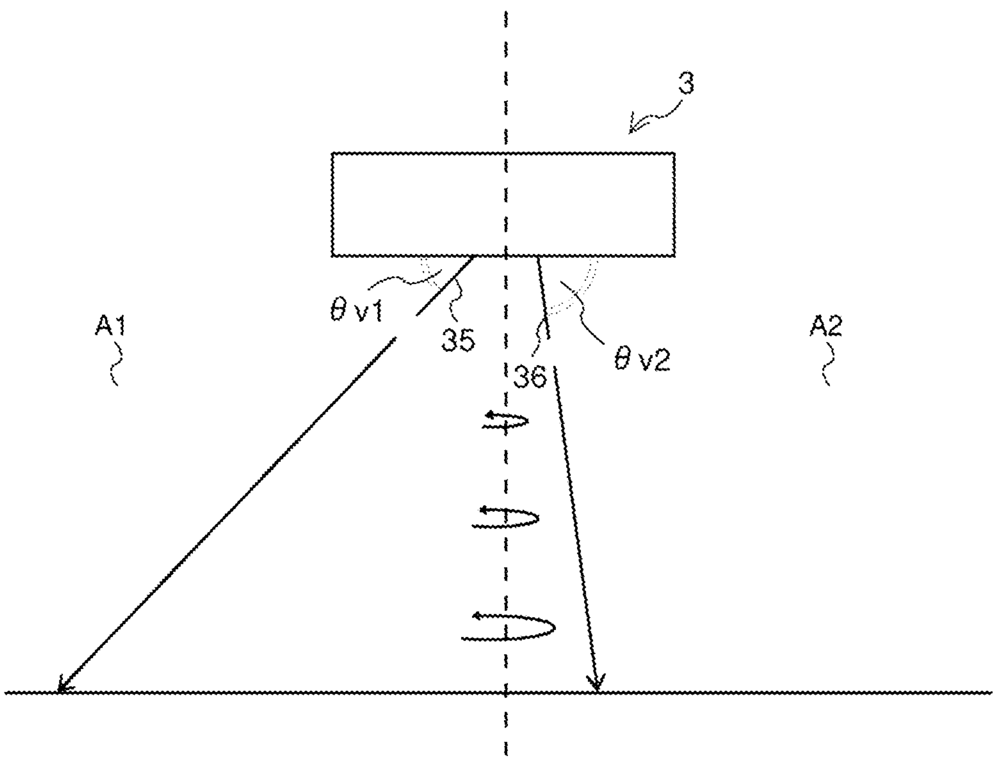


FIG. 6

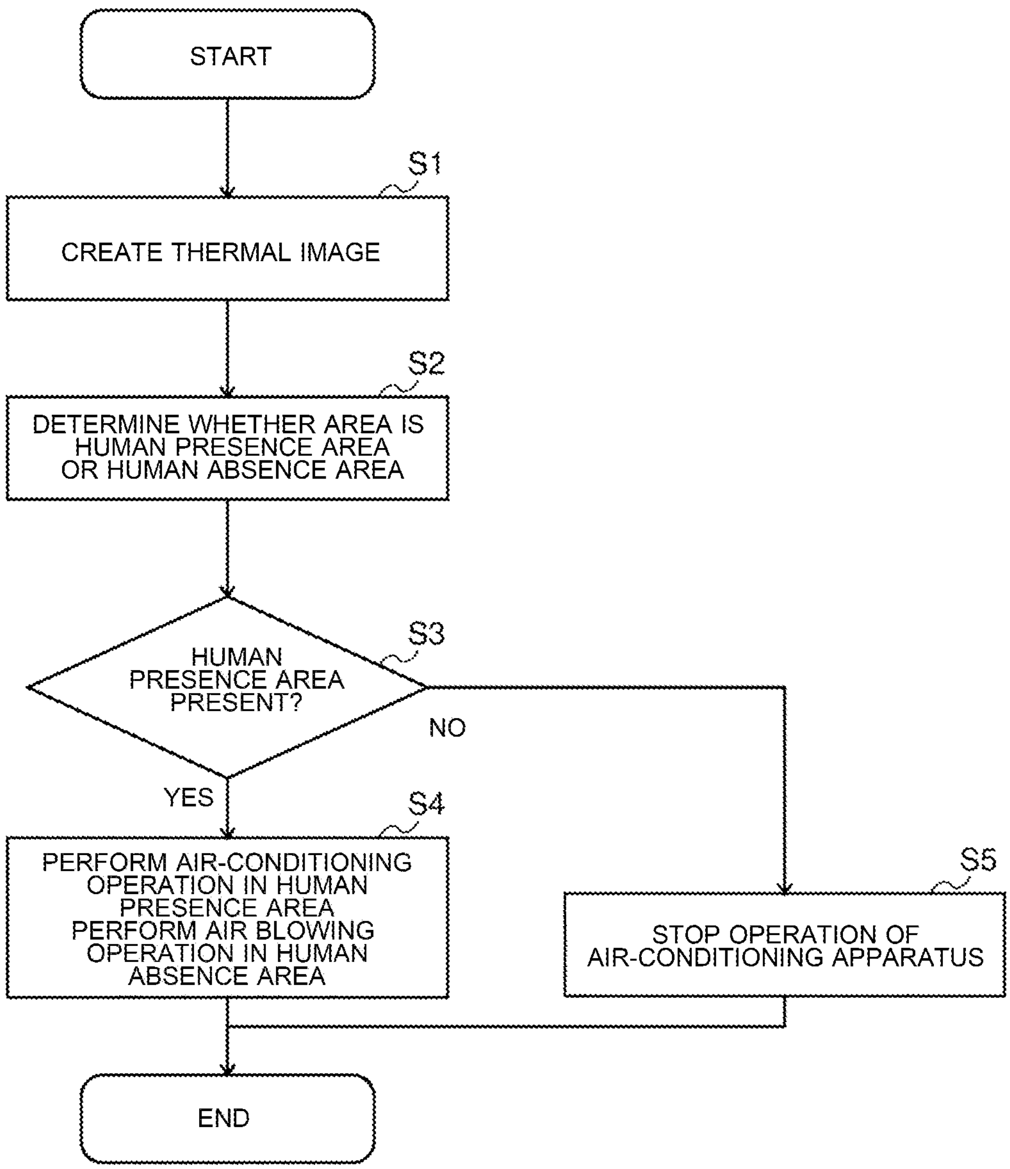

START
S1
CREATE THERMAL IMAGE
S2
DETERMINE WHETHER AREA IS HUMAN PRESENCE AREA OR HUMAN ABSENCE AREA
S3
HUMAN PRESENCE AREA PRESENT?
NO
YES
S4
PERFORM AIR-CONDITIONING OPERATION IN HUMAN PRESENCE AREA PERFORM AIR BLOWING OPERATION IN HUMAN ABSENCE AREA
S5
STOP OPERATION OF AIR-CONDITIONING APPARATUS
END

FIG. 7

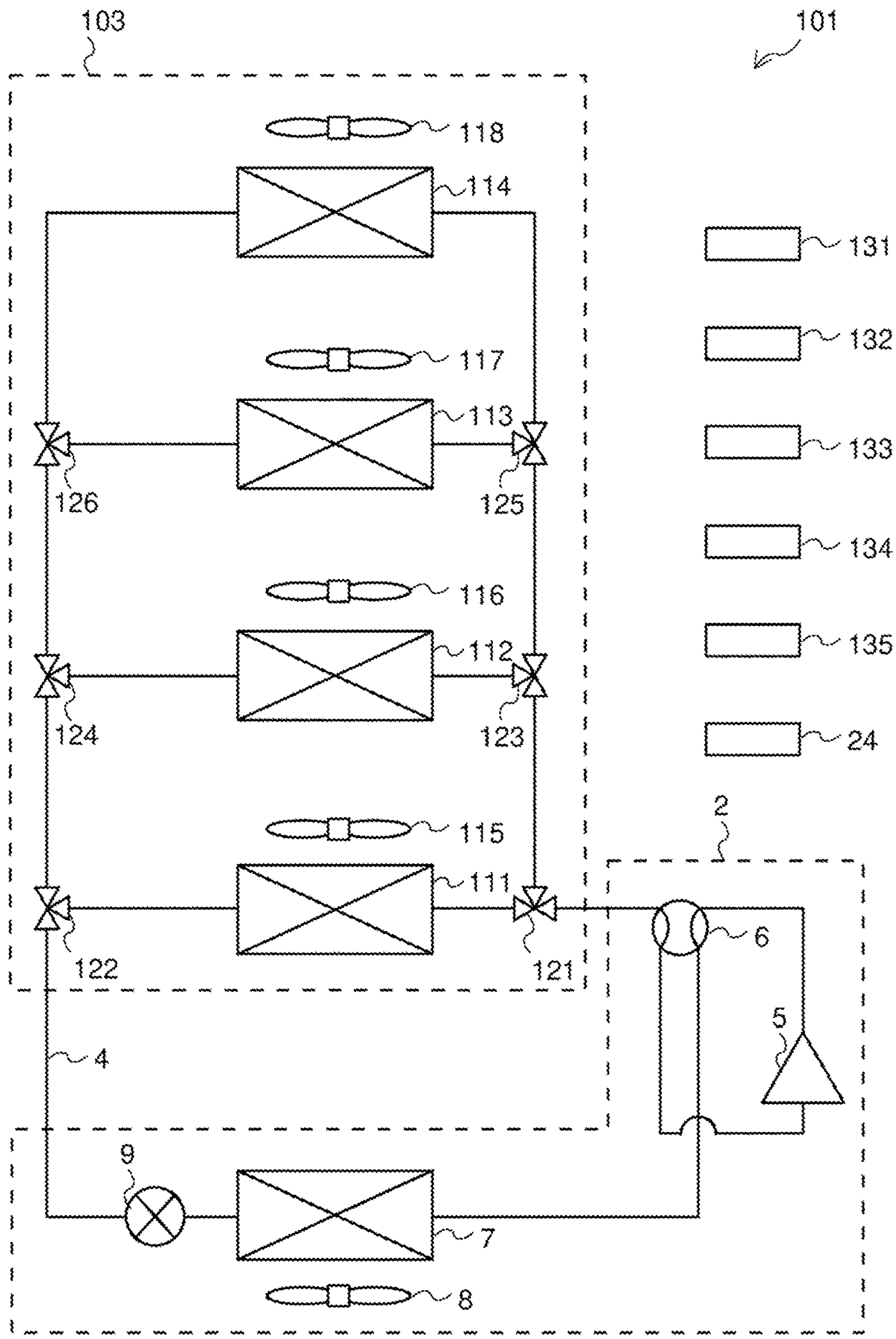

103
101
118
114
131
132
117
113
133
126
125
134
116
112
135
124
123
24
2
115
111
6
122
121
5
4
9
7
8

FIG. 8

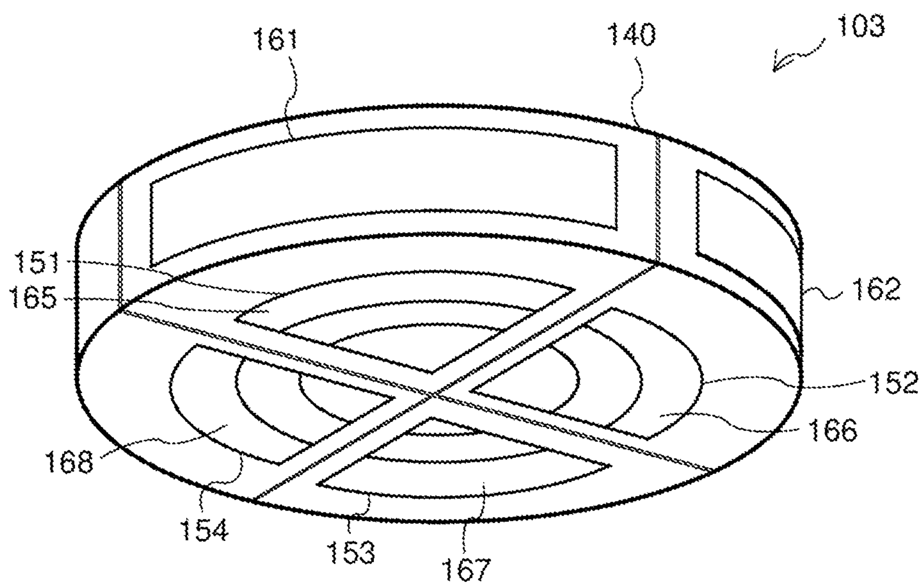


FIG. 9

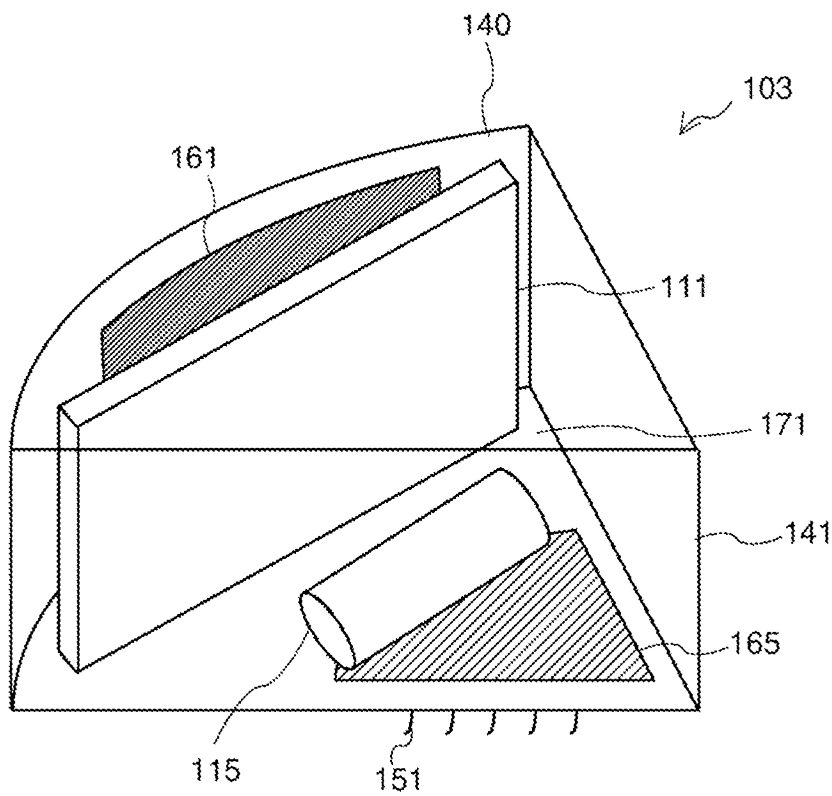
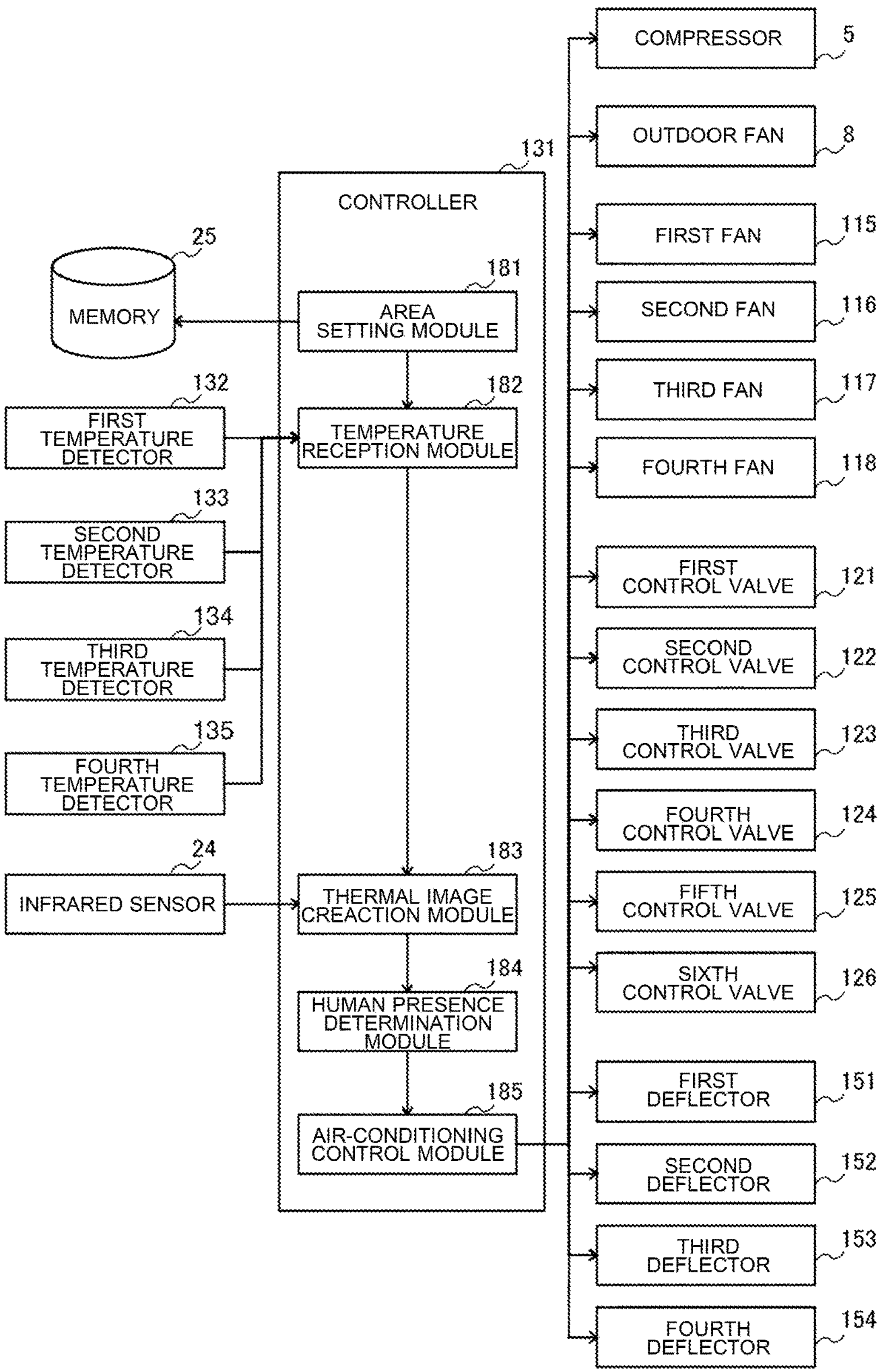


FIG. 10



CONTROLLER
131
MEMORY
25
AREA SETTING MODULE
181
TEMPERATURE RECEPTION MODULE
182
FIRST TEMPERATURE DETECTOR
132
SECOND TEMPERATURE DETECTOR
133
THIRD TEMPERATURE DETECTOR
134
FOURTH TEMPERATURE DETECTOR
135
INFRARED SENSOR
24
THERMAL IMAGE CREACTION MODULE
183
HUMAN PRESENCE DETERMINATION MODULE
184
AIR-CONDITIONING CONTROL MODULE
185
COMPRESSOR
5
OUTDOOR FAN
8
FIRST FAN
115
SECOND FAN
116
THIRD FAN
117
FOURTH FAN
118
FIRST CONTROL VALVE
121
SECOND CONTROL VALVE
122
THIRD CONTROL VALVE
123
FOURTH CONTROL VALVE
124
FIFTH CONTROL VALVE
125
SIXTH CONTROL VALVE
126
FIRST DEFLECTOR
151
SECOND DEFLECTOR
152
THIRD DEFLECTOR
153
FOURTH DEFLECTOR
154

# AIR-CONDITIONING APPARATUS

## TECHNICAL FIELD

**[0001]** The present disclosure relates to an air-conditioning apparatus provided with a single indoor unit including two heat-source-side circuits.

## BACKGROUND ART

**[0002]** In the past, air-conditioning apparatuses each provided with a single outdoor unit including two heat-source-side circuits have been known. As such a type of air-conditioning apparatus, Patent Literature 1 discloses an air-conditioning apparatus in which two heat exchangers and two fans are housed in a single housing, and air subjected to heat exchange at each of the heat exchangers is blown out by an associated one of the two fans through an associated one of two outlets.

## CITATION LIST

### Patent Literature

**[0003]** Patent Literature 1: Japanese Unexamined Patent Application Publication No. 2003-83272

## SUMMARY OF INVENTION

### Technical Problem

**[0004]** In the air-conditioning apparatus disclosed in Patent Literature 1, air-conditioned air is sent even to an indoor space in which no person is present. Thus, in the air-conditioning apparatus of Patent Literature 1, electricity required for air-conditioning the indoor space in which no person is present is wasted.

**[0005]** The present disclosure is applied to solve the above problem, and an object according to the present disclosure is to reduce the electricity consumption of an air-conditioning apparatus provided with a single outdoor unit including two heat-source-side circuits.

### Solution to Problem

**[0006]** An air-conditioning apparatus according to an embodiment of the present disclosure includes: a housing; a first heat exchanger provided in the housing; a second heat exchanger provided in the housing; a first fan provided in the housing and configured to send air to the first heat exchanger; a second fan provided in the housing and configured to send air to the second heat exchanger; a control valve configured to control a flow of refrigerant to the first heat exchanger and the second heat exchanger; and a controller configured to control the control valve, the first fan, and the second fan. The housing includes a first air outlet configured to allow air subjected heat exchange at the first heat exchanger to be blown out, and a second air outlet configured to allow air subjected to heat exchange at the second heat exchanger to be blown out. The controller sets in the air-conditioning target space, a first area associated with the first air outlet and a second area associated with the second area, detects whether a person or persons are present or no person is present in each of the first area and the second area, and controls the control valve, the first fan, and the second fan such that air conditioning is performed in the first area and an air-blowing operation in which air is blown is performed in the second area, when detecting that the person or persons are present in the first area and no person is present in the second area.

### Advantageous Effects of Invention

**[0007]** In the air-conditioning apparatus according to the present disclosure, air-conditioning is performed in the first area in which a person or persons are present, and the air-blowing operation is performed in the second area in which no person is present. Therefore, unnecessary air-conditioning is not performed in the second area, thus reducing the electricity consumption. Furthermore, air-conditioned air blown to the first area is prevented by air blown to the human absence area from flowing to the second area. Therefore, air-conditioning is performed concentratedly in the first area, and the temperature in the first area can be efficiently kept at a temperature set by the user, thereby reducing the electricity consumption. As described above, according to the present disclosure, it is possible to reduce the electricity consumption of the air-conditioning apparatus in which two heat-source-side circuits are provided in a single indoor unit.

## BRIEF DESCRIPTION OF DRAWINGS

**[0008]** FIG. **1** is a circuit diagram illustrating an air-conditioning apparatus **1** according to Embodiment 1.

**[0009]** FIG. **2** is a schematic sectional view illustrating an indoor unit **3** of the air-conditioning apparatus **1** according to Embodiment 1.

**[0010]** FIG. **3** is an explanatory view for explanation of the locations of an air-conditioning target space and the air-conditioning apparatus **1** according to Embodiment 1.

**[0011]** FIG. **4** is a function block diagram of a controller **21** according to Embodiment 1.

**[0012]** FIG. **5** is an explanatory view for explanation of an air-conditioning function of the air-conditioning apparatus **1** according to Embodiment 1.

**[0013]** FIG. **6** is a flow chart indicating an operation of the controller **21** according to Embodiment 1.

**[0014]** FIG. **7** is a circuit diagram illustrating an air-conditioning apparatus **101** according to Embodiment 2.

**[0015]** FIG. **8** is a perspective view illustrating an indoor unit **103** of the air-conditioning apparatus **101** according to Embodiment 2.

**[0016]** FIG. **9** is an explanatory view for explanation of an internal configuration of the air-conditioning apparatus **101** according to Embodiment 2.

**[0017]** FIG. **10** is a function block diagram of a controller **131** according to Embodiment 2.

## DESCRIPTION OF EMBODIMENTS

### Embodiment 1

**[0018]** An air-conditioning apparatus **1** according to Embodiment 1 will be described with reference the drawings. Regarding Embodiment 1, various settings will be specifically described by way of example, and this description is not limiting. FIG. **1** is a circuit diagram illustrating the air-conditioning apparatus **1** according to Embodiment 1. As illustrated in FIG. **1**, the air-conditioning apparatus **1** includes an outdoor unit **2**, an indoor unit **3**, and refrigerant pipes **4**.

**[0019]** As illustrated in FIG. **1**, the outdoor unit **2** includes a compressor **5**, a flow switching valve **6**, an outdoor heat exchanger **7**, an outdoor fan **8**, and an expansion valve **9**. The indoor unit **3** includes a first heat exchanger **10**, a second heat exchanger **11**, a first fan **12**, a second fan **13**, a first control valve **14**, and a second control valve **15**. The refrigerant pipes **4** connect the compressor **5**, the flow switching valve **6**, the outdoor heat exchanger **7**, the expansion valve **9**, the first heat exchanger **10**, the second heat exchanger **11**, the first control valve **14**, and the second control valve **15**, and are pipes through which refrigerant flows. The refrigerant pipes **4** and the components connected by the refrigerant pipes **4** form a refrigerant circuit. The refrigerant circuit includes a load-side circuit of the outdoor unit **2** and heat-source-side circuits that branch off to extend through the first heat exchanger **10** and the second heat exchanger **11** of the indoor unit **3**. That is, the indoor unit **3** includes two heat-source-side circuits.

**[0020]** The compressor **5** sucks low-temperature and low-pressure refrigerant, compresses the sucked refrigerant to change it into high-temperature and high-pressure refrigerant, and discharges the high-temperature and high-pressure refrigerant. In the refrigerant circuit, the flow switching valve **6** is provided to switch the flow direction of refrigerant, and is, for example, a four-way valve. The outdoor heat exchanger **7** causes heat exchange to be performed between refrigerant and outdoor air, and is, for example, a finned tube heat exchanger. The outdoor heat exchanger **7** operates as a condenser in a cooling operation, and operates as an evaporator in a heating operation. The outdoor fan **8** sends outdoor air to the outdoor heat exchanger **7**. The expansion valve **9** reduce the pressure of refrigerant to expand the refrigerant, and is, for example, an electronic expansion valve.

**[0021]** The first heat exchanger **10** and the second heat exchanger **11** are indoor heat exchangers that cause heat exchange to be performed between indoor air and refrigerant. The first heat exchanger **10** and the second heat exchanger **11** operate as evaporators in the cooling operation, and operate as condensers in the heating operation. The first fan **12** sends indoor air to the first heat exchanger **10**, and is, for example, a cross-flow fan. The second fan **13** sends indoor air to the second heat exchanger **11**, and is, for example, a cross-flow fan.

**[0022]** The first control valve **14** and the second control valve **15** are each a three-way valve having three ports (not illustrated). The state of each of the first control valve **14** and the second control valve **15** is switched between the opened state and the closed state, thereby controlling the flow of the refrigerant to the first heat exchanger **10** and the second heat exchanger **11**. The three ports of the first control valve **14** are connected with the flow switching valve **6**, the first heat exchanger **10**, and the second heat exchanger **11**, respectively. The three ports of the second control valve **15** are connected with the expansion valve **9**, the first heat exchanger **10**, and the second heat exchanger **11**, respectively. Furthermore, the opened/closed states of the ports of each of the first control valve **14** and the second control valve **15** are switched according to which of a first mode, a second mode, and a third mode is set.

**[0023]** In the first mode, the refrigerant is caused to flow through the first heat exchanger **10** only, and is not allowed to flow through the second heat exchanger **11**. To be more specific, in the first mode, in the first control valve **14**, the port connected with the flow switching valve **6** and the port connected with the first heat exchanger **10** are opened, and the port connected with the second heat exchanger **11** is closed; and in the second control valve **15**, the port connected with the expansion valve **9** and the port connected with the first heat exchanger **10** are opened, and the port connected with the second heat exchanger **11** is closed.

**[0024]** In the second mode, the refrigerant is not allowed to flow through the first heat exchanger **10**, and is caused to flow through the second heat exchanger **11** only. To be more specific, in the second mode, in the first control valve **14**, the port connected with the flow switching valve **6** is opened, the port connected with the first heat exchanger **10** is closed, and the port connected with the second heat exchanger **11** is opened; and in the second control valve **15**, the port connected with the expansion valve **9** is opened, the port connected with the first heat exchanger **10** is closed, and the port connected with the second heat exchanger **11** is opened.

**[0025]** In the third mode, the refrigerant is caused to flow through both the first heat exchanger **10** and the second heat exchanger **11**. To be more specific, in the third mode, all the ports of the first control valve **14** are opened, and all the ports of the second control valve **15** are also opened.

**[0026]** It will be described how the air-conditioning apparatus **1** is operated. First of all, the cooling operation in the case where the first control valve **14** and the second control valve **15** are in the first mode will be described. The air-conditioning apparatus **1** performs the cooling operation by switching the state of the flow switching valve **6** such that a discharge side of the compressor **5** is connected with the outdoor heat exchanger **7**. In the cooling operation, the refrigerant sucked by the compressor **5** is compressed by the compressor **5** to change into high-temperature and high-pressure gas refrigerant, and is thus discharged as the high-temperature and high-pressure gas refrigerant. The high-temperature and high-pressure gas refrigerant discharged from the compressor **5** passes through the flow switching valve **6**, and flows into the outdoor heat exchanger **7**, which operates as a condenser. The refrigerant that has flowed into the outdoor heat exchanger **7** exchanges heat with outdoor air sent by the outdoor fan **8** to condense and liquefy. The liquefied refrigerant flows into the expansion valve **9**, and is decompressed and expanded thereat to change into low-temperature and low-pressure two-phase gas-liquid refrigerant. The two-phase gas-liquid refrigerant flows into the first heat exchanger **10**, which serves as an evaporator. The refrigerant that has flowed into the first heat exchanger **10** exchanges heat with indoor air sent by the first fan **12** to evaporate and gasify. At this time, the indoor air is cooled and the cooling operation is performed in an indoor space. Thereafter, the evaporated high-temperature and low-pressure gas refrigerant passes through the flow switching valve **6** and is sucked by the compressor **5**.

**[0027]** The cooling operation in the case where the first control valve **14** and the second control valve **15** are in the second mode will be described. In this case, the refrigerant discharged from the compressor **5** flows in the same manner as in the first mode until the refrigerant passes through the flow switching valve **6**, a heat exchanger of the outdoor unit **2**, and the expansion valve **9**. Two-phase gas-liquid refrigerant that has passed through the expansion valve **9** flows into the second heat exchanger **11**, which operates as an evaporator. The refrigerant that has flowed into the second heat exchanger **11** exchanges heat with indoor air sent by the second fan **13** to evaporate and gasify. At this time, the indoor air is cooled and the cooling operation is performed in the indoor space. Thereafter, the evaporated high-temperature and low-pressure gas refrigerant passes through the flow switching valve **6** and is sucked by the compressor **5**.

**[0028]** The cooling operation in which the first control valve **14** and the second control valve **15** are in the third mode will be described. In this case also, the refrigerant discharged from the compressor **5** flows in the same manner as in the first mode and the second mode until the refrigerant passes through the flow switching valve **6**, the heat exchanger of the outdoor unit **2**, and the expansion valve **9**. Two-phase gas-liquid refrigerant that has passed through the expansion valve **9** flows into the first heat exchanger **10** and the second heat exchanger **11**, which operate as evaporators. The refrigerant that has flowed into the first heat exchanger **10** exchanges heat with indoor air sent by the first fan **12** to evaporate and gasify. Also, the refrigerant that has flowed into the second heat exchanger **11** exchanges heat with indoor air sent by the second fan **13** to evaporate and gasify. At this time, the indoor air is cooled and the cooling operation is performed in the indoor space. Thereafter, the evaporated high-temperature and low-pressure gas refrigerant passes through the flow switching valve **6** and is sucked by the compressor **5**.

**[0029]** The heating operation in the case where the first control valve **14** and the second control valve **15** are in the first mode will be described. The air-conditioning apparatus **1** performs the heating operation by switching the state of the flow switching valve **6** such that the discharge side of the compressor **5** is connected with the first heat exchanger **10**. In the heating operation, the refrigerant sucked by the compressor **5** is compressed by the compressor **5** to change into high-temperature and high-pressure gas refrigerant, and is thus discharged as the high-temperature and high-pressure gas refrigerant. The high-temperature and high-pressure gas refrigerant discharged from the compressor **5** passes through the flow switching valve **6**, and flows into the first heat exchanger **10**, which operates as a condenser. The refrigerant that has flowed into the first heat exchanger **10** exchanges heat with indoor space sent by the first fan **12** to condense and liquefy. At this time, the indoor space is heated and the heating operation is performed in the indoor space. The liquefied refrigerant flows into the expansion valve **9** and is decompressed and expanded thereat to change into low-temperature and low-pressure two-phase gas-liquid refrigerant. The two-phase gas-liquid refrigerant flows into the outdoor heat exchanger **7**, which operates as an evaporator. The refrigerant that has flowed into the outdoor heat exchanger **7** exchanges heat with indoor air sent by the outdoor fan **8** to evaporate and gasify and thus change into low-temperature and low-pressure gas refrigerant. Thereafter, the low-temperature and low-pressure gas refrigerant passes through the flow switching valve **6**, and is sucked by the compressor **5**.

**[0030]** The heating operation in the case where the first control valve **14** and the second control valve **15** are in the second mode will be described. In this case, in the heating operation, the refrigerant sucked by the compressor **5** is compressed by the compressor **5** to change into high-temperature and high-pressure gas refrigerant, and is thus discharged as the high-temperature and high-pressure gas refrigerant. The high-temperature and high-pressure gas refrigerant discharged from the compressor **5** passes through the flow switching valve **6**, and flows into the second heat exchanger **11**, which operates as a condenser. The refrigerant that has flowed into the second heat exchanger **11** exchanges heat with indoor air sent by the second fan **13** to condense and liquefy. At this time, the indoor air is heated and the heating operation is performed in the indoor space. Thereafter, the refrigerant that has passed through the second heat exchanger **11** and has liquefied flows in the same manner as in the first mode until the refrigerant passes through the expansion valve **9**, the evaporator, and the outdoor heat exchanger **7**, and is sucked by the compressor **5**.

**[0031]** The heating operation in the case where the first control valve **14** and the second control valve **15** are in the third mode will be described. In this case, in the heating operation, the refrigerant sucked by the compressor **5** is compressed by the compressor **5** to change into high-temperature and high-pressure gas refrigerant, and is thus discharged as the high-temperature and high-pressure gas refrigerant. The high-temperature and high-pressure gas refrigerant discharged from the compressor **5** passes through the flow switching valve **6**, and flows into the first heat exchanger **10** and the second heat exchanger **11**, which operate as condensers. The refrigerant that has flowed into the first heat exchanger **10** exchanges heat with indoor air sent by the first fan **12** to condense and liquefy. The refrigerant that has flowed into the second heat exchanger **11** exchanges heat with indoor air sent by the second fan **13** to condense and liquefy. At this time, the indoor air is heated and the heating operation is performed in the indoor space. Thereafter, the refrigerant that has passed through the first heat exchanger **10** and the second heat exchanger **11** and has liquefied flows in the same manner as in the first mode and the second mode until the refrigerant passes through the expansion valve **9**, the evaporator, and the outdoor heat exchanger **7**, and is sucked by the compressor **5**.

**[0032]** The air-conditioning apparatus **1** includes a controller **21**, a first temperature detector **22**, a second temperature detector **23**, and an infrared sensor **24**. The controller **21** controls the operation of the entire air-conditioning apparatus **1** including the indoor unit **3** and the outdoor unit **2**, based on set information on a temperature, an air volume, a wind direction, etc. for air-conditioning, and various information. The set information is transmitted from a remote controller (not illustrated), and the various information is transmitted from components of the indoor unit **3** and components of the outdoor unit **2**. The first temperature detector **22** and the second temperature detector **23** are each a non-contact temperature sensor that detects the temperature of a space. The infrared sensor **24** is a sensor that detects infrared rays in the space. The first temperature detector **22**, the second temperature detector **23**, and the infrared sensor **24** are wirelessly connected to the controller **21** such that the first temperature detector **22**, the second temperature detector **23**, and the infrared sensor **24** can communicate with the controller **21**. The controller **21**, the first temperature detector **22**, the second temperature detector **23**, and the infrared sensor **24** will be described in detail later.

**[0033]** FIG. **2** is a schematic sectional view illustrating the indoor unit **3** of the air-conditioning apparatus **1** according to Embodiment 1. Although it is not illustrated in the figure, the indoor unit **3** has a substantially cuboid shape as a whole. The indoor unit **3** is suspended from a ceiling located above an indoor space that is an air-conditioning target space or is embedded in the ceiling. FIG. **2** illustrates a section of the indoor unit **3** that is taken along an up-down direction after the indoor unit **3** is installed. As illustrated in FIG. **2**, the indoor unit **3** includes a housing **30**, the first heat exchanger **10**, the second heat exchanger **11**, the first fan **12**, and the second fan **13**. The housing **30** includes an outer casing **31**, a first internal casing **32**, a second internal casing **33**, a partition **34**, a plurality of first deflectors **35**, and a plurality of second deflectors **36**.

**[0034]** The outer casing **31** forms an outer shell of the outdoor unit **2**. In the outer casing **31**, a first air inlet **41**, a second air inlet **42**, a first air outlet **43**, and a second air outlet **44**. The first air inlet **41** is formed in one side surface of the outer casing **31** and is an opening through which indoor air is sucked from the indoor space into the outer casing **31**; and the second air inlet **42** is formed in the other side surface of the outer casing **31** which is located opposite to the one side surface thereof and is an opening through which indoor air is sucked from the indoor space into the outer casing **31**. The first air outlet **43** is formed in a lower surface of the outer casing **31** and is an opening from which air subjected to heat exchange at the first heat exchanger **10** is blown; and the second air outlet **44** is formed in the lower surface of the outer casing **31** is an opening from which air subjected to heat exchange at the second heat exchanger **11** is blown. It should be noted that the second air outlet **44** is formed separate from the first air outlet **43**.

**[0035]** The first internal casing **32** is provided in the outer casing **31** and located above the first fan **12**. A surface of the first internal casing **32** that faces the first fan **12** is curved. A space that is surrounded by the outer casing **31** and the first internal casing **32** and communicates with the first air inlet **41** and the first air outlet **43** serves as a first air passage **51**. The second internal casing **33** is provided in the outer casing **31** and located above the second fan **13**. A surface of the second internal casing **33** that faces the second fan **13** is curved. A space that is surrounded by the outer casing **31** and the second internal casing **33** and communicates with the second air inlet **42** and the second air outlet **44** is a second air passage **52**. The partition **34** is provided between the first air passage **51** and the second air passage **52**. The partition **34** partitions the inside of the housing **30** so that air that flows through the first air passage **51** and air that flows through the second air passage **52** do not interfere with each other. The partition **34** is formed in the shape of a plate and has substantially the same shape as a side surface of the housing **30**.

**[0036]** In the first air passage **51**, the first heat exchanger **10** is inclined relative to one side surface in which the first air outlet **43** is formed. In the second air passage **52**, the second heat exchanger **11** is inclined relative to another side surface in which the second air outlet **44** is formed. Furthermore, in the first air passage **51**, the first fan **12** is provided downward of the first heat exchanger **10**. The first fan **12** is, for example, a cross-flow fan, and is provided such that its rotation axis is located substantially horizontally. In the second air passage **52**, the second fan **13** is provided downward of the second heat exchanger **11**. The second fan **13** is provided such that its rotation axis is located substantially horizontally.

**[0037]** The housing **30** includes the plurality of first deflectors **35** and the plurality of second deflectors **36**. The first deflectors **35** are located to cover the first air outlet **43** when the air-conditioning apparatus **1** is in the stopped state. The first deflectors **35** are rotated in the up-down direction to adjust the direction of air that is blown from the first air outlet **43**, when the air-conditioning apparatus **1** is in operation. The second deflectors **36** are located to cover the second air outlet **44** when the air-conditioning apparatus **1** is in the stopped state. The second deflectors **36** are rotated in the up-down direction to adjust the direction of air that is blown from the second air outlet **44**, when the air-conditioning apparatus **1** is in operation.

**[0038]** The direction of air in the indoor unit **3** of the air-conditioning apparatus **1** will be described. The following description is made with respect to the case where the first control valve **14** and the second control valve **15** are in the third mode. First, air sucked from the first air inlet **41** by rotation of the first fan **12** passes through the first heat exchanger **10** and is subjected to heat exchange. The air subjected to the heat exchange is sent to the indoor space through the first air outlet **43**. Furthermore, air sucked from the second air inlet **42** by rotation of the second fan **13** passes through the second heat exchanger **11** and is subjected to heat exchange. The air subjected to the heat exchange is sent to the indoor space through the second air outlet **44**. The indoor unit **3** sucks air from the side surfaces of the housing **30**, and blows the air downward, as a result of which a short cycle does not easily occur.

**[0039]** FIG. **3** is an explanatory view for explanation of the locations of the air-conditioning target space and the air-conditioning apparatus **1** according to Embodiment 1. FIG. **3** schematically illustrates the indoor space corresponding to the air-conditioning space, in which the indoor unit **3** is provided, as viewed from above. The indoor unit **3** of the air-conditioning apparatus is provided at substantially the center of the indoor space. The controller **21** is housed in the housing **30** of the indoor unit **3**. The controller **21** includes a memory **25** (FIG. **4**) that stores in advance data indicating a setting in which a region to be air-conditioned by air blown from the first air outlet **43**, that is, a region of the air-conditioning target space that adjoins the one side surface in which the first air outlet **43** is formed, is a first area. Also, the memory **25** stores in advance data indicating a setting in which a region to be air-conditioned by air blown from the second air outlet **44**, that is, a region of the air-conditioning target space that adjoins the part of the lower surface in which the second air outlet **44** is formed, is a second area. That is, when the air-conditioning apparatus **1** is installed in the indoor space, the first area and the second area in the indoor space are determined. Referring to FIG. **3**, of two divided areas of the indoor space, an area **A1** corresponds to the first area, and an area **A2** corresponds to the second area.

**[0040]** The first temperature detector **22** is provided on a surface of a wall located in the first area to detect a temperature of the first area. The first temperature detector **22** transmits temperature information on the temperature detected by the first temperature detector **22** to the controller **21**. The second temperature detector **23** is provided on a surface of a wall located in the second area to detect a temperature of the second area. The second temperature detector **23** transmits temperature information on the temperature detected by the second temperature detector **23** to the controller **21**. The infrared sensor **24** is provided at the housing **30** of the indoor unit **3**, detects infrared rays in the entire air-conditioning target space, and transmits the result of this detection to the controller **21**.

(Configuration of Controller **21**)

**[0041]** The controller **21** controls the operating frequency of the compressor **5**, the rotational speed of each of the outdoor fan **8**, the first fan **12**, and the second fan **13**, the opened/closed states of the ports of each of the first control valve **14** and the second control valve **15**. The controller **21** is dedicated hardware or a central processing unit (CPU, or also referred to as a processing device, an arithmetic device, a microprocessor, a microcomputer, or a processor that executes a program stored in the memory **25**. In the case where the controller **21** is dedicated hardware, the controller **21** is a single circuit, a composite circuit, an application specific integrated circuit (ASIC), a field-programmable gate array (FPGA), or a combination of these circuits. Functions of function parts of the controller **21** that are fulfilled by the controller **21** may be fulfilled by respective hardware or single hardware.

**[0042]** In the case where the controller **21** is a CPU, the functions of the function parts of the controller **21** that are fulfilled by the controller **21** are fulfilled by software, firmware, or a combination of software and firmware. The software and the firmware are written as programs, and then stored in the memory **25**. The CPU reads out a program stored in the memory **25** and executes the read-out program, thereby fulfilling a function associated with the program. The memory **25** is a nonvolatile or volatile semiconductor memory such as a RAM, a ROM, a flash memory, an EPROM or an EEPROM. It should be noted that some functions of the controller **21** may be fulfilled by dedicated hardware, and other functions of the controller **21** may be fulfilled by software or firmware.

**[0043]** FIG. **4** is a function block diagram of the controller **21** according to Embodiment 1. As illustrated in FIG. **4**, the controller **21** includes, the function parts, an area setting module **61**, a temperature reception module **62**, a thermal image creation module **63**, a human presence determination module **64**, and an air-conditioning control module **65**.

**[0044]** The area setting module **61** causes the memory **25** to store setting information indicating a setting in which the first temperature detector **22** is installed in the first area. Also, the area setting module **61** causes the memory **25** to store setting information indicating a setting in which the second temperature detector **23** is installed in the second area. That is, the area setting module **61** sets a relationship between the first temperature detector **22** and the first area and a relationship between the second temperature detector **23** and the second area. Such an area setting by the area setting module **61** is performed when the position of at least one of the indoor unit **3** of the air-conditioning apparatus **1**, the first temperature detector **22**, and the second temperature detector **23** is changed. In this case, the area setting is performed at timing indicated by an instruction given by a user or a contractor using the remote controller.

**[0045]** The temperature reception module **62** receives temperature information on the first area, from the first temperature detector **22**. Also, the temperature reception module **62** receives temperature information on the second area, from the second temperature detector **23**.

**[0046]** The thermal image creation module **63** creates a thermal image based on the result of detection of infrared rays that is transmitted from the infrared sensor **24**. As processing for creasing the thermal image, well known processing for creation of the thermal image may be applied.

**[0047]** The human presence determination module **64** calculates coordinate ranges corresponding to the first area and the second area, in the thermal image created by the thermal image creation module **63**, and detects whether a person or persons are present or no person is present in each of the coordinate ranges. As processing for detecting whether a person or persons are present or not, well-known human detection processing may be applied. The human presence determination module **64** determines an area where a person or persons are detected, as a human presence area, and an area where no person is detected, as a human absence area.

**[0048]** When it is determined that at least one of the first area and the second area is the human presence area, the air-conditioning control module **65** controls each of components such that air-conditioning is performed in the human presence area based on set information set by the user, and an air-blowing operation in which air is blown is performed in the human absence area.

**[0049]** More specifically, when it is determined that the first area is the human presence area, and the second area is the human absence area, the first control valve **14** and the second control valve **15** are controlled to be in the first mode in which the refrigerant is made to flow though the first heat exchanger **10** only. Furthermore, the operating frequency of the compressor **5** and the rotational frequency of the outdoor fan **8** are adjusted such that the temperature of the first area reaches the temperature set by the user, and the volume of refrigerant that flows through the first heat exchanger **10** is controlled. In addition, the first fan **12** and the second fan **13** are both driven and the first deflectors **35** are rotated such that the air volume and the wind direction reach a set air volume and a set wind direction. The second deflectors **36** are kept at a predetermined angle.

**[0050]** When it is determined that the first area is the human absence area and the second area is the human presence area, the first control valve **14** and the second control valve **15** are controlled to be in the second mode in which the refrigerant is made to flow through the second heat exchanger only. Furthermore, the operating frequency of the compressor **5** and the rotational frequency of the outdoor fan **8** are adjusted and the volume of refrigerant that flows through the second heat exchanger **11** is controlled such that the temperature of the second area reaches a temperature set by the user. In addition, the first fan **12** and the second fan **13** are both driven and the second deflectors **36** are rotated such that the air volume and the wind direction reach a set air volume and a set wind direction. The first deflectors **35** are kept at a predetermined angle.

**[0051]** When it is determined that the first area and the second area are each the human presence area, the first control valve **14** and the second control valve **15** are controlled to be in the third mode in which the refrigerant is made to flow through both the first heat exchanger **10** and the second heat exchanger **11**. Furthermore, the operating frequency of the compressor **5** and the rotational frequency of the outdoor fan **8** are adjusted and the volume of the refrigerant that flows through each of the first heat exchanger **10** and the second heat exchanger **11** is controlled such that the temperatures of the first area and the second area reach a temperature set by the user. In addition, the first fan **12** and the second fan **13** are both driven and the first deflectors **35** and the second deflectors **36** are rotated such that the air volume and the wind direction reach a set air volume and a set wind direction.

**[0052]** When it is determined that the first area and the second area are each the human absence area, the air-conditioning control module **65** stops the operation of the air-conditioning apparatus **1**.

**[0053]** FIG. **5** is an explanatory view for explanation of an air-conditioning function of the air-conditioning apparatus **1** according to Embodiment 1. In the figure, in order to clearly explain the first deflectors **35** and the second deflectors **36**, one of the first deflectors **35** and one of the second deflectors **36** are enlargedly illustrated. Furthermore, the following description is made by referring to by way of example the case where the first area A**1** is the human presence area and the second area A**2** is the human absence area. Also, referring to the figure, the opening degree of the first deflector **35** is θv1 with reference to 0° that is the opening degree of the first deflector **35** when the first deflector **35** is in the closed state; and the opening degree of the second deflector **36** is θv2 with reference to 0° that is the opening degree of the second deflector **36** when the second deflector **36** is in the closed state. In addition, the flow directions of air are indicated by arrows.

**[0054]** The air-conditioning control module **65** causes each of the first deflectors **35** to be rotated such that the opening degree θv1 of the first deflector **35** falls within the range of 0 to 90°. That is, the first deflectors **35** are rotated such that air is blown toward the first area. Furthermore, the air-conditioning control module **65** keeps the opening degree of each of the second deflectors **36** at a predetermined opening degree that falls within falls within the range of 0 to 90°. For example, in an example illustrated in FIG. **5**, the opening degree of the second deflector **36** is approximately 80°. That is, the opening degree of the second deflectors **36** is maintained such that air is blown from the second air outlet **44** in a direction away from the first area. As illustrated in FIG. **5**, air-conditioned air that is blown from the first air outlet **43** toward the first area is prevented by air blown toward the human absence area from flowing toward the second area. As a result, air-conditioning is performed concentratedly in the first area which is the human presence area, and the temperature in the first area can be efficiently kept at the temperature set by the user.

(Operation of Controller **21**)

**[0055]** An operation of the controller **21** will be described. FIG. **6** is a flow chart indicating the operation of the controller **21** according to Embodiment 1. First, the thermal image creation module **63** creates a thermal image of the indoor space based on the result of detection by the infrared sensor **24** (S**1**). Subsequently, the human presence determination module **64** detects whether a person or persons are present or no person is present in each of the areas, and determines whether the area is the human presence area or the human absence area (S**2**). Then, the air-conditioning control module **65** determines whether each of the first area and the second area of the air-conditioning target space is the human presence area or not (S**3**). When the human presence area is present (Yes in S**3**), the air-conditioning control module **65** controls each of the components such that air-conditioning is performed in the human presence area, and the air-blowing operation is performed in the human absence area (S**4**). When the air-conditioning target spaces are both the human absence areas (No in S**3**), the air-conditioning control module **65** stops the operation of the air-conditioning apparatus **1** (S**5**). The above processes are repeatedly executed at regular intervals when the air-conditioning apparatus **1** is in operation).

**[0056]** In Embodiment 1, the air-conditioning apparatus **1** performs air-conditioning in the first area in which a person or persons are present, and sends wind to the second area in which no person is present. Therefore, in the second area, unnecessary temperature adjustment is not performed, and the electricity consumption is thus reduced. In addition, air-conditioned air that is blown toward the first area is prevented by air blown toward the human absence area from flowing toward the second area. Thus, air-conditioning is performed concentratedly in the first area and the temperature in the first area can be efficiently kept at the temperature set by the user, thereby reducing the electricity consumption. As described above, according to Embodiment 1, it is possible to reduce the electricity consumption of the air-conditioning apparatus **1** provided with single indoor unit **3** including two heat-source-side circuits.

**[0057]** Furthermore, in Embodiment 1, the housing **30** includes the partition **34** which is provided between the first air passage **51** and the second air passage **52**. Thus, air that flows in the first air passage **51** and air that flows in the second air passage **52** do not interfere with each other. It is therefore possible to reduce a decrease in the momentum of air blown from the first air outlet **43** and the second air outlet **44**.

**[0058]** In addition, in Embodiment 1, the first air outlet **43** and the second air outlet **44** are formed in the lower surface of the housing **30**. Therefore, the air-conditioning apparatus **1** can perform air-conditioning in a larger area than in the case where the first air outlet **43** and the second air outlet **44** are formed in respective side surfaces of the housing **30**, thus improving the comfort of the user.

Embodiment 2

**[0059]** FIG. **7** is a circuit diagram illustrating an air-conditioning apparatus **101** according to Embodiment 2. As illustrated in FIG. **7**, in Embodiment 2, an indoor unit **103** includes four heat-source-side circuits. In this regard, Embodiment 2 is different from Embodiment 1. Regarding Embodiment 2, components that are the same as those in Embodiment 1 are denoted by the same reference signs, and their descriptions will thus be omitted. The following description concerning Embodiment 2 will be made by referring mainly to the differences between Embodiments 1 and 2.

**[0060]** As illustrated in FIG. **7**, the indoor unit **103** of the air-conditioning apparatus **101** includes as indoor heat exchangers, a first heat exchanger **111**, a second heat exchanger **112**, a third heat exchanger **113**, and a fourth heat exchanger **114**. To the lower-side circuit of the outdoor unit **2**, heat-source-side circuits are connected. To be more specific, the heat-source-side circuits are branched off and include the first heat exchanger **111**, the second heat exchanger **112**, the third heat exchanger **113**, and the fourth heat exchanger **114** in the indoor unit **103**. That is, the indoor unit **103** includes four heat-source-side circuits. Furthermore, the indoor unit **103** includes a first fan **115**, a second fan **116**, a third fan **117**, and a fourth fan **118**. The first fan **115** is a device that sends air to the first heat exchanger **111**; the second fan **116** is a device that sends air to the second heat exchanger **112**; the third fan **117** is a device that sends air to the third heat exchanger **113**; and the fourth fan **118** is a device that sends air to the fourth heat exchanger **114**.

**[0061]** Furthermore, the indoor unit **103** includes a first control valve **121**, a second control valve **122**, a third control valve **123**, a fourth control valve **124**, a fifth control valve **125**, and a sixth control valve **126**. The first control valve **121**, the second control valve **122**, the third control valve **123**, the fourth control valve **124**, the fifth control valve **125**, and the sixth control valve **126** are each a three-way valve. The flows of refrigerant to the first heat exchanger **111**, the second heat exchanger **112**, the third heat exchanger **113**, and the fourth heat exchanger **114** are controlled by controlling in combination, the opened/closed states of the ports of the first control valve **121**, the second control valve **122**, the third control valve **123**, the fourth control valve **124**, the fifth control valve **125**, and the sixth control valve **126**.

**[0062]** The ports of the first control valve **121** are connected to the flow switching valve **6**, the first heat exchanger **111**, and the third control valve **123**; the ports of the second control valve **122** are connected to the expansion valve **9**, the first heat exchanger **111**, and the fourth control valve **124**; the ports of the third control valve **123** are connected to the second heat exchanger **112**, the first control valve **121**, and the fifth control valve **125**; the ports of the fourth control valve **124** are connected to the second heat exchanger **112**, the second control valve **122**, and the sixth control valve **126**; the ports of the fifth control valve **125** are connected to the third heat exchanger **113**, the fourth heat exchanger **114**, and the third control valve **123**; and the ports of the sixth control valve **126** are connected to the third heat exchanger **113**, the fourth heat exchanger **114**, and the fourth control valve **124**.

**[0063]** FIG. **8** is a perspective view illustrating the indoor unit **103** of the air-conditioning apparatus **101** according to Embodiment 2. As illustrated in FIG. **8**, a housing **140** of the indoor unit **103** is formed in the shape of a flat cylinder. In a side surface of the housing **140** of the indoor unit **103**, a first air inlet **161**, a second air inlet **162**, a third air inlet (not illustrated), and a fourth air inlet (not illustrated) are formed. In a lower surface of the housing **140** of the indoor unit **103**, a first air outlet **165**, a second air outlet **166**, a third air outlet **167**, and a fourth air outlet **168** are formed.

**[0064]** The memory **25** stores in advance, setting information indicating a setting in which a region to be air-conditioned by air blown from the first air outlet **165**, that is, a region of the air-conditioning target space that is associated with the first air outlet **165**, is the first area, as in Embodiment 1; the memory **25** stores in advance, store setting information indicating a setting in which a region to be air-conditioned by air blown from the second air outlet **166**, that is, a region of the air-conditioning target space that is associated with the second air outlet **166**, is the second area; the memory **25** stores in advance, setting information indicating a setting in which a region to be air-conditioned by air blown from the third air outlet **167**, that is, a region of the air-conditioning target space that is associated with the third air outlet **167**, is a third area; and the memory **25** stores in advance, setting information indicating a setting in which a region to be air-conditioned by air blown from the fourth air outlet **168**, that is, a region of the air-conditioning target space that is associated with the fourth air outlet **168**, is a fourth area.

**[0065]** Referring to FIG. **7**, the indoor unit **103** of the air-conditioning apparatus **101** includes a first temperature detector **132**, a second temperature detector **133**, a third temperature detector **134**, a fourth temperature detector **135**, and the infrared sensor **24**. The first temperature detector **132** detects a temperature of the first area and transmits temperature information on this temperature to a controller **131**; the second temperature detector **133** detects a temperature in the second area and transmits temperature information on this temperature to the controller **131**; the third temperature detector **134** detects a temperature in a third area and transmits temperature information on this temperature to the controller **131**; and the fourth temperature detector **135** detects a temperature of a fourth area and temperature information on this temperature to the controller **131**. The infrared sensor **24** detects infrared rays within the entire air-conditioning target space.

**[0066]** FIG. **9** is an explanatory view for explanation of an internal configuration of the air-conditioning apparatus **101** according to Embodiment 2. FIG. **9** illustrates part of the indoor unit **103** that has the first air outlet **165**. A space which is surrounded by the housing **140** and through which the first air inlet **161** communicates with the first air outlet **165** is a first air passage **171**. The following description is made by referring to the first air passage **171** on behalf of air passages. It should be noted that a second air passage (not illustrated), a third flow passage (not illustrated), and a fourth flow passage (not illustrated) have the same configuration as the first air passage **171**. The first air inlet **161** is formed in the side surface of the housing **140**. The first air outlet **165** is formed in a lower surface of the outer casing **31**. The first fan **115** is, for example, a cross-flow fan, and is horizontally provided on the housing **140** such that its rotation axis is substantially horizontal. Furthermore, the housing **140** includes four partitions **141**. The four partitions **141** divides the inside of the housing **140** such that air that flows through the first air passage **171**, air that flows through the second air passage, air that flows through the third flow passage, and air that flows through the fourth flow passage do not interfere with each other.

(Configuration of Controller **131**)

**[0067]** FIG. **10** is a function block diagram of the controller **131** according to Embodiment 2. In Embodiment 2, the function parts of the controller **131** are associated with the first area, the second area, the third area, and the fourth area. In other respects, Embodiment 2 is the same as Embodiment 1. To be more specific, an area setting module **181** sets relationships between the first temperature detector **132**, the second temperature detector **133**, the third temperature detector **134**, and the fourth temperature detector **135** and the above areas. A temperature reception module **182** receives temperature information on the first area, the second area, the third area, and the fourth area from the first temperature detector **132**, the second temperature detector **133**, the third temperature detector **134**, and the fourth temperature detector **135**. A thermal image creation module **183** creates a thermal image of the entire air-conditioning target space. A human presence determination module **184** determines whether each of the first area, the second area, the third area, and the fourth area is the human presence area or the human absence area from the result of detection of infrared rays that is made by the infrared sensor **24**. Then, in the case where at least one of the first area, the second area, the third area, and the fourth area is the human presence area, an air-conditioning control module **185** controls components such that air-condition is performed in the human presence area and the air-blowing operation is performed in the human absence area.

**[0068]** For example, in the case where the first area is the human presence area, and each of the second area, the third area, and the fourth area is the human absence area, in the first control valve **121**, the port connecting with the flow switching valve **6** is opened, the port connected with the first heat exchanger **111** is opened, and the port connected with the third control valve **123** is closed; in the second control valve **122**, the port connected with the expansion valve **9** is opened, the port connected with the first heat exchanger **111** is opened, and the port connected with the fourth control valve **124** is closed; and in each of the third control valve **123**, the fourth control valve **124**, the fifth control valve **125**, and the sixth control valve **126**, all the ports are closed. Furthermore, the operating frequency of the compressor **5**, the rotational frequency of the outdoor fan **8**, and the volume of refrigerant that flows through the first heat exchanger **111** are controlled. Then, the first fan **115**, the second fan **116**, the third fan **117**, and the fourth fan **118** are driven, and first deflectors **151** are rotated, such that an air volume and a wind direction reach a set air volume and a set wind direction. Furthermore, second deflectors **152**, third deflectors **153**, and fourth deflectors **154** are kept at predetermined angles. As a result, the refrigerant flows through the first heat exchanger **111** only; and air conditioning is performed only in the first area, and the air-blowing operation is performed in each of the second area, the third area, and the fourth area.

**[0069]** Also, in cases other than the above case, the controller **131** controls the control valves to cause the refrigerant to flow through only an indoor heat exchanger associated with an area which is determined as the human presence area, and to stop the flow of the refrigerant to an indoor heat exchanger associated with an area which is determined as the human absence area.

**[0070]** In Embodiment 2, the air-conditioning apparatus **101** divides the indoor space into four areas; and performs air-conditioning, based on setting information set by the user, in an area or areas each determined as the human presence area, and sends wind to an area or areas each determined as the human absence area. Thus, in the air-conditioning apparatus **101** according to Embodiment 2, it is possible to further limit the air-conditioning target space to a target area or target areas in which air-conditioning is concentratedly performed, as compared with the air-conditioning apparatus **101** according to Embodiment 1. Therefore, in Embodiment 2, it is possible to further reduce the electricity consumption of the air-conditioning apparatus **101** which is provided with a plurality of heat-source-side circuits in the single housing **140**.

**[0071]** Although the present disclosure is made to explain the above embodiments, application of the present disclosure is not limited to explanation of the embodiments, that is, various modifications can be made without departing from the gist of the present disclosure. For example, although it is described above regarding Embodiment 1 that the first control valve **14** and the second control valve **15** are three-way valves, four-way valves or two-way valves may be combined to have the same functions as the first control valve **14** and the second control valve.

**[0072]** Regarding the first temperature detector **22** and the second temperature detector **23** of Embodiment 1, the installation locations of the first temperature detector **22** and the second temperature detector **23** and the number of first temperature detectors **22** and that of second temperature detectors **23** may be changed as long as the first temperature detector or detectors **22** and the second temperature detector or detectors **23** are capable of detecting respective areas. For example, the first temperature detector **22** and the second temperature detector **23** may be installed in the housing **30** of the indoor unit **3**. Furthermore, the first temperature detector **22** and the second temperature detector **23** may detect temperatures in the indoor space based on a thermal image created based on infrared rays detected by the infrared sensor **24**. In addition, a PC or a mobile terminal of the user, such as a smartphone, are wirelessly connected to the controller **21** such that the mobile phone can communicate with the controller **21**, and the controller **21** may acquire a temperature detected by the mobile terminal or the PC. In this case, the first temperature detector **22** and the second temperature detector **23** can be omitted.

**[0073]** The infrared sensor **24** of Embodiment 1 may be configured to not only detect infrared rays in the air-conditioning target space, but also have a function of creating a thermal image. In this case, the thermal image creation module **63** included in the controller **21** may be omitted.

**[0074]** The human presence determination module **64** of Embodiment 1 may be configured to determine whether an area is the human presence area or the human absence area based on whether a signal received from the mobile terminal, the PC, or other devices, is present or absent, or the intensity of the signal, not based on the thermal image. In this case, the infrared sensor **24** can be omitted.

**[0075]** In Embodiment 1, in a given region, wireless communication may be performed, and in another region, wire communication may be performed. In addition, communication from a given device to another device may be performed as wire communication, and communication from the above other device to the given device may be performed as wireless communication.

**[0076]** With respect to Embodiment 1, it is described above that the timing at which the area setting by the area setting module **61** is performed is indicated by an instruction or a contractor using the remote controller. In a modification, it is detected from, for example, a change in the intensities of signals received from the first temperature detector **22** and the second temperature detector **23**, it is detected that a relative positional relationship between the area setting module **61** and the first temperature detector **22** or the area setting module **61** and the second temperature detector **23** is changed, and as a result, the area setting module **61** can automatically perform the area setting.

**[0077]** Regarding Embodiment 1, it is described above that in the case where all the areas are each determined as the human absence area, the operation of the air-conditioning apparatus **1** is stopped. However, in the case where all the areas are each determined as the human absence area, wind may be sent to all the areas.

**[0078]** In Embodiment 1, the shape of the housing **30** and the arrangement of the air inlets and the air outlets may be changed as appropriate to differ from the shape and arrangement described above regarding Embodiment 1. For example, the first air inlet **41** and the second air inlet **42** may be formed in the lower surface of the housing **30** and the first air outlet **43** and the second air outlet **44** may be formed in the side surfaces of the housing **30**.

**[0079]** Regarding Embodiment 1, although it is described above that the air volume in the human absence area is an air volume set by the user, the air volume in the human absence area may be made larger than that in the human presence area. In this case, air-conditioned air blown to the human presence area is more reliably prevented by air blown toward the human absence area from flowing toward the human absence area.

**[0080]** In Embodiment 1, although it is described above that the opening degree θv2 of each of the second deflectors **36** in the human absence area is approximately 80°, it suffices that the opening degree θv2 is kept at an opening degree which falls within the range of 0 to 90°, such that air blown from the second air outlet **44** flows in a direction away from the first area. For example, when the opening degree θv2 is set to 90°, air blown from the second air outlet **44** flows toward a region located directly below the air-conditioning apparatus **1**. In this case, the flow of the air blown from the second air outlet **44** is not easily attenuated until the air comes into contact with air blown from the first air outlet **43**. Thus, it is possible to more reliably prevent the flow of the air from the first area to the second area.

**[0081]** Furthermore, in Embodiments 1 and 2, the deflectors in the human presence area are controlled to be rotated; however, the deflectors may be kept at a predetermined angle. In addition, in the case where each of the deflectors is located in such a manner as to cause air blown from an associated air outlet to flow in a direction away from an area other than an associated area, the orientation of the deflector may be fixed relative to the housing and the deflector may be configured not to have a function of rotating.

**[0082]** The opened/closed states of the control valves are not limited to the opened/closed states described above regarding Embodiments 1 and 2, that is, the opened/closed states of the control valves may be set to opened/closed states other than the opened/closed states described above regarding Embodiments 1 and 2, as long as the opened/closed states of the control valves are set such that the control valves cause the refrigerant to flow through only the indoor heat exchanger associated with an area or areas each determined as the human presence area, and stop the flow of the refrigerant to the indoor heat exchanger associated with an area or areas each determined as the human absence area. In addition, in Embodiments 1 and 2, one or more of the control valves may be omitted, as long as the opened/closed states of the remaining control valves can be set such that the remaining control valves cause the refrigerant to flow through only the indoor heat exchanger associated with an area or areas each determined as the human presence area, and stop the flow of the refrigerant to the indoor heat exchanger associated with an area or areas each determined as the human absence area.

## REFERENCE SIGNS LIST

**[0083]** **1**: air-conditioning apparatus, **2**: outdoor unit, **3**: indoor unit, **4**: refrigerant pipe, **5**: compressor, **6**: flow switching valve, **7**: outdoor heat exchanger, **8**: outdoor fan, **9**: expansion valve, **10**: first heat exchanger, **11**: second heat exchanger, **12**: first fan, **13**: second fan, **14**: first control vale, **15**: second control valve, **21**: controller, **22**: first temperature detector, **23**: second temperature detector, **24**: infrared sensor, **25**: memory, **30**: housing, **31**: outer casing, **32**: first internal casing, **33**: second internal casing, **34**: partition, **35**: first deflector. **36**: second deflector, **41**: first air inlet, **42**: second air inlet, **43**: first air outlet, **44**: second air outlet, **51**: second air passage, **52**: second air passage, **61**: area setting module, **62**: temperature reception module, **63**: thermal image creation module, **64**: human presence determination module, **65**: air-conditioning control module. **101**: air-conditioning apparatus. **103**: indoor unit, **111**: first heat exchanger, **112**: second heat exchanger, **113**: third heat exchanger, **114**: fourth heat exchanger, **115**: first fan, **116**: second fan, **117**: third fan, **118**: fourth fan, **121**: first control valve, **122**: second control valve, **123**: third control valve, **124**: fourth control valve, **125**: fifth control valve, **126**: sixth control valve, **131**: controller, **132**: first temperature detector, **133**: second temperature detector, **134**: third temperature detector, **135**: fourth temperature detector, **140**: housing, **141**: partition, **151**: first deflector, **152**: second deflector, **153**: third deflector, **154**: fourth deflector, **161**: first air inlet, **162**: second air inlet, **165**: first air outlet, **166**: second air outlet, **167**: third air outlet, **168**: fourth air outlet, **171**: first air passage, **181**: area setting module, **182**: temperature reception module, **183**; thermal image creation module, **184**: human presence determination module, **185**: air-conditioning control module

**1**. An air-conditioning apparatus comprising:
a housing;
a first heat exchanger provided in the housing;
a second heat exchanger provided in the housing;
a first fan provided in the housing and configured to send air to the first heat exchanger;
a second fan provided in the housing and configured to send air to the second heat exchanger;
a control valve configured to control a flow of refrigerant to the first heat exchanger and the second heat exchanger; and
a controller configured to control the control valve, the first fan, and the second fan,
wherein the housing includes
a first air inlet formed in one side surface of the housing and configured to allow air to flow to the first heat exchanger through the first air inlet,
a second air inlet formed in an other side surface of the housing that is located opposite to the one side surface, and configured to allow air to flow to the second heat exchanger through the second air inlet,
a first air outlet formed in a lower surface of the housing and configured to allow air subjected heat exchange at the first heat exchanger to be blown out, and
a second air outlet formed in the lower surface of the housing and configured to allow air subjected to heat exchange at the second heat exchanger to be blown out, and
wherein the controller is configured to set in the air-conditioning target space, a first area associated with the first air outlet and a second area associated with the second area, detect whether a person or persons are present or no person is present in each of the first area and the second area, and control the control valve, the first fan, and the second fan such that air conditioning is performed in the first area and an air-blowing operation in which air is blown is performed in the second area, when detecting that the person or persons are present in the first area and no person is present in the second area.

**2**. The air-conditioning apparatus of claim **1**, wherein the controller is configured to control the control valve to cause refrigerant to flow through the first heat exchanger, drive the first fan, control the control valve to stop a flow of the refrigerant to the second heat exchanger, and drive the second fan, when detecting that the person or persons are present in the first area and no person is present in the second area.

**3**. The air-conditioning apparatus of claim **1**, wherein the housing includes

a first air passage in which the first fan is provided,

a second air passage in which the second fan is provided,

a partition provided between the first air passage and the second air passage.

**4**. (canceled)

**5**. The air-conditioning apparatus of claim **1**, further comprising:

first deflectors configured to adjust a flow direction of air that is blown from the first air outlet; and

second deflectors configured to adjust a flow direction of air that is blown from the second air outlet,

wherein the controller is configured to control the second deflectors to cause the air that is blown from the second air outlet to flow in a direction away from the first area, when detecting that the person or persons are present in the first area and no person is present in the second area.

**6**. The air-conditioning apparatus of claim **1**, further comprising an infrared sensor configured to detect infrared rays in the air-conditioning target space,

wherein the controller is configured to detect, using the infrared sensor, whether the person or persons are present or no person is present in each of the first area and the second area.

**7**. The air-conditioning apparatus of claim **1**, further comprising a temperature detector configured to detect a temperature in the air-conditioning target space,

wherein the controller is configured to control the control valve, the first fan, and the second fan such that a temperature of the first area and a temperature of the second area reach respective target temperatures.

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