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(54) **SETTING SYSTEM FOR AIR CONDITIONER**

(57) To provide an air conditioner setting system that inexpensively performs, when models differ depending on the type of outdoor unit that is connected to an indoor unit, judgment of matching between the models and remote controller settings. Models of air conditioners include a dual cooling and heating outdoor unit (2) and a cooling-only outdoor unit (3). A setting changing switch (39) of a universal remote controller (30) transmits operation instruction signals compatible with the models of the air conditioners to execute setting change. A remote controller transmitting component (31) unilaterally transmits,

to an indoor unit (1), an operation instruction signal corresponding to the setting state of the setting changing switch (39). Additionally, an outdoor transmitting component (25) of the outdoor unit (2) transmits its own predetermined model information identified beforehand to the indoor unit (1) to which it is connected. A judging component (15) of the indoor unit (1) compares the predetermined model information and the operation instruction signal to judge whether or not the setting of the universal remote controller (30) and the model of the air conditioner are compatible with each other.

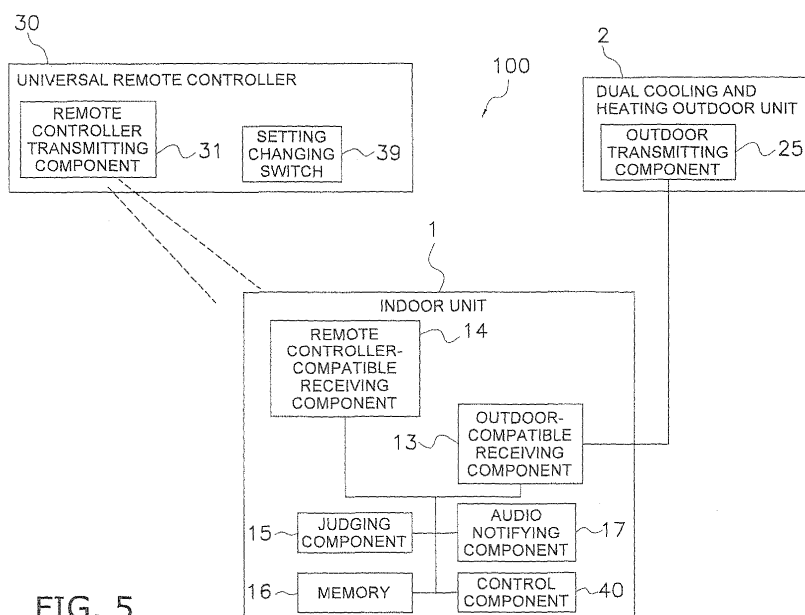


FIG. 5

Description

TECHNICAL FIELD

[0001] The present invention relates to an air conditioner setting system.

BACKGROUND ART

[0002] Conventionally, in the manufacture of air conditioners, there has been developed a universal controller which, when plural models of air conditioners are manufactured, is used compatibly with any of these models of air conditioners. As such plural models of air conditioners, there are, for example, a model whose outdoor unit is a cooling-only type, a cooling/heating compatible heat pump type model and a capability-variable type model capable of continuous control of its cooling/heating capability.

[0003] For example, in patent document 1 listed below, there is proposed an air conditioner configured such that a microcomputer of an outdoor unit and a microcomputer of an indoor unit are interconnected so as to be capable of communicating bidirectionally with each other and such that the microcomputer of the indoor unit and a microcomputer of a remote controller are also interconnected so as to be capable of communicating bidirectionally with each other. According to this air conditioner, the indoor unit understands, by bidirectional communication with the outdoor unit, the type of outdoor unit to which the indoor unit is connected, and the indoor unit that has understood the type transmits data of that type of outdoor unit to the remote controller. Then, the remote controller performs operation setting of the outdoor unit that has been transmitted and transmits data to the indoor unit such that the indoor unit can understand the operation content that has been set. Thus, even when plural models of air conditioners are manufactured, by utilizing a universal remote controller, it becomes unnecessary to manufacture a remote controller for each model, and manufacturing costs can be controlled.

Patent Document 1: JP-A No. 64-70641

DISCLOSURE OF THE INVENTION

<Technical Problem>

[0004] However, in the air conditioner described in patent document 1, in order to perform setting of the remote controller corresponding to the model, it is assumed that communication between the indoor unit and the remote controller is bidirectional, and the communicating component of the indoor unit and the communicating component of the remote controller end up becoming high-cost in comparison to the case of unidirectional communication.

[0005] Further, in a unidirectional communication sys-

tem from the remote controller to the indoor unit, a user operating the remote controller cannot understand whether or not the setting of the remote controller is a setting compatible with the model of the air conditioner. For this reason, when the setting of the remote controller is an erroneous setting that is not compatible with the air conditioner, sometimes the user does not become aware of that error and ends up mistakenly assuming that the air conditioner is faulty.

[0006] The present invention has been made in view of the aforementioned point, and it is an object of the present invention to provide an air conditioner setting system that is capable of inexpensively performing, in air conditioners whose models differ depending on the type of outdoor unit that is connected to an indoor unit, judgment of matching between the models and remote controller settings by simply performing unidirectional signal transmission to the indoor unit using a remote controller capable of operation setting corresponding to the models.

<Solution to the Problem>

[0007] An air conditioner setting system pertaining to a first aspect of the present invention comprises plural predetermined outdoor units, a universal indoor unit and a universal remote controller. The plural predetermined outdoor units identify plural models of air conditioners. The universal indoor unit configures the identified models of air conditioners by configuring a refrigerant circuit together with any of the plural predetermined outdoor units. The universal remote controller includes a setting switching component and a remote controller transmitting component. The setting switching component is capable of operation instruction compatible with the plural models of the air conditioners and switches the setting of the operation instruction in accordance with the model. The remote controller transmitting component unilaterally transmits, to the universal indoor unit, the operation instruction signal corresponding to the setting state of the setting switching component. Additionally, each of the predetermined outdoor units includes an outdoor transmitting component that transmits its own predetermined model information identified beforehand to the universal indoor unit configuring the refrigerant circuit together with any of the plural predetermined outdoor units. The universal indoor unit includes an outdoor-compatible receiving component that receives the predetermined model information from the outdoor transmitting components of the predetermined outdoor units configuring the refrigerant circuit together with the universal indoor unit and a remote controller-compatible receiving component that receives the operation instruction signal from the remote controller transmitting component of the universal remote controller. The universal indoor unit also includes a judging component that compares the predetermined model information that has been received and the operation instruction signal that has been received to judge whether

or not the setting of the universal remote controller is compatible with the model and a notifying component that performs predetermined notification on the basis of the judgment result resulting from the judging component.

[0008] Here, the models of the air conditioners are determined by the types of the predetermined outdoor units that configure the refrigerant circuit together with the universal indoor unit. Here, the universal indoor unit understands the model of its own air conditioner by receiving, in the outdoor-compatible receiving component, the predetermined model information from the outdoor transmitting component connected so as to configure the refrigerant circuit together with the universal indoor unit.

[0009] Further, the universal remote controller is configured to become operable by setting switching resulting from the setting switching component with respect to the model of air conditioner resulting from any combination of these. Here, the universal remote controller simply unilaterally transmits an operation signal to the remote controller-compatible receiving component of the universal indoor unit, does not receive data from the universal indoor unit, and is manufactured inexpensively.

[0010] Additionally, the judging component of the universal indoor unit compares the predetermined model information from the predetermined outdoor units and the operation instruction signal from the universal remote controller to judge whether or not the setting state of the universal remote controller is compatible with the model of the air conditioner. Additionally, the notifying component performs notification relating to whether or not the setting state of the universal remote controller is compatible with the model of the air conditioner. For this reason, a user can, in accordance with the notification from the notifying component, cause the universal remote controller to be compatible with the model of the air conditioner by switching or maintaining the setting state of the setting switching component of the universal remote controller.

[0011] Thus, the user can easily understand whether or not the setting of the remote controller is erroneous, and it becomes possible to inexpensively perform operation setting of the universal remote controller corresponding to the model by simply performing unidirectional signal transmission to the universal indoor unit without having to construct an expensive system such as a bidirectional communication system.

[0012] An air conditioner setting system pertaining to a second aspect of the present invention is the air conditioner setting system pertaining to the first aspect of the present invention, wherein the universal indoor unit further includes a control component that performs operation control based on the operation instruction signal when the remote controller-compatible receiving component has received the operation instruction signal compatible with a preset outdoor unit determined beforehand of the plural predetermined outdoor units. The notifying component performs notification when it has been judged by the judging component that the predetermined model

information compatible with the preset outdoor unit and the operation instruction signal are not compatible with each other.

[0013] Here, in regard to the setting situation of the universal remote controller, the notifying component does not perform notification when the predetermined model information and the operation instruction signal are compatible with each other but rather performs notification when it has been judged by the judging component that the predetermined model information and the operation instruction signal are not compatible with each other. Further, the control component of the universal indoor unit performs operation control based on the operation instruction signal when the remote controller-compatible receiving component has received the operation instruction signal compatible with a preset outdoor unit determined beforehand of the plural predetermined outdoor units.

[0014] Thus, it suffices for the user to perform switching operation of the setting switching component of the universal remote controller only when there is notification, and when the predetermined model information and the operation instruction signal are compatible with each other, the user is not notified, so the user does not have to particularly recognize whether or not the setting situation of the universal remote controller is compatible with the model of the air conditioner, and it becomes possible for the user to operate the universal remote controller to cause the air conditioner to execute operation control.

[0015] An air conditioner setting system pertaining to a third aspect of the present invention is the air conditioner setting system pertaining to the first aspect or the second aspect of the present invention, wherein the notifying component notifies by emitting at least either one of sound or light. It will be noted that examples of notification by sound here may include notification by a buzzer sound or a melody and that examples of notification by light may include display by LED display, a dot matrix and liquid crystal.

[0016] Here, it becomes possible for the user to easily understand notification from the notifying component through hearing or sight by sound or light notification.

[0017] An air conditioner setting system pertaining to a fourth aspect of the present invention is the air conditioner setting system pertaining to any of the first aspect to the third aspect of the present invention, wherein a model that becomes a cooling-only air conditioner by configuring the refrigerant circuit together with the universal indoor unit and a model that becomes a dual cooling and heating air conditioner by configuring the refrigerant circuit together with the universal indoor unit are included as plural models of the predetermined outdoor units. Here, the cooling-only air conditioner may, for example, be used for rooms accompanied by heat emission, such as a server room, or for food products that must be maintained at a low temperature. Further, the dual cooling and heating air conditioner may, for example, be used for homes where it is to be used in order to

realize a comfortable space throughout the year.

[0018] Here, it becomes possible to use the universal indoor unit when either model of the cooling-only air conditioner and the dual cooling and heating air conditioner is manufactured.

[0019] Thus, the indoor unit can be manufactured by a common process, so manufacturing costs can be controlled, and when, for example, manufacturing demand of the cooling-only air conditioner increases and there is leeway in the manufacture of the dual cooling and heating air conditioner, flexible accommodation, such as appropriating the universal indoor unit for the manufacture of the cooling-only air conditioner, becomes possible.

[0020] An air conditioner setting system pertaining to a fifth aspect of the present invention is the air conditioner setting system pertaining to the fourth aspect of the present invention, wherein the judging component causes the notifying component to notify when the outdoor-compatible receiving component of the universal indoor unit is receiving information relating to the cooling-only air conditioner as the predetermined model information when the remote controller-compatible receiving component of the universal indoor unit has received from the remote controller transmitting component a signal requesting heating as the operation instruction signal.

[0021] Here, in a case where the model that becomes the cooling-only air conditioner is being employed as the predetermined outdoor unit, heating operation cannot be executed, so when the remote controller-compatible receiving component of the universal indoor unit has received from the remote controller transmitting component a signal requesting heating as the operation instruction signal, it is invariably necessary to switch the setting switching component of the universal remote controller.

[0022] In this manner, a heating command is not possible in the case of a cooling-only model, so it becomes possible for the judging component of a simple configuration to cause the notifying unit to notify the user that the setting is erroneous.

<Advantageous Effects of the Invention>

[0023] In the air conditioner setting system of the first aspect of the invention, the user can easily understand whether or not the setting of the remote controller is erroneous, and it becomes possible to inexpensively perform operation setting of the universal remote controller corresponding to the model by simply performing unidirectional signal transmission to the universal indoor unit without having to construct an expensive system such as a bidirectional communication system.

[0024] In the air conditioner setting system of the second aspect of the invention, it suffices for the user to perform switching operation of the setting switching component of the universal remote controller only when there is notification, and when the predetermined model information and the operation instruction signal are compatible with each other, the user is not notified, so the user

does not have to particularly recognize whether or not the setting situation of the universal remote controller is compatible with the model of the air conditioner, and it becomes possible for the user to operate the universal remote controller to cause the air conditioner to execute operation control.

[0025] In the air conditioner setting system of the third aspect of the invention, it becomes possible for the user to easily understand notification from the notifying component through hearing or sight by notification by sound or light.

[0026] In the air conditioner setting system of the fourth aspect of the invention, it becomes possible to use the universal indoor unit when either model of the cooling-only air conditioner and the dual cooling and heating air conditioner is manufactured.

[0027] In the air conditioner setting system of the fifth aspect of the invention, a heating command is not possible in the case of a cooling-only model, so it becomes possible for the judging component of a simple configuration to cause the notifying unit to notify the user that the setting is erroneous.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028]

FIG. 1 is a conceptual diagram showing types of outdoor units that are connected to an indoor unit of an air conditioner of the present invention.

FIG. 2 is a general diagram of the exterior of a dual cooling and heating air conditioner.

FIG. 3 is a general diagram of the exterior of a cooling-only air conditioner.

FIG. 4 is a configuration diagram of a refrigerant circuit using the dual cooling and heating air conditioner as an example.

FIG. 5 is a block configuration diagram using the dual cooling and heating air conditioner as an example.

FIG. 6 is a remote controller setting flowchart using the dual cooling and heating air conditioner as an example.

FIG. 7 is a diagram of a universal remote controller that has been set so as to be compatible with the dual cooling and heating air conditioner.

FIG. 8 is a diagram of the universal remote controller that has been set so as to be compatible with the cooling-only air conditioner.

DESCRIPTION OF THE REFERENCE SYMBOLS

[0029]

- | | |
|----|---|
| 1 | Indoor Unit (Universal Indoor Unit) |
| 2 | Dual Cooling and Heating Outdoor Unit |
| 3 | Cooling-Only Outdoor Unit |
| 13 | Outdoor-Compatible Receiving Component |
| 14 | Remote Controller-Compatible Receiving Com- |

	ponent
15	Judging Component
16	Memory
17	Audio Notifying Component (Notifying Component)
25	Outdoor Transmitting Component
30	Universal Remote Controller
31	Remote Controller Transmitting Component
39	Setting Changing Switch (Setting Switching Component)
40	Control Component
100	Dual Cooling and Heating Air Conditioner
200	Cooling-Only Air Conditioner

BEST MODE FOR CARRYING OUT THE INVENTION

[0030] Below, an embodiment of an air conditioner setting system pertaining to the present invention will be described on the basis of the drawings.

<General Configuration of Air Conditioner Setting System>

[0031] An air conditioner setting system where one embodiment of the present invention is employed is configured by an indoor unit 1 that is installed in an indoor wall surface, a universal remote controller 30 that transmits an operation instruction signal to the indoor unit, and outdoor units 2 and 3 that are installed outdoors.

[0032] As the air conditioner here, as shown in FIG. 2 or FIG. 3, there are a dual cooling and heating air conditioner 100 (see FIG. 2) where a dual cooling and heating outdoor unit 2 and the indoor unit 1 are interconnected to configure a refrigerant circuit and a cooling-only air conditioner 200 (see FIG. 3) where a cooling-only outdoor unit 3 and the indoor unit 1 are interconnected to configure a refrigerant circuit. The dual cooling and heating air conditioner 100 and the cooling-only air conditioner 200 are such that the indoor unit 1, which has the same configuration in both and is universal, is connected via a communication pipe 5, and this indoor unit 1 is connectable to either of the dual cooling and heating outdoor unit 2 and the cooling-only outdoor unit 3 and can exhibit functions corresponding to the type of the outdoor unit.

[0033] Further, the universal remote controller 30 has a setting switching scheme such that it can transmit the operation instruction signal to either of the dual cooling and heating air conditioner 100 and the cooling-only air conditioner 200 and can cause the respective models to execute control corresponding to the operation instruction signal.

<Configuration of Refrigerant Circuit of Air Conditioner 100>

[0034] Here, of the dual cooling and heating air conditioner 100 and the cooling-only air conditioner 200, the refrigerant circuit of the dual cooling and heating air con-

ditioner 100 that is configured as a result of the indoor unit 1 and the dual cooling and heating outdoor unit 2 being interconnected will be taken as an example and described with reference to FIG. 4.

[0035] This refrigerant circuit is mainly configured by an indoor heat exchanger 10, an accumulator 21, a compressor 22, a four-way switch valve 23, an outdoor heat exchanger 20 and an expansion valve 24.

[0036] The indoor heat exchanger 10 that is disposed in the indoor unit 1 performs heat exchange with air coming into contact therewith. Further, a cross-flow fan 11 for sucking in indoor air, passing the air through the indoor heat exchanger 10 and discharging, to the indoors, the air after heat exchange has been performed is disposed in the indoor unit 1. The cross-flow fan 11 is driven to rotate by one indoor fan motor 12 that is disposed inside the indoor unit 1.

[0037] In the dual cooling and heating outdoor unit 2, there are disposed the compressor 22, the four-way switch valve 23 that is connected to a discharge side of the compressor 22, the accumulator 21 that is connected to a suction side of the compressor 22, the outdoor heat exchanger 20 that is connected to the four-way switch valve 23, and the expansion valve 24 that is connected to the outdoor heat exchanger 20. The expansion valve 24 is connected to a pipe via a liquid close valve 26 and is connected to one end of the indoor heat exchanger 10 via this pipe. Further, the four-way switch valve 23 is connected to a pipe via a gas close valve 27 and is connected to the other end of the indoor heat exchanger 10 via this pipe. Further, a propeller fan 28 for discharging, to the outside, air after heat exchange in the outdoor heat exchanger 20 is disposed in the dual cooling and heating outdoor unit 2. This propeller fan 28 is driven to rotate by an outdoor fan motor 29.

[0038] Here, when the four-way switch valve 23 shown in FIG. 4 is in the connected state indicated by the solid lines, cooling operation is executed in the dual cooling and heating air conditioner 100 as a result of the outdoor heat exchanger 20 functioning as a condenser of refrigerant and the indoor heat exchanger 10 functioning as an evaporator of refrigerant. Further, when the four-way switch valve 23 shown in FIG. 4 is changed to the connected state indicated by the dotted lines, heating operation is performed.

<Communication Configuration of Air Conditioner Setting System>

[0039] Here also, a setting system of the dual cooling and heating air conditioner 100 configured by the indoor unit 1, the dual cooling and heating outdoor unit 2 and the universal remote controller 30 will be taken as an example, and a block configuration diagram thereof is shown in FIG. 5.

[0040] The dual cooling and heating outdoor unit 2 includes an outdoor transmitting component 25, is communicably connected to an outdoor-compatible receiving

component 13 of the indoor unit 1, and performs air-conditioning operation while transmitting and receiving various data.

[0041] The indoor unit 1 is equipped with the aforementioned outdoor-compatible receiving component 13, a remote controller-compatible receiving component 14, a judging component 15, an audio notifying component 17, a memory 16 and a control component 40, etc. The outdoor-compatible receiving component 13 performs communication bidirectionally, in regard to data such as air conditioning operation data and temperature data, with the aforementioned outdoor transmitting component 25. The remote controller-compatible receiving component 14 receives information transmitted from a remote controller transmitting component 31 of the universal remote controller 30 as shown in FIG. 2 and FIG. 3. The judging component 15 compares, on the basis of a command of the control component 40, the information transmitted from the remote controller transmitting component 31 with information stored in the memory 16 to judge whether or not they are compatible with each other. As shown in FIG. 2 and FIG. 3, the audio notifying component 17 emits, on the basis of a command of the control component 40, a buzzer sound for a predetermined amount of time to perform notification to notify a user that the setting state of the universal remote controller 30 is erroneous. In the memory 16, setting temperature data relating to air conditioning operation and control data are correlated with the operation instruction signals that the remote controller 30 transmits and stored as a database for each model of air conditioner corresponding to the type of outdoor unit to which the indoor unit 1 is connected. That is, even the same air volume adjustment signals are made into a database and stored such that an air volume adjustment operation instruction signal in the dual cooling and heating air conditioner 100 and an air volume adjustment operation instruction signal in the cooling-only air conditioner 200 respectively differ. The control component 40 performs various types of control relating to air conditioning operation and, when it understands that the setting state of the universal remote controller 30 is erroneous in the judgment result in the judging component 15, performs processing to cause the audio notifying component 17 to notify the user thereof.

[0042] The universal remote controller 30 is mainly equipped with the remote controller transmitting component 31 and a setting changing switch 39. The remote controller transmitting component 31 uses instruction content operated by the user as the operation instruction signal corresponding to the model and transmits this unidirectionally rather than bidirectionally to the remote controller-compatible receiving component 14 of the indoor unit 1. The setting changing switch 39 is, as indicated by the dotted lines in FIG. 7 and FIG. 8, disposed in the vicinity of a battery box on the back surface of the universal remote controller 30 such that switching of settings corresponding to models of air conditioners becomes possible.

<By-Model Setting of Universal Remote Controller>

[0043] Further, in the air conditioner setting system, a flow of setting of the universal remote controller 30 relating to the dual cooling and heating air conditioner 100 where the dual cooling and heating outdoor unit 2 is connected to the indoor unit 1 is shown in the flowchart of FIG. 6.

[0044] In step S1, the outdoor transmitting component 25 transmits, to the outdoor-compatible receiving component 13 of the indoor unit 1, predetermined model information indicating that it is the dual cooling and heating outdoor unit 2 and not the cooling-only outdoor unit 3 in order to allow the indoor unit 1 to recognize the model of the outdoor unit to which the indoor unit 1 is connected. Then, the outdoor-compatible receiving component 13 receives, from the outdoor transmitting component 25 of the dual cooling and heating outdoor unit 2, the predetermined model information indicating that the outdoor unit is a dual cooling and heating model.

[0045] In step S2, the control component 40 of the indoor unit 1 stores, in the memory 16, this predetermined model information indicating that the outdoor unit is a dual cooling and heating model. Thus, the indoor unit 1 recognizes that it is configuring the dual cooling and heating air conditioner 100 together with the dual cooling and heating outdoor unit 2.

[0046] In step S3, the remote controller transmitting component 31 uses the setting content operated by the user as the operation instruction signal corresponding to the model and transmits this to the remote controller-compatible receiving component 14 of the indoor unit 1. Then, the remote controller-compatible receiving component 14 of the indoor unit 1 receives the operation instruction signal corresponding to the model from the remote controller transmitting component 31.

[0047] In step S4, the control component 40 of the indoor unit 1 causes the judging component 15 to compare the operation instruction signal received by the remote controller-compatible receiving component 14 and the content of the database corresponding to the predetermined model information (here, information indicating that the outdoor unit is a dual cooling and heating model) stored in the memory 16 to judge whether or not both sets of data are compatible with each other. Here, when the judgment result resulting from the judging component 15 is content where "both sets of data are compatible with each other", the flow moves to step S7. Further, when the judgment result resulting from the judging component 15 is content where "both sets of data are not compatible with each other", the flow moves to step S5.

[0048] In step S5, the control component 40 of the indoor unit 1 instructs the audio notifying component 17 to perform notification, and the audio notifying component 17 emits a buzzer sound for a predetermined amount of time.

[0049] In step S6, the user hearing the buzzer sound recognizes that the setting state of the universal remote

controller 30 is not compatible with the model of the air conditioner and switches the setting changing switch 39 of the universal remote controller 30. Thereafter, a signal different from the operation instruction signal corresponding to the model that was transmitted from the remote controller transmitting component 31 in step S3 becomes transmitted.

[0050] In step S7, the setting state of the universal remote controller 30 is a state compatible with the model of the air conditioner, so the control component 40 performs air conditioning operation control in response to the operation instruction signal that the remote controller transmitting component 31 has transmitted and that the remote controller-compatible receiving component 14 of the indoor unit 1 has received.

<Operation Instruction of Universal Remote Controller 30>

[0051] FIG. 7 shows the universal remote controller 30 that has been set so as to be compatible with the dual cooling and heating air conditioner 100, and FIG. 8 shows the universal remote controller 30 that has been set so as to be compatible with the cooling-only air conditioner 200.

[0052] The universal remote controller 30 includes an operate/stop button 32, a temperature setting button 33, a timer setting button 35, an operation switching button 36, a blowing direction changing button 37, a reset button 38, a liquid crystal display W that performs display corresponding to these (an operate/stop display portion, a temperature setting display portion 33W, a timer setting display portion 35W, an operating state display portion 36W, a blowing direction display portion 37W, etc.), and the aforementioned setting changing switch 39.

[0053] Here, as shown in FIG. 7, in a state where the setting changing switch 39 has been set to the dual cooling and heating side so as to be compatible with the dual cooling and heating air conditioner 100, four operating states of "dehumidifying", "cooling", "heating" and "blowing" are displayed in the operating state display portion 36W as indicated by arrow P in FIG. 7, and each time the user presses the operation switching button 36, the universal remote controller 30 transmits an operation instruction signal that sequentially switches the four settings. That is, during cooling operation, "cooling" is displayed on the operating state display portion 36W of the universal remote controller 30, and when the user presses the operation switching button 36 here, the display of the operating state display portion 36W of the universal remote controller 30 switches to "heating", and operation of the air conditioner 100 also switches to heating operation.

[0054] In contrast, as shown in FIG. 8, in a state where the setting changing switch 39 has been set to the cooling-only side so as to be compatible with the cooling-only air conditioner 200, there is no longer the display corresponding to the operation mode of "heating" and only

three operating states of "dehumidifying", "cooling" and "blowing" are displayed in the operating state display portion 36W as indicated by arrow P in FIG. 8, and each time the user presses the operation switching button 36, the universal remote controller 30 transmits an operation instruction signal that sequentially switches the three settings.

[0055] In this manner, the user performs setting of the universal remote controller 30 corresponding to the model of the air conditioner.

<Characteristics of Air Conditioner 100 Setting System of Present Embodiment>

(1)

[0056] The air conditioner setting system of the present embodiment simply transmits the operation instruction signal from the universal remote controller 30 to the remote controller-compatible receiving component 14 of the indoor unit 1, so that when the current setting state of the universal remote controller 30 is compatible with the model of the air conditioner, operation control is executed without having to change the setting state. Additionally, when the current setting state of the universal remote controller 30 is not compatible with the model of the air conditioner, the user becomes aware of the error in the setting state of the universal remote controller 30 because of the buzzer sound from the audio notifying component 17 and simply switches the setting changing switch 39, so the setting state of the universal remote controller 30 can be switched to a setting state that is compatible with the model of the air conditioner.

[0057] Thus, the user can easily understand whether or not the setting of the universal remote controller 30 is erroneous, and operation setting corresponding to the model of the air conditioner can be performed inexpensively by simply performing unidirectional signal transmission from the universal remote controller 30 to the indoor unit 1 without having to construct an expensive system such as a bidirectional communication system.

(2)

[0058] In the air conditioner setting system of the present embodiment, when the setting state of the universal remote controller 30 is compatible with the current model of the air conditioner, operation is controlled without particular notification from the audio notifying component 17 being performed, so the user does not have to particularly recognize whether or not the setting situation of the universal remote controller 30 is compatible with the model of the air conditioner.

<Modifications of Air Conditioner 100 Setting System of Present Embodiment>

[0059] In the air conditioner setting system of the pre-

ceding embodiment, there has been taken as an example and described a case where the audio notifying component 17 was disposed in the indoor unit 1 and where the audio notifying component 17 emitted a buzzer sound for a predetermined amount of time to allow the user to understand that the setting state of the universal remote controller 30 was erroneous.

[0060] However, the present invention is not limited to this; for example, the audio emitted from the audio notifying component 17 may also indicate specific instruction content such as "The current setting state of the universal remote controller is erroneous" or "Please change the setting state of the universal remote controller to XX".

[0061] Further, the notification is not limited to notification by audio; the notifying component may also perform notification by light (flashing, blinking, etc.) using an LED or the like or notification relating to the setting state of the universal remote controller 30 in a dot matrix or a liquid crystal display.

[0062] Moreover, it is not necessary for the notifying component to be disposed in the indoor unit 1, and the notifying component is not limited to a particular installation position as long as it can receive instructions from the control component 40 of the indoor unit 1.

(B)

[0063] In the air conditioner setting system of the preceding embodiment, mainly the dual cooling and heating air conditioner 100 has been taken as example and described.

[0064] In addition to this, as the present invention, for example, the cooling-only air conditioner 200 may, for example, be used for rooms accompanied by heat emission, such as a server room, or for food products that must be maintained at a low temperature.

[0065] Further, the dual cooling and heating air conditioner may, for example, be used for homes where it is to be used in order to realize a comfortable space throughout the year.

(C)

[0066] In the air conditioner setting system of the preceding embodiment, there has been taken as an example and described a case where data of operation instruction signals corresponding to models of air conditioners were stored beforehand in the memory 16 and where, on the basis of the data, the judging component judged whether or not the setting situation of the universal remote controller 30 was correct.

[0067] However, the present invention is not limited to this; for example, the invention may also be configured such that, when the only difference between the models is "dual cooling and heating" and "cooling-only", the audio notifying component 17 notifies the user only when the remote controller-compatible receiving component 14 has received an operation instruction signal indicating

"heating" operation from the universal remote controller 30 in the case of the model of the cooling-only air conditioner 200 where the indoor unit 1 and the cooling-only outdoor unit 3 are interconnected, so that the devices can be simplified and their costs can be lowered.

INDUSTRIAL APPLICABILITY

[0068] By utilizing the present invention, the invention can inexpensively perform, in air conditioners whose models differ depending on the type of outdoor unit that is connected to an indoor unit, judgment of matching between the models and remote controller settings by simply performing unidirectional signal transmission with respect to the indoor unit using a remote controller capable of operation setting corresponding to the models, so the invention is particularly useful as an air conditioner setting system whose models differ depending on the type of outdoor unit that is connected to an indoor unit.

Claims

1. An air conditioner (100, 200) setting system comprising:

plural predetermined outdoor units (2, 3) that identify plural models of air conditioners (100, 200);

a universal indoor unit (1) that configures the identified models of air conditioners (100, 200) by configuring a refrigerant circuit together with any of the plural predetermined outdoor units (2, 3); and

a universal remote controller (30) that includes

a setting switching component (39) that is capable of operation instruction compatible with the plural models of the air conditioners (100, 200) and switches the setting of the operation instruction in accordance with the model and

a remote controller transmitting component (31) that unilaterally transmits, to the universal indoor unit (1), the operation instruction signal corresponding to the setting state of the setting switching component (39),

wherein each of the predetermined outdoor units (2, 3) includes an outdoor transmitting component (25) that transmits its own predetermined model information identified beforehand to the universal indoor unit (1) configuring the refrigerant circuit together with any of the plural predetermined outdoor units, and the universal indoor unit (1) includes an outdoor-compatible receiving component (13) that receives the predetermined model information

from the outdoor transmitting components (25) of the predetermined outdoor units (2, 3) configuring the refrigerant circuit together with the universal indoor unit (1), a remote controller-compatible receiving component (14) that receives the operation instruction signal from the remote controller transmitting component (31) of the universal remote controller (30), a judging component (15) that compares the predetermined model information that has been received and the operation instruction signal that has been received to judge whether or not the setting of the universal remote controller is compatible with the model, and a notifying component (17) that performs predetermined notification on the basis of the judgment result resulting from the judging component (15).

2. The air conditioner (100, 200) setting system according to claim 1, wherein the universal indoor unit (1) further includes a control component (40) that performs operation control based on the operation instruction signal when the remote controller-compatible receiving component (14) has received the operation instruction signal compatible with a preset outdoor unit (2, 3) determined beforehand of the plural predetermined outdoor units (2, 3), and the notifying component (17) performs notification when it has been judged by the judging component (15) that the predetermined model information compatible with the preset outdoor unit (2, 3) and the operation instruction signal are not compatible with each other.
3. The air conditioner (100, 200) setting system according to claim 1 or 2, wherein the notifying component (17) notifies by emitting at least either one of sound or light.
4. The air conditioner (100, 200) setting system according to any one of claims 1 to 3, wherein a model that becomes a cooling-only air conditioner by configuring the refrigerant circuit together with the universal indoor unit (1) and a model that becomes a dual cooling and heating air conditioner by configuring the refrigerant circuit together with the universal indoor unit (1) are included as plural models of the predetermined outdoor units (2, 3).
5. The air conditioner (100, 200) setting system according to claim 4, wherein the judging component (15) causes the notifying component (17) to notify when the outdoor-compatible receiving component (13) of the universal indoor unit (1) is receiving information relating to the cooling-only air conditioner as the predetermined model information when the remote controller-compatible receiving component (14) of the

universal indoor unit (1) has received from the remote controller transmitting component (31) a signal requesting heating as the operation instruction signal.

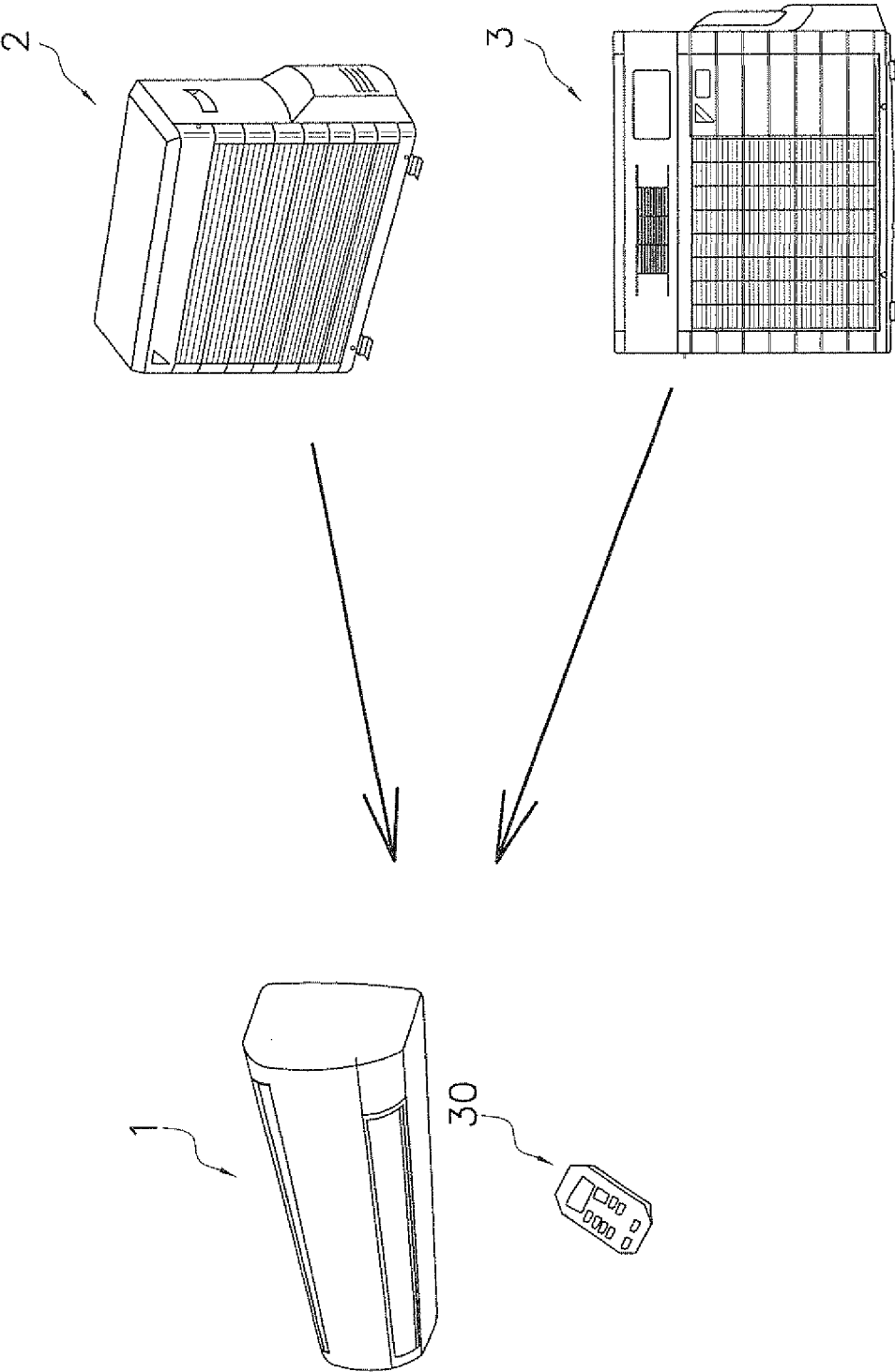


FIG. 1

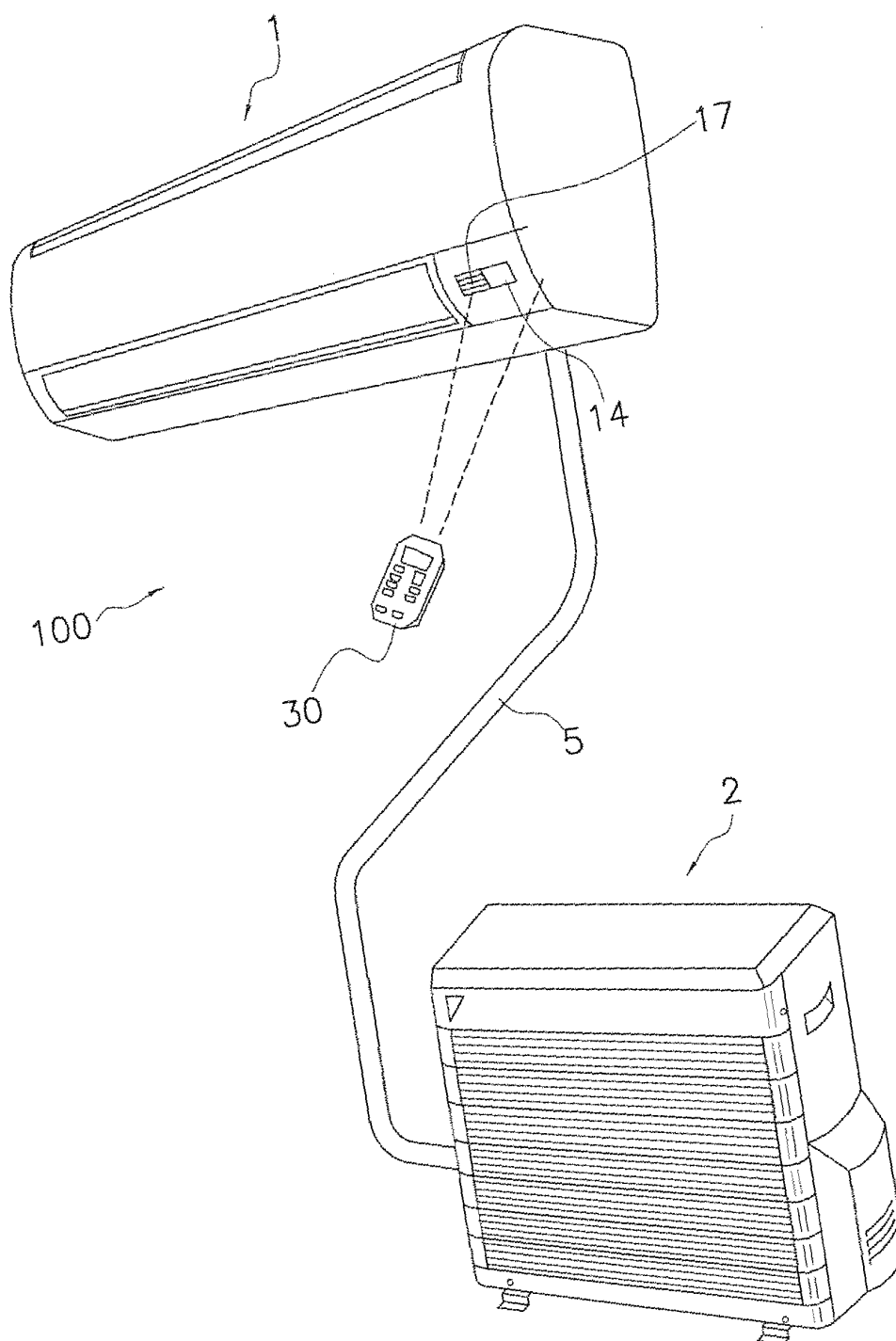


FIG. 2

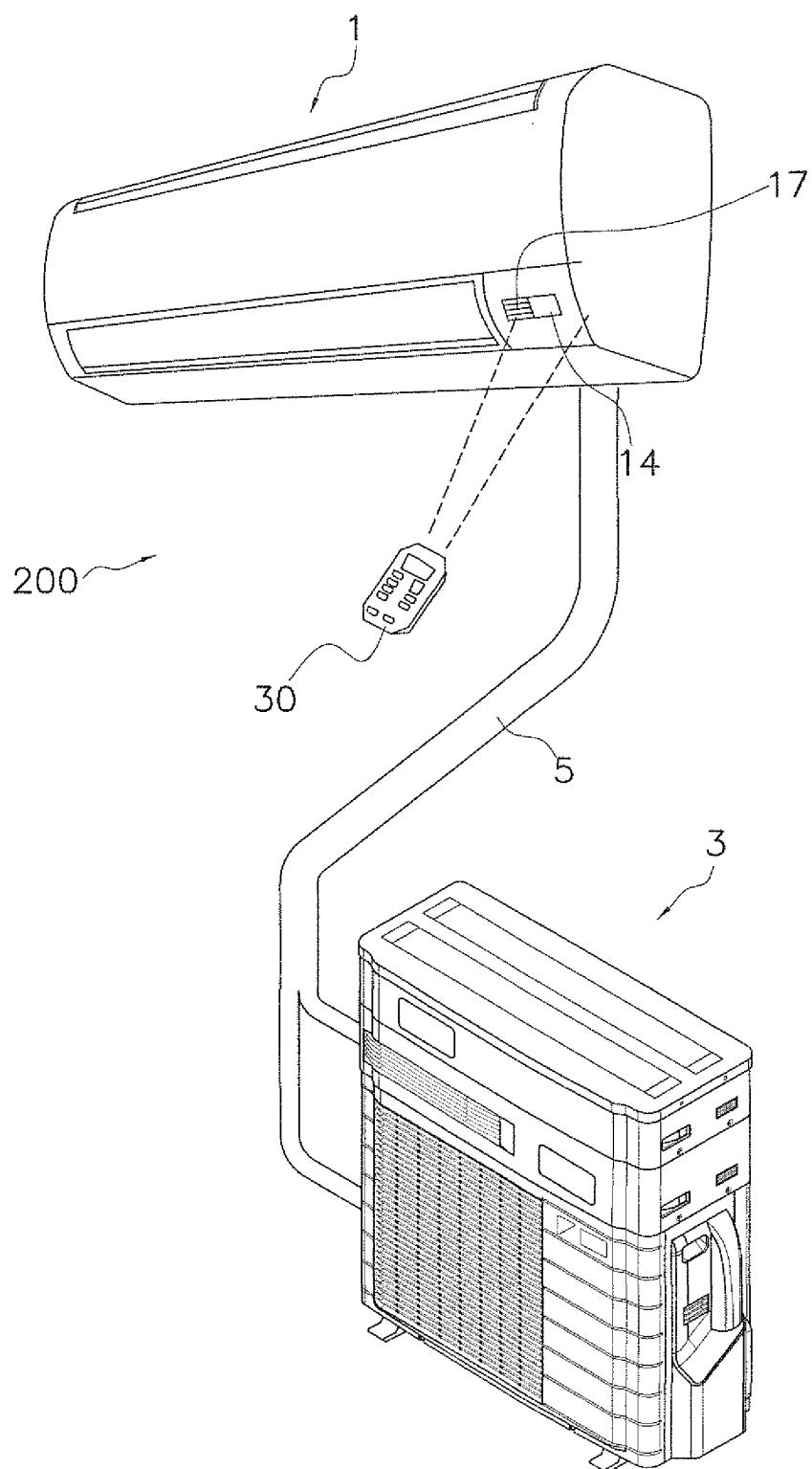
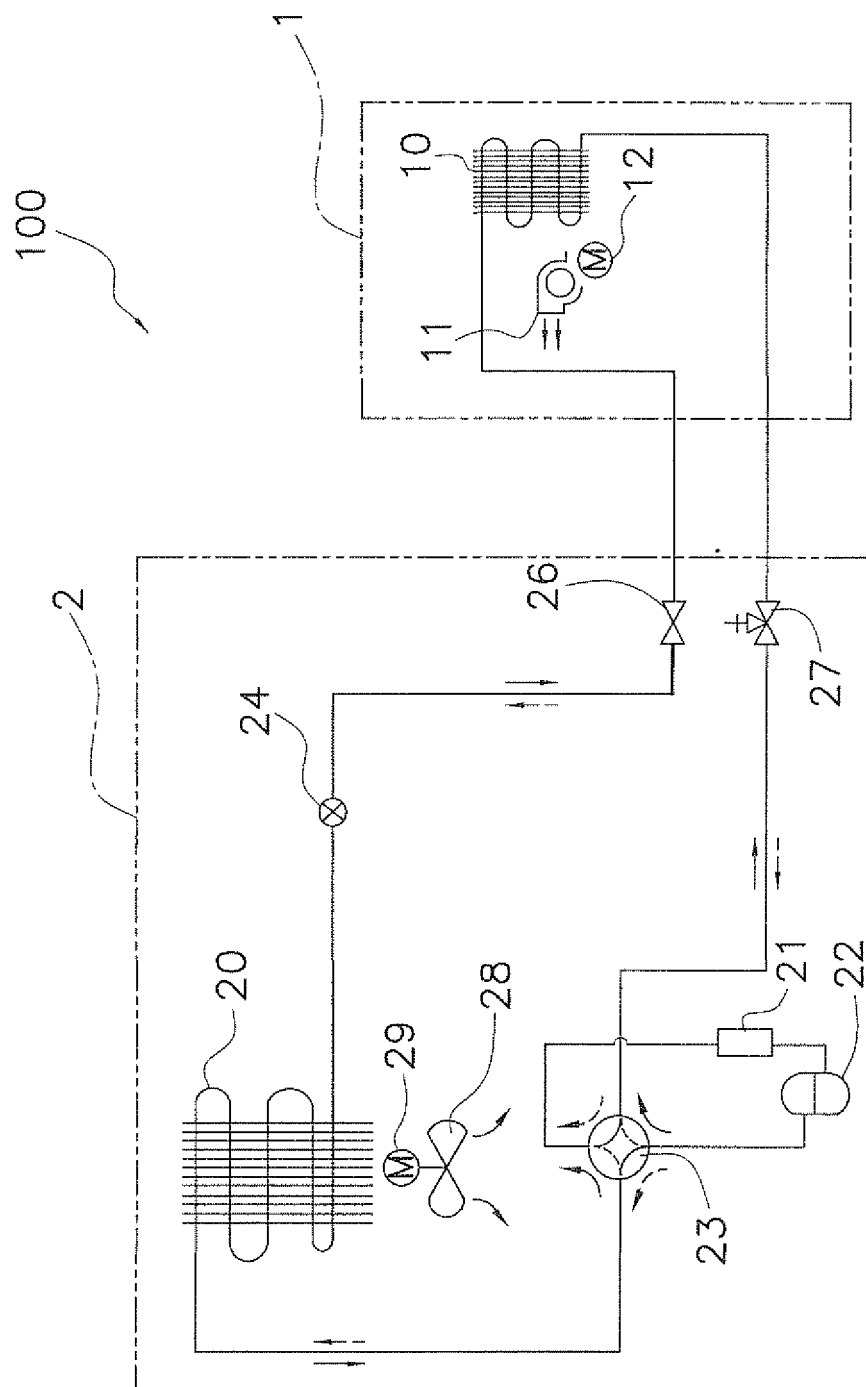


FIG. 3



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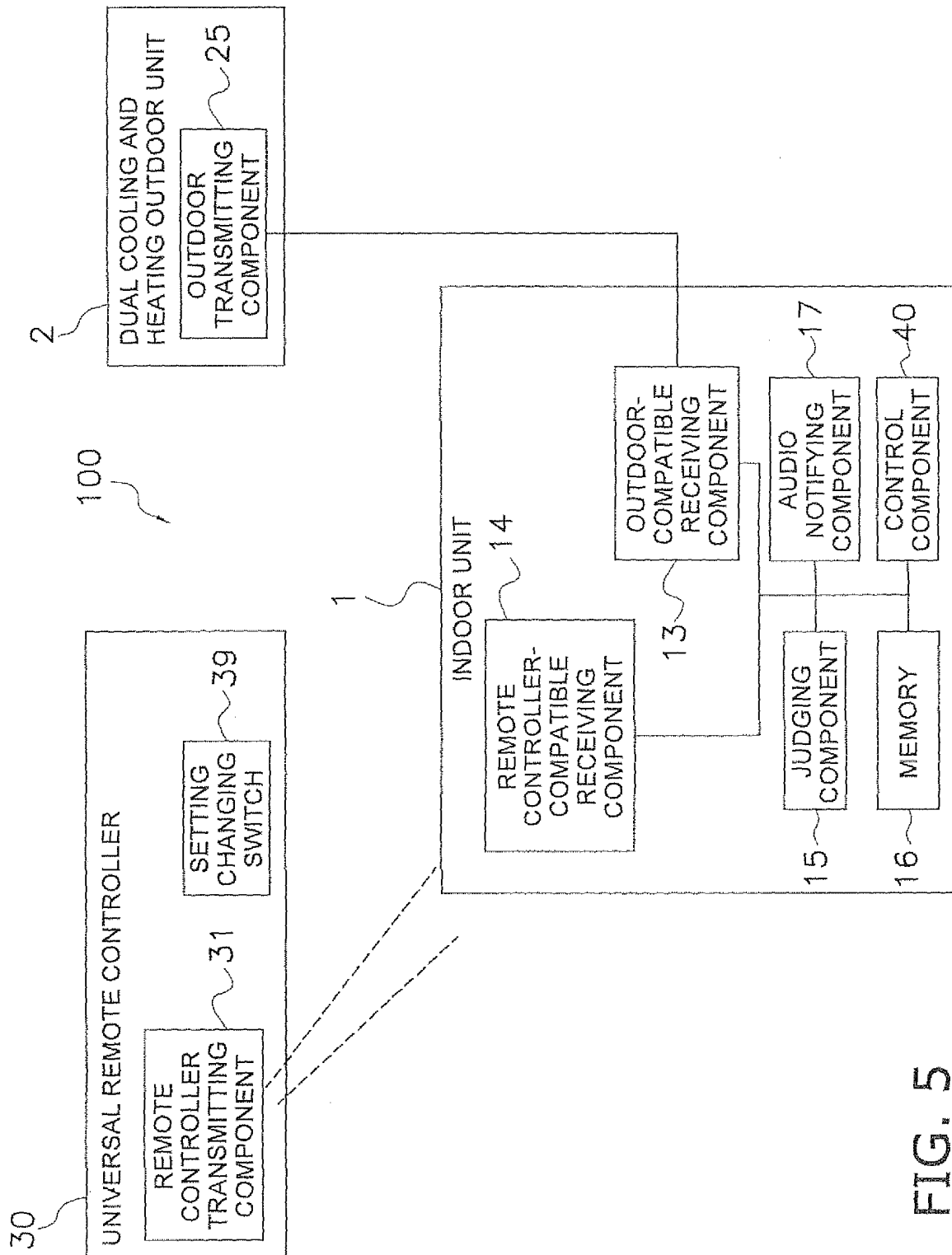


FIG. 5

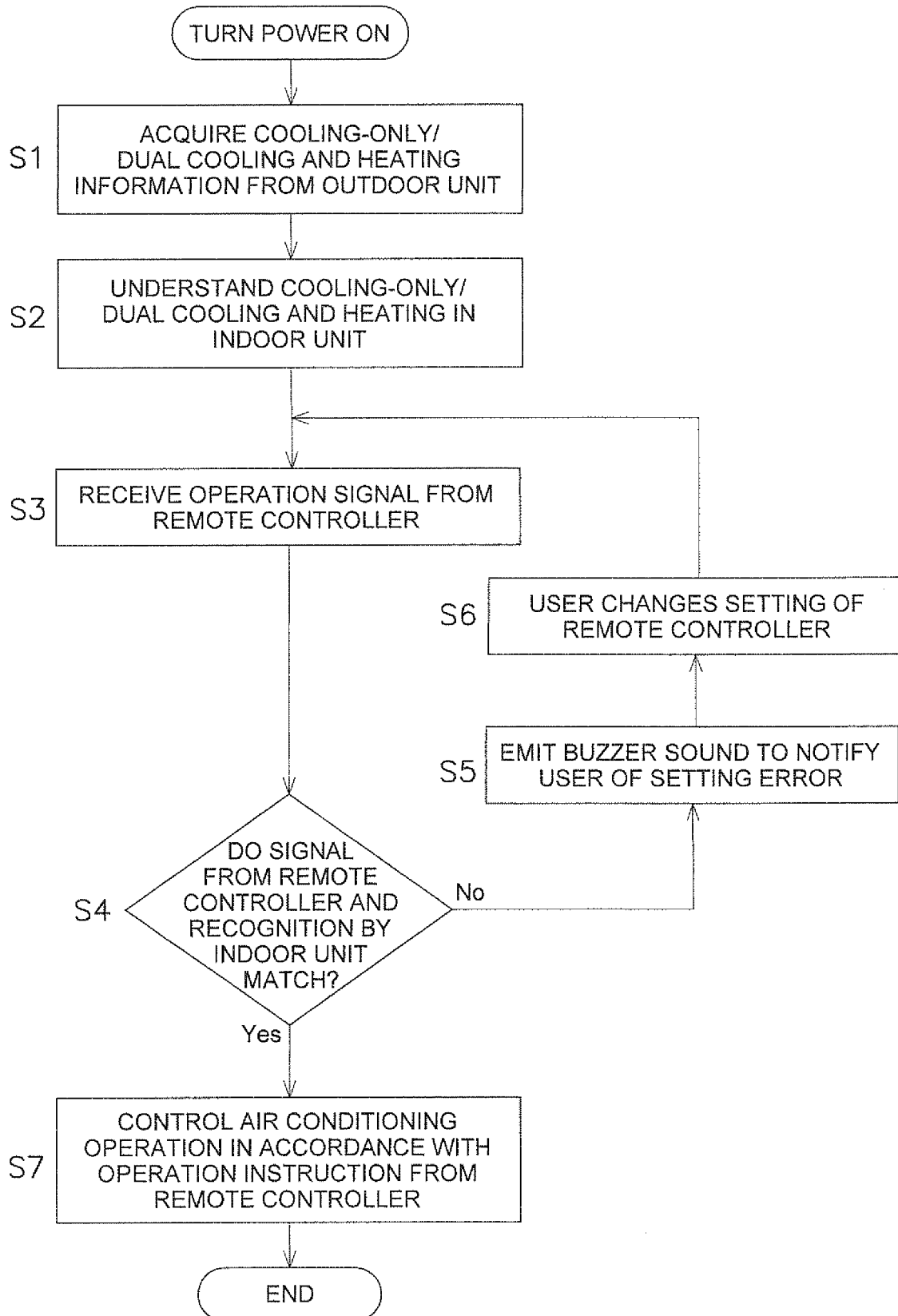


FIG. 6

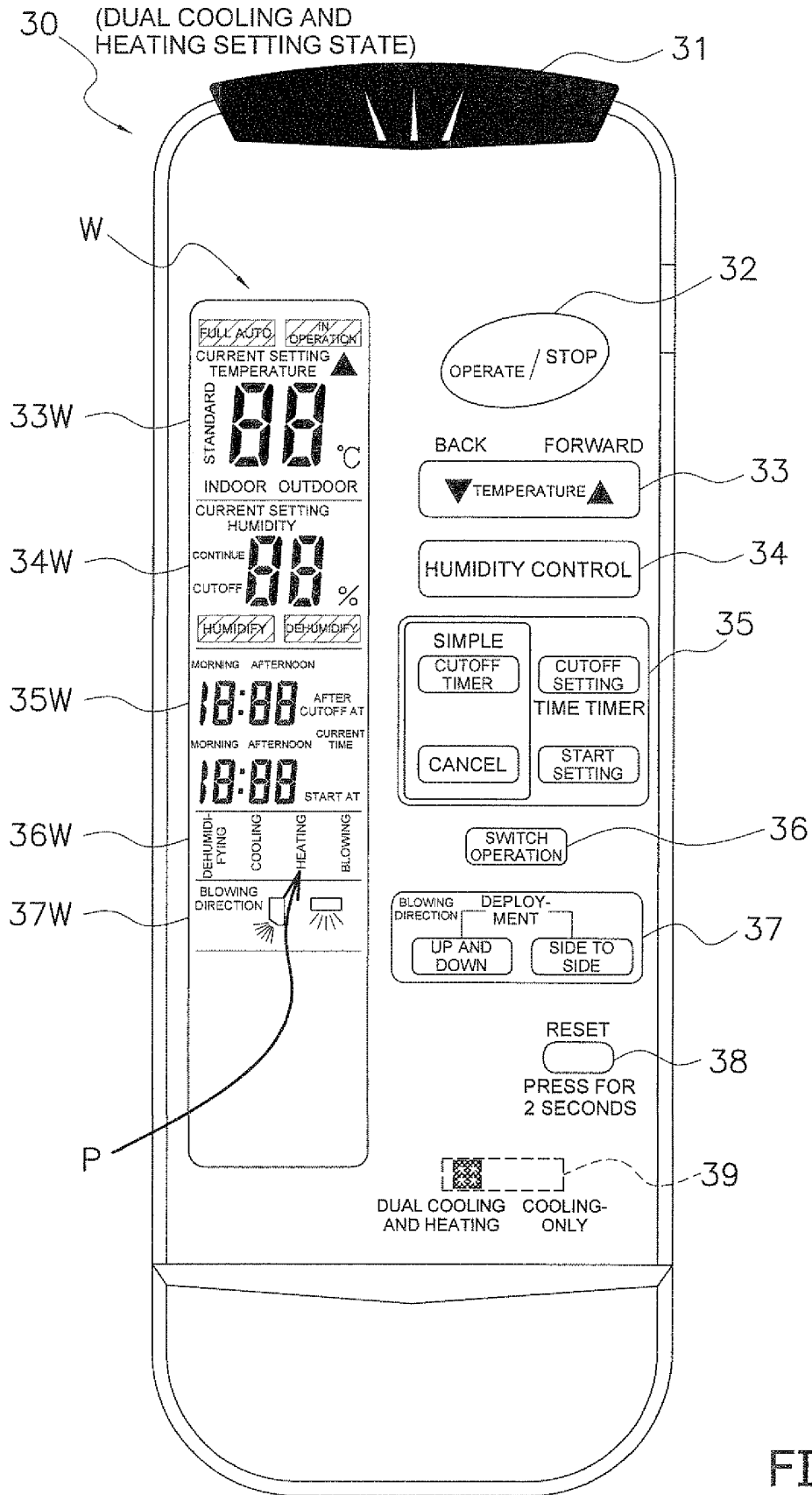


FIG. 7

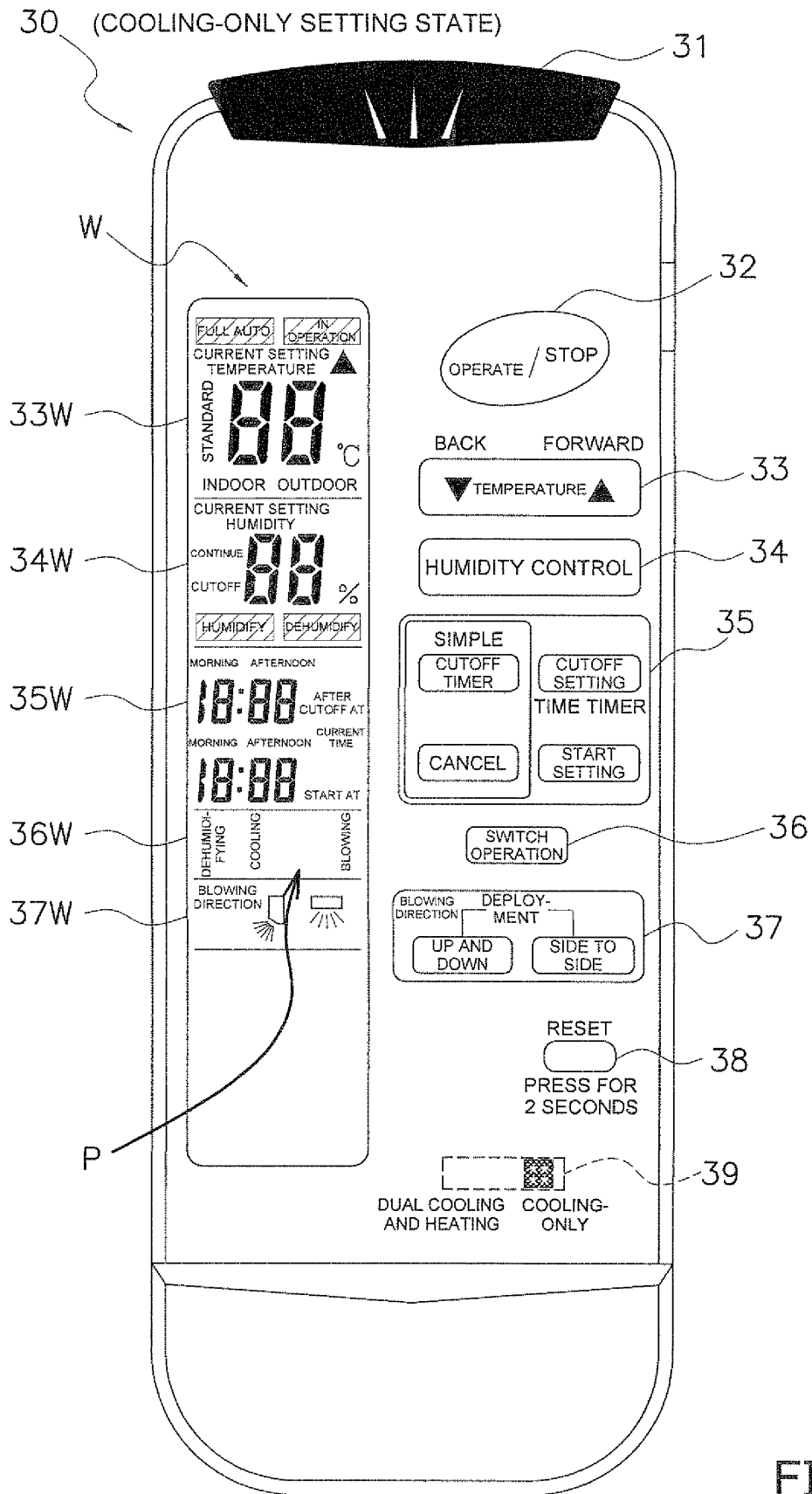


FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2007/069806

A. CLASSIFICATION OF SUBJECT MATTER F24F11/02 (2006.01) i		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) F24F11/02		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2007 Kokai Jitsuyo Shinan Koho 1971-2007 Toroku Jitsuyo Shinan Koho 1994-2007		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 11-018172 A (Diamond Electric Mfg. Corp.), 22 January, 1999 (22.01.99), Par. No. [0002]; Fig. 3 (Family: none)	1, 3, 4
Y	JP 2003-148790 A (Daikin Industries, Ltd.), 21 May, 2003 (21.05.03), Par. Nos. [0037] to [0042], [0051]; Fig. 2 (Family: none)	1, 3, 4
☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.		
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Date of the actual completion of the international search 05 November, 2007 (05.11.07)		Date of mailing of the international search report 20 November, 2007 (20.11.07)
Name and mailing address of the ISA/ Japanese Patent Office		Authorized officer
Facsimile No.		Telephone No.

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Patent documents cited in the description

- JP 6470641 A [0003]