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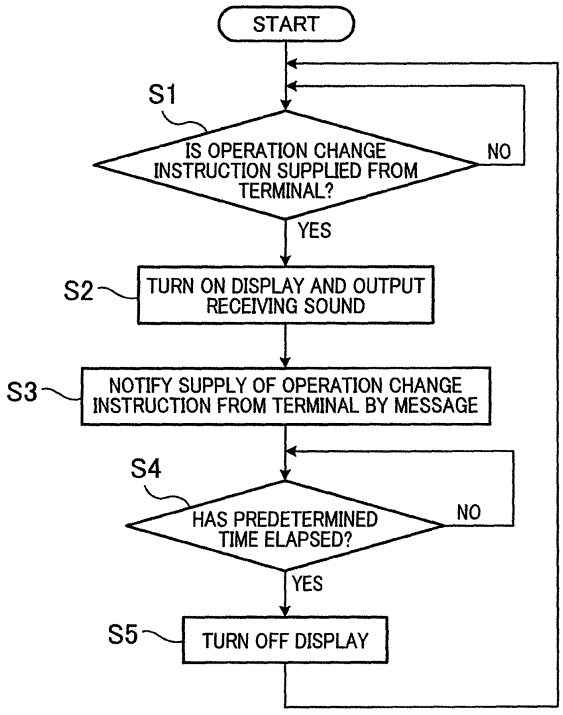
(54) AIR CONDITIONER

(57) In a known air conditioner, when the operation setting of the air conditioner is changed from a visiting destination or the like by a user using a terminal, another user in an air-conditioned space in which the air conditioner is provided may misunderstand the change as a malfunction of the air conditioner.

A sound notification controller (sound notification unit) of an air conditioner is arranged such that, when an operation change instruction is supplied from a terminal different from a remote controller which is an accessory of the air conditioner (S1: Yes), the air conditioner notifies by a message that the operation change instruction is supplied from the terminal, in response to the operation change instruction supplied from the terminal (S3).

FIG.3



EP 3 056 832 A1

Description

[Technical Field]

[0001] The present invention relates to an air conditioner in which operation setting is changeable based on an operation change instruction supplied from a terminal which is different from a remote controller which is an accessory of the air conditioner.

[Background Art]

[0002] There is a known air conditioner which is arranged such that the operation setting of the air conditioner is changeable from a visiting destination or the like by using a terminal such as a mobile phone, which is different from a remote controller which is an accessory of the air conditioner.

[Citation List]

[Patent Literatures]

[0003] [PTL 1] Japanese Unexamined Patent Publication No. 2002-243249

[Summary of Invention]

[Technical Problem]

[0004] With the air conditioner above, when a user changes the operation setting of the air conditioner from a visiting destination or the like by using a terminal, another user in an air-conditioned space in which the air conditioner is provided may misunderstand the change as a malfunction of the air conditioner.

[0005] An object of the present invention is to provide an air conditioner with which, when the operation setting of the air conditioner is changed by using a terminal which is different from a remote controller which is an accessory of the air conditioner, the change is not misunderstood as a malfunction of the air conditioner.

[Solution to Problem]

[0006] According to the first aspect of the invention, an air conditioner, in which operation setting is changeable based on an operation change instruction supplied from a terminal different from a remote controller which is an accessory of the air conditioner, includes a sound notification unit configured to notify predetermined information by sound, the sound notification unit notifying, by a message, that the operation change instruction is supplied from the terminal, in response to the operation change instruction supplied from the terminal.

[0007] In this air conditioner, because the supply of the operation change instruction from the terminal is notified by the message, a user in the air-conditioned space is able to recognize that the operation setting of the air conditioner is changed by the terminal. On this account, when the operation setting of the air conditioner is changed by the terminal which is different from the remote controller, the change is not misunderstood as a malfunction of the air conditioner.

[0008] According to the second aspect of the invention, the air conditioner of the first aspect is arranged such that the message includes a content of the operation change instruction supplied from the terminal.

[0009] In this air conditioner, because the message includes the content of the operation change instruction, the user in the air-conditioned space is able to recognize the content of the operation change instruction.

[0010] According to the third aspect of the invention, the air conditioner of the first or second aspect is arranged such that the sound notification unit outputs the message after outputting first receiving sound.

[0011] In this air conditioner, because the message is output after the receiving sound is output, sudden output of the message from the air conditioner is prevented.

[0012] According to the fourth aspect of the invention, the air conditioner of the third aspect is arranged such that the sound notification unit is capable of outputting second receiving sound in response to the operation change instruction supplied from the remote controller, and the second receiving sound is different from the first receiving sound.

[0013] In this air conditioner, because the receiving sound output when the operation setting is changed by the remote controller is different from the receiving sound output when the operation setting is changed by the terminal, it is possible to understand, based on the receiving sound, that the operation setting of the air conditioner is changed by the terminal. This further makes it easy to recognize that the operation setting of the air conditioner is changed by the terminal.

[0014] According to the fifth aspect of the invention, the air conditioner of any one of the first to fourth aspects is arranged such that the sound notification unit outputs the message when the operation change instruction supplied from the terminal is at least one of an operation start instruction and an operation stop instruction.

[0015] In this air conditioner, because the message is output when at least one of the operation start instruction and the operation stop instruction is supplied from the terminal, it is possible to recognize that the operation start or the operation stop, which are often misunderstood as a malfunction by another user in the air-conditioned space, is instructed by the terminal.

[0016] According to the sixth aspect of the invention, the air conditioner of any one of the first to fifth aspects further includes further comprising a human body detection unit configured to detect a person in an air-conditioned space, the sound notification unit outputting the message when a person is detected by the human body detection unit.

[0017] In this air conditioner, because the output of a

message is not carried out when no user is in the air-conditioned space, power saving is achieved.

[Advantageous Effects of Invention]

[0018] As described above, the following effects are achieved by the present invention.

[0019] According to the first aspect of the invention, because the supply of the operation change instruction from the terminal is notified by the message, a user in the air-conditioned space is able to recognize that the operation setting of the air conditioner is changed by the terminal. On this account, when the operation setting of the air conditioner is changed by the terminal which is different from the remote controller, the change is not misunderstood as a malfunction of the air conditioner.

[0020] According to the second aspect of the invention, because the message includes the content of the operation change instruction, the user in the air-conditioned space is able to recognize the content of the operation change instruction.

[0021] According to the third aspect of the invention, because the message is output after the receiving sound is output, sudden output of the message from the air conditioner is prevented.

[0022] According to the fourth aspect of the invention, because the receiving sound output when the operation setting is changed by the remote controller is different from the receiving sound output when the operation setting is changed by the terminal, it is possible to understand, based on the receiving sound, that the operation setting of the air conditioner is changed by the terminal. This further makes it easy to recognize that the operation setting of the air conditioner is changed by the terminal.

[0023] According to the fifth aspect of the invention, because the message is output when at least one of the operation start instruction and the operation stop instruction is supplied from the terminal, it is possible to recognize that the operation start or the operation stop, which are often misunderstood as a malfunction by another user in the air-conditioned space, is instructed by the terminal.

[0024] According to the sixth aspect of the invention, because the output of a message is not carried out when no user is in the air-conditioned space, power saving is achieved.

[Brief Description of Drawings]

[0025]

[FIG. 1] FIG. 1 is a circuit diagram of a refrigerant circuit of an air conditioner of an embodiment of the present invention.

[FIG. 2] FIG. 2 is a block diagram of the air conditioner shown in FIG. 1.

[FIG. 3] FIG. 3 is a flowchart of the operation of the air conditioner shown in FIG. 1.

[Description of Embodiments]

[0026] The following will describe an air conditioner 1 according to an embodiment of the present invention.

<Overall Structure of Air Conditioner>

[0027] As shown in FIG. 1, the air conditioner 1 of the present embodiment is provided with an indoor unit 2 provided inside a room and an outdoor unit 3 provided outside the room. The air conditioner 1 includes a refrigerant circuit which connects a compressor 10, a four-way valve 11, an outdoor heat exchanger 12, an expansion valve (decompression structure) 13, and an indoor heat exchanger 14 with one another. In the refrigerant circuit, the outdoor heat exchanger 12 is connected with a discharge port of the compressor 10 via the four-way valve 11, and the expansion valve 13 is connected with the outdoor heat exchanger 12. The expansion valve 13 is connected with one end of the indoor heat exchanger 14, whereas an inlet port of the compressor 10 is connected with the other end of the indoor heat exchanger 14 via the four-way valve 11.

[0028] The air conditioner 1 can be driven in one of an automatic operation, a cooling operation, a heating operation, a dehumidification operation, and a ventilation operation. In the air conditioner 1, operation start, operation switching, or operation stop is performed by selecting one of the operations by using a remote controller 4 which is an accessory of the air conditioner 1 or by using a terminal 5 held by a user. The terminal 5 held by the user is, for example, a liquid crystal terminal such as a smart phone, and is able to supply operation change instructions (operation start, operation stop, indoor temperature setting, etc.) to the air conditioner 1 over a network.

[0029] In the cooling operation and the dehumidification operation, as indicated by solid arrows in the figure, a cooling cycle or a dehumidification cycle is formed such that refrigerant discharged from the compressor 10 flows from the four-way valve 11 to the outdoor heat exchanger 12, the expansion valve 13, and the indoor heat exchanger 14 in this order, and the refrigerant having passed the indoor heat exchanger 14 returns to the compressor 10 via the four-way valve 11. In other words, the outdoor heat exchanger 12 functions as a condenser whereas the indoor heat exchanger 14 functions as an evaporator.

[0030] In the meanwhile, in the heating operation, as the four-way valve 11 is switched, as indicated by broken line arrows in the figure, a heating cycle is formed such that refrigerant discharged from the compressor 10 flows from the four-way valve 11 to the indoor heat exchanger 14, the expansion valve 13, and the outdoor heat exchanger 12 in this order, and the refrigerant having passed the outdoor heat exchanger 12 returns to the compressor 10 via the four-way valve 11. In other words, the indoor heat exchanger 14 functions as a condenser whereas the outdoor heat exchanger 12 functions as an

evaporator.

[0031] In the indoor unit 2, an indoor fan 16 is provided to oppose the indoor heat exchanger 14. At the outlet port of the indoor unit 2, an up-down flap is provided to change the blowing direction in up-down directions. As shown in FIG. 1, the indoor unit 2 includes a speaker 20 configured to, for example, notify predetermined information by sound, a display 21 (display device) including, for example, LED elements, and a human body sensor 25 (human body detection unit) configured to detect a person in the room (an air-conditioned space in which the air conditioner 1 is provided).

[0032] As shown in FIG. 2, a controller 30 of the air conditioner 1 is connected with the speaker 20, the display 21, the human body sensor 25, and a remote controller 4 which is an accessory of the air conditioner 1. The controller 30 of the air conditioner 1 changes the operation of the air conditioner 1 based on an operation change instruction supplied from the terminal 5 of the user. The terminal 5 of the user is, for example, a liquid crystal terminal such as a smart phone, and is able to supply operation change instructions (operation start, operation stop, indoor temperature setting, etc.) to the air conditioner 1 over a network. The controller 30 therefore controls the operation of the air conditioner 1 based on instructions (operation start, operation stop, indoor temperature setting, etc.) from the remote controller 4 or the terminal 5 of the user. A such, in the air conditioner 1 of the present embodiment, the operation state is changed not only based on the operation change instructions (operation start, operation stop, indoor temperature setting, etc.) supplied from the remote controller 4 but also based on the operation change instructions (operation start, operation stop, indoor temperature setting, etc.) supplied from the terminal 5 of the user.

[0033] The remote controller 4 is provided with an operation setting section 6 (setting unit) by which setting of each function of the air conditioner 1 is changed.

[0034] By operating this operation setting section 6, the user is able to enable or disable a response notification in response to the operation change instructions (operation start, operation stop, indoor temperature setting, etc.) supplied from the remote controller 4. The response notification includes a sound response notification and a displayed response notification. The sound response notification includes, for example, a message notification of notifying, as a message, the content of an operation change instruction supplied from the remote controller 4, and a receiving sound notification of outputting receiving sound such as "single beep" in response to an operation change instruction supplied from the remote controller 4. As to the message notification (sound response notification), when, for example, an operation start instruction is supplied from the remote controller 4, a message "Operation Starts." is output from the speaker 20 in response to the operation start instruction. As to the displayed response notification, the LED elements of the display 21 (display device) are turned on in response to the operation change instruction supplied from the remote controller 4. The user is allowed to select, by operating the operation setting section 6 of the remote controller 4, whether to enable each of the message notification, the receiving sound notification, and the displayed response notification. On this account, when the user feels that the message notification, the receiving sound notification, and/or the displayed response notification is a nuisance, the user is allowed to disable the message notification, the receiving sound notification, and/or the displayed response notification. In this air conditioner 1, when the message notification is enabled whereas the receiving sound notification is disabled, the receiving sound notification and the message notification are prohibited, and hence the receiving sound notification and the message notification are not performed even if the operation change instruction is supplied from the remote controller 4.

[0035] The controller 30 of the air conditioner 1 is formed of plural pieces of hardware such as a CPU, a ROM, and a RAM. The ROM stores a control program for controlling the controller 30 or the like. As shown in FIG. 2, the controller 30 includes a notification controller 31 (notification unit).

[0036] This notification controller 31 (notification unit) includes a sound notification controller 32 (sound notification unit) and a displayed notification controller 33. The sound notification controller 32 is able to perform a message notification of, for example, notifying the content of an operation change instruction supplied to the air conditioner 1 as a message and a receiving sound notification of outputting receiving sound such as "single beep" in response to an operation change instruction supplied to the air conditioner 1. Furthermore, by the displayed notification controller 33, a displayed response notification of turning on the LED elements of the display 21 can be performed in response to an operation change instruction supplied to the air conditioner 1. To begin with, the sound notification controller 32 will be detailed.

[0037] The sound notification controller 32 outputs receiving sound or a message by the speaker 20. When the receiving sound notification and the message notification are enabled, as an operation change instruction (operation start, operation stop, indoor temperature setting, etc.) is supplied from the remote controller 4, the sound notification controller 32 outputs, for example, receiving sound (second receiving sound) such as "single beep" or "two beeps" in response to the operation change instruction. After outputting the receiving sound (second receiving sound), the sound notification controller 32 notifies, as a message, the content of the operation change instruction supplied from the remote controller 4. For example, when an operation start instruction is supplied from the remote controller 4, the sound notification controller 32 outputs receiving sound (second receiving sound) "single beep", and then outputs a message "Operation Starts.".

[0038] In the meanwhile, when the receiving sound no-

tification is enabled whereas the message notification is disabled, no message is output and only the receiving sound (second receiving sound) is output when an operation change instruction is supplied from the remote controller 4. When the receiving sound notification is disabled, no matter whether the message notification is enabled or disabled, no receiving sound (second receiving sound) is output and no message is output even if an operation change instruction is supplied from the remote controller 4.

[0039] In the meanwhile, when an operation change instruction (operation start, operation stop, indoor temperature setting, etc.) is supplied from the terminal 5, the sound notification controller 32 outputs receiving sound (first receiving sound) such as "single beep" or "two beeps" in response to the operation change instruction. After outputting the receiving sound (first receiving sound), the sound notification controller 32 performs the message notification to notify by a message that the operation change instruction has been supplied from the terminal 5. An example of the message notifying that the operation change instruction has been supplied from the terminal 5 is a message "Operated from Smart Phone.".

[0040] In particular, when the operation change instruction from the terminal 5 is an operation start instruction or an operation stop instruction, in response to the operation change instruction, the sound notification controller 32 outputs the receiving sound (first receiving sound) such as "single beep" or "two beeps", and then notifies, as the message notification, that the operation change instruction has been supplied from the terminal 5 and the content of that operation change instruction. For example, when the operation start instruction is supplied from the terminal 5, the sound notification controller 32 outputs the receiving sound (first receiving sound) "single beep" and then outputs a message "Operated from Smart Phone. Start Operation. ". In this message, the part "Operated from Smart Phone." is a message indicating that the operation change instruction has been supplied from the terminal 5, whereas the part "Start Operation. " is a message indicating the content of the operation change instruction. On this account, when the operation change instruction from the terminal 5 is either the operation start instruction or the operation stop instruction, the message includes the content of the operation change instruction supplied from the terminal 5. When the operation change instruction from the terminal 5 is an instruction other than the operation start instruction and the operation stop instruction (e.g., indoor temperature setting, indoor moisture setting, wind direction setting, wind volume setting, or a change in the operation mode such as the cooling operation and the heating operation), the sound notification controller 32 outputs the receiving sound (first receiving sound) and then outputs a message to notify that the operation change instruction has been supplied from the terminal 5, but does not notify the content of that operation change instruction. For example, when an instruction to change the indoor temperature is supplied from the terminal 5, the sound notification controller 32 outputs the receiving sound (first receiving sound) "single beep" and then only outputs the message "Operated from Smart Phone.".

[0041] The receiving sound (first receiving sound) output in response to an operation change instruction supplied from the terminal 5 is identical with the receiving sound (second receiving sound) output in response to an operation change instruction supplied from the remote controller 4. Furthermore, the sound notification controller 32 performs the receiving sound notification and the message notification in response to all operation change instructions supplied from the terminal 5.

[0042] When the displayed response notification is enabled, as an operation change instruction (operation start, operation stop, indoor temperature setting, etc.) is supplied from the remote controller 4, the displayed notification controller 33 performs, for example, the displayed response notification of turning on the LED elements of the display 21 for a predetermined time, in response to that operation change instruction. In the meanwhile, when the displayed response notification is disabled, the displayed notification controller 33 does not turn on the LED elements of the display 21 even if an operation change instruction is supplied from the remote controller 4. Turning on the LED elements of the display 21 encompasses flickering of the LED elements of the display 21.

[0043] When an operation change instruction (operation start, operation stop, indoor temperature setting, etc.) is supplied from the terminal 5, the displayed notification controller 33 performs, for example, the displayed response notification of turning on the LED elements of the display 21 for a predetermined time, in response to that operation change instruction. In this regard, between the displayed response notification performed in response to an operation change instruction supplied from the terminal 5 and the displayed response notification performed in response to an operation change instruction supplied from the remote controller 4, the turn-on time, flickering frequency, and the like are all identical. The displayed notification controller 33 performs the displayed response notification in response to all operation change instructions supplied from the terminal 5.

[0044] When the message notification based on an operation change instruction from the remote controller 4 is prohibited, the sound notification controller 32 performs the message notification in response to an operation change instruction supplied from the terminal 5. In other words, even if the message notification based on an operation change instruction from the remote controller 4 is prohibited, when an operation change instruction from the terminal 5 is the operation start instruction or the operation stop instruction, a message is output to notify that the operation change instruction has been supplied from the terminal 5 and to notify the content of that operation change instruction. Furthermore, even if the message notification based on an operation change instruction from the remote controller 4 is prohibited, a message is

output to notify that the operation change instruction has been supplied from the terminal 5, when the operation change instruction from the terminal 5 is an instruction other than the operation start instruction and the operation stop instruction. The cases where the message notification based on an operation change instruction from the remote controller 4 is prohibited correspond to cases where the receiving sound notification is disabled or the message notification is disabled.

[0045] When the receiving sound notification based on an operation change instruction from the remote controller 4 is prohibited (i. e., the receiving sound notification is disabled), the sound notification controller 32 performs the receiving sound notification of outputting the receiving sound (first receiving sound), when an operation change instruction is supplied from the terminal 5 different from the remote controller 4. When the displayed response notification based on an operation change instruction from the remote controller 4 is prohibited (i.e. , the displayed response notification is disabled), the displayed notification controller 33 performs the displayed response notification of turning on the LED elements of the display 21 when an operation change instruction is supplied from the terminal 5 different from the remote controller 4.

[0046] Therefore, in this air conditioner, when, for example, the message notification based on an operation change instruction from the remote controller 4 is prohibited, if an operation change instruction is supplied from the terminal 5, the supply of the operation change instruction from the terminal 5 is notified as a message. On this account, when the user changes the operation setting of the air conditioner 1 by using the terminal 5 from, for example, a visiting destination, another user in the room can easily understand that the operation setting of the air conditioner 1 is changed by the terminal 5. Furthermore, in this air conditioner, when, for example, the displayed response notification based on an operation change instruction from the remote controller 4 is prohibited, if an operation change instruction is supplied from the terminal 5, the displayed response notification is carried out. On this account, when the user changes the operation setting of the air conditioner 1 by using the terminal 5 from, for example, a visiting destination, another user in the room can easily understand that the operation setting of the air conditioner 1 is changed by the terminal 5. In the present invention, cases where the sound response notification based on an operation change instruction from the remote controller 4 is prohibited correspond to cases where the receiving sound notification and the message notification based on an operation change instruction from the remote controller 4 are prohibited.

<Flow>

[0047] Now, the operations (flow) of the air conditioner 1 will be described with reference to FIG. 3.

[0048] To begin with, whether an operation change instruction is supplied from the terminal 5 is determined, and this determination is repeated until an operation change instruction is supplied (S1). When the operation change instruction is supplied (S1: Yes), the display 21 is turned on and the receiving sound (first receiving sound) is output (S2). After the output of the receiving sound (first receiving sound), the supply of the operation change instruction from the terminal 5 is notified by a message (S3) . Subsequently, whether a predetermined time elapses from the turning on of the display 21 is determined, and this determination is repeated until the predetermined time elapses (S4) . When the predetermined time elapses (S5: Yes), the display 21 is turned off. Then the process returns to the step S1.

<Characteristics of Air Conditioner of Present Embodiment>

[0049] The air conditioner 1 of the present embodiment has the following characteristics.

[0050] In the air conditioner 1 of the present embodiment, because the supply of an operation change instruction from the terminal 5 (operation start, operation stop, indoor temperature setting, etc.) is notified by a message, a user in the room (i.e., the air-conditioned space in which the air conditioner 1 is provided) is able to recognize that the operation setting of the air conditioner 1 is changed by the terminal 5. On this account, when the operation setting of the air conditioner 1 is changed by the terminal 5 which is different from the remote controller 4, the change is not misunderstood as a malfunction of the air conditioner 1.

[0051] In addition to the above, with the air conditioner 1 of the present embodiment, because a message includes the content of an operation change instruction, a user in the room is able to recognize the content of the operation change instruction.

[0052] In addition to the above, with the air conditioner 1 of the present embodiment, because a message is output after the receiving sound (first receiving sound) is output, the message is not suddenly output from the air conditioner 1.

[0053] While the embodiment of the present invention has been described, it should be noted that the scope of the invention is not limited to the above-described embodiment. The scope of the present invention is defined by the appended claims rather than the foregoing description of the embodiment, and the present invention is intended to embrace all alternatives, modifications and variances which fall within the scope of the appended claims.

[First Variation]

[0054] Now, an air conditioner according to First Variation will be described. In the embodiment above, the receiving sound (first receiving sound) output in response

to an operation change instruction supplied from the terminal 5 is identical with the receiving sound (second receiving sound) output in response to an operation change instruction supplied from the remote controller 4. In this regard, first receiving sound is different from second receiving sound in the air conditioner of First Variation. For example, when the first receiving sound is receiving sound of "two beeps", the second receiving sound is receiving sound of "single beep".

[0055] In the air conditioner of First Variation, because the receiving sound (second receiving sound) output when the operation setting is changed by the remote controller 4 is different from the receiving sound (first receiving sound) output when the operation setting is changed by the terminal 5, it is possible to understand, based on the receiving sound, that the operation setting of the air conditioner is changed by the terminal 5. This further makes it easy to understand that the operation setting of the air conditioner is changed by the terminal 5.

[Second Variation]

[0056] Now, an air conditioner of Second Variation will be described. In the embodiment above, the notification controller 31 outputs a message in response to all operation change instructions supplied from the terminal 5. In this regard, the air conditioner of Second Variation is arranged such that, a message is output when an operation change instruction supplied from the terminal 5 is the operation start instruction or the operation stop instruction, but no message is output when the operation change instruction is one of the other operation change instructions (e.g., indoor temperature setting, indoor moisture setting, wind direction setting, wind volume setting, or a change in the operation mode such as the cooling operation and the heating operation).

[0057] With the air conditioner of Second Variation, because a message is output when the operation start instruction or the operation stop instruction is supplied from the terminal 5, it is possible to recognize that the operation start or the operation stop, which are often misunderstood as a malfunction by another user in the room, is instructed by the terminal 5. Furthermore, it is possible to avoid annoying message notification when one of the other operation change instructions (e.g., indoor temperature setting, indoor moisture setting, wind direction setting, wind quantity setting, or a change in the operation mode such as the cooling operation and the heating operation), which are less likely to be misunderstood as a malfunction by a user in the room, is supplied.

[Third Variation]

[0058] Now, an air conditioner of Third Variation will be described. In the embodiment above, no matter whether a person is in the room (the air-conditioned space in which the air conditioner 1 is provided), the notification controller 31 outputs a message in response to all operation change instructions supplied from the terminal 5. In this regard, in the air conditioner of Third Variation, a message is output in response to an operation change instruction supplied from the terminal 5 when a person is detected by the human body sensor 25, and no message is output in response to an operation change instruction supplied from the terminal 5 when no one is detected by the human body sensor 25.

[0059] Because in the air conditioner of Third Variation the output of a message is not carried out when no user is in the air-conditioned space, power saving is achieved.

[Other Variations]

[0060] In the embodiment above, when an instruction (e.g., indoor temperature setting, indoor moisture setting, wind direction setting, wind quantity setting, or a change in the operation mode such as the cooling operation and the heating operation) other than the operation start instruction and the operation stop instruction is supplied as an operation change instruction from the terminal 5, the content of that operation change instruction is not notified. Alternatively, the content of the operation change instruction may be notified as a message. For example, while in the embodiment above only a message "Operated from Smart Phone." is output when an instruction to change the set temperature of the indoor temperature is supplied from the terminal 5, a message "Operated from Smart Phone. Change Set Temperature." including the content of the operation change instruction may be output.

[0061] In addition to the above, while in the embodiment above the notification controller 31 outputs a message in response to all operation change instructions supplied from the terminal 5, a message may be output when an operation change instruction supplied from the terminal 5 is the operation start instruction or the operation stop instruction as in Second Variation, a message may be output only when the operation change instruction from the terminal 5 is the operation start instruction, or a message may be output only when the operation change instruction supplied from the terminal 5 is the operation stop instruction.

[0062] In addition to the above, while in the embodiment above a message may include the content of an operation change instruction supplied from the terminal 5, the content of an operation change instruction may not be included. As such, when an operation change instruction is supplied from the terminal 5, only the supply of the operation change instruction from the terminal 5 may be notified by a message (e.g. , the message only notifies that "Operated from Smart Phone.").

[0063] In addition to the above, while in the embodiment above the receiving sound notification, the message notification, and the displayed response notification are carried out when an operation change instruction is supplied from the terminal 5, only the message notification may be carried out. As such, the receiving sound

(first receiving sound) may not be output before the output of a message.

[0064] In addition to the above, while in the embodiment above the terminal 5 different from the remote controller 4 is able to supply an operation change instruction to the air conditioner 1 over a network, the terminal 5 may be able to supply an operation change instruction to the air conditioner 1 without the intermediary of a network.

[Industrial Applicability]

[0065] By the present invention, when the operation setting of an air conditioner is changed by using a terminal which is different from a remote controller which is an accessory of the air conditioner, the change is not misunderstood as a malfunction of the air conditioner.

[Reference Signs List]

[0066]

1 AIR CONDITIONER
4 REMOTE CONTROLLER
5 TERMINAL
25 HUMAN BODY SENSOR (HUMAN BODY DETECTION UNIT)
32 SOUND NOTIFICATION CONTROLLER (SOUND NOTIFICATION UNIT)

Claims

1. An air conditioner in which operation setting is changeable based on an operation change instruction supplied from a terminal different from a remote controller which is an accessory of the air conditioner, comprising a sound notification unit configured to notify predetermined information by sound,
the sound notification unit notifying, by a message, that the operation change instruction is supplied from the terminal, in response to the operation change instruction supplied from the terminal.

2. The air conditioner according to claim 1, wherein, the message includes a content of the operation change instruction supplied from the terminal.

3. The air conditioner according to claim 1 or 2, wherein, the sound notification unit outputs the message after outputting first receiving sound.

4. The air conditioner according to claim 3, wherein, the sound notification unit is capable of outputting second receiving sound in response to the operation change instruction supplied from the remote controller, and
the second receiving sound is different from the first receiving sound.

5. The air conditioner according to any one of claims 1 to 4, wherein, the sound notification unit outputs the message when the operation change instruction supplied from the terminal is at least one of an operation start instruction and an operation stop instruction.

6. The air conditioner according to any one of claims 1 to 5, further comprising a human body detection unit configured to detect a person in an air-conditioned space, the sound notification unit outputting the message when a person is detected by the human body detection unit.

FIG.1

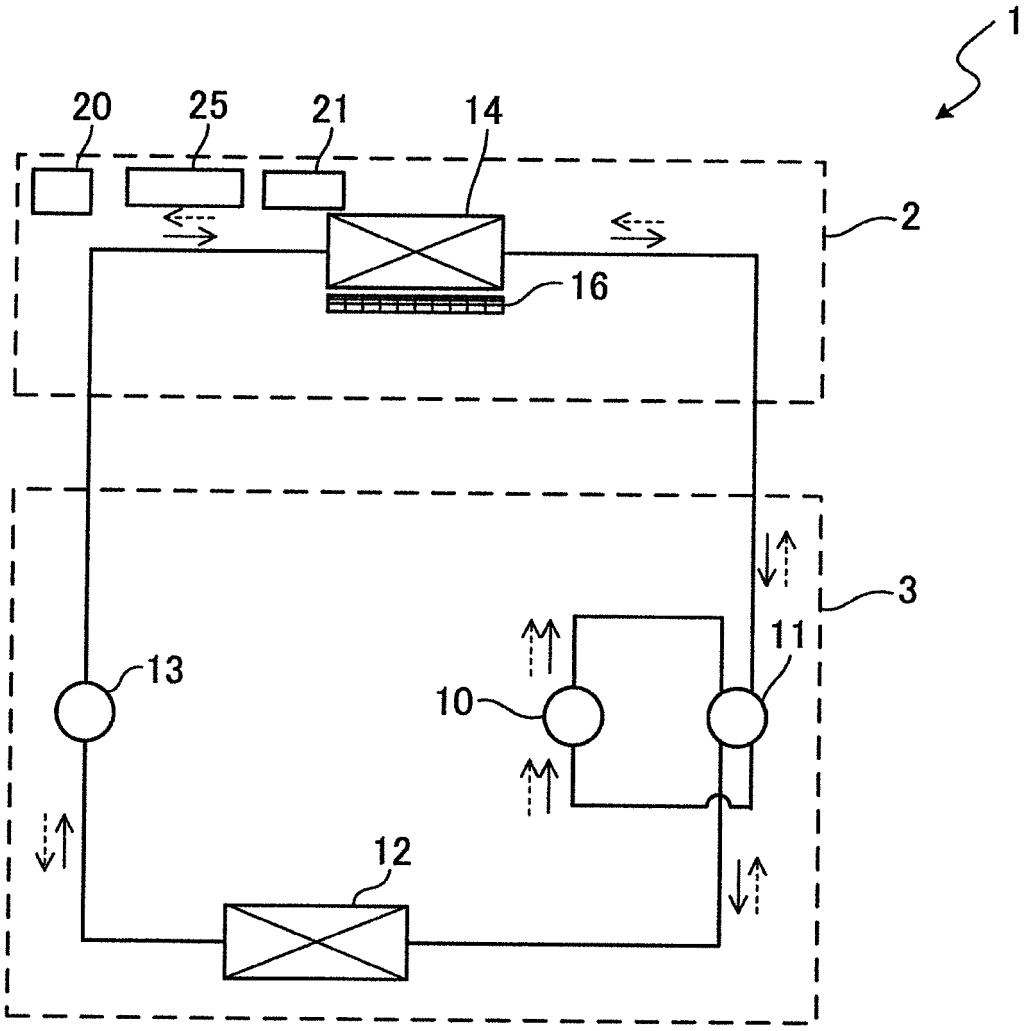


FIG.2

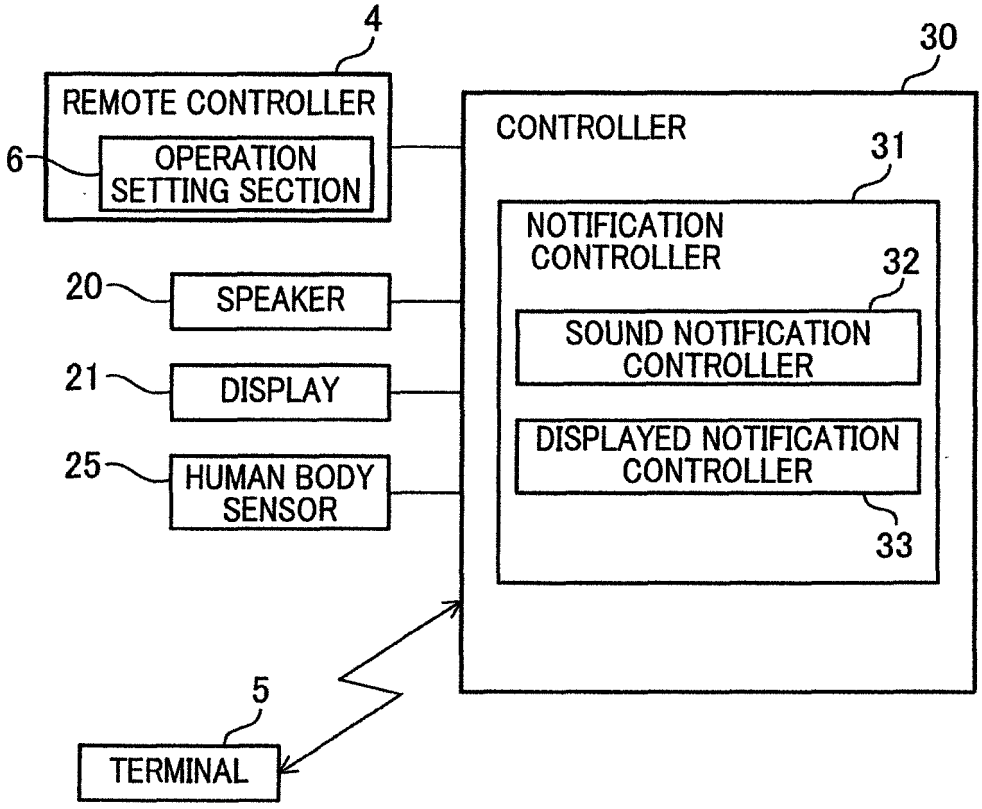
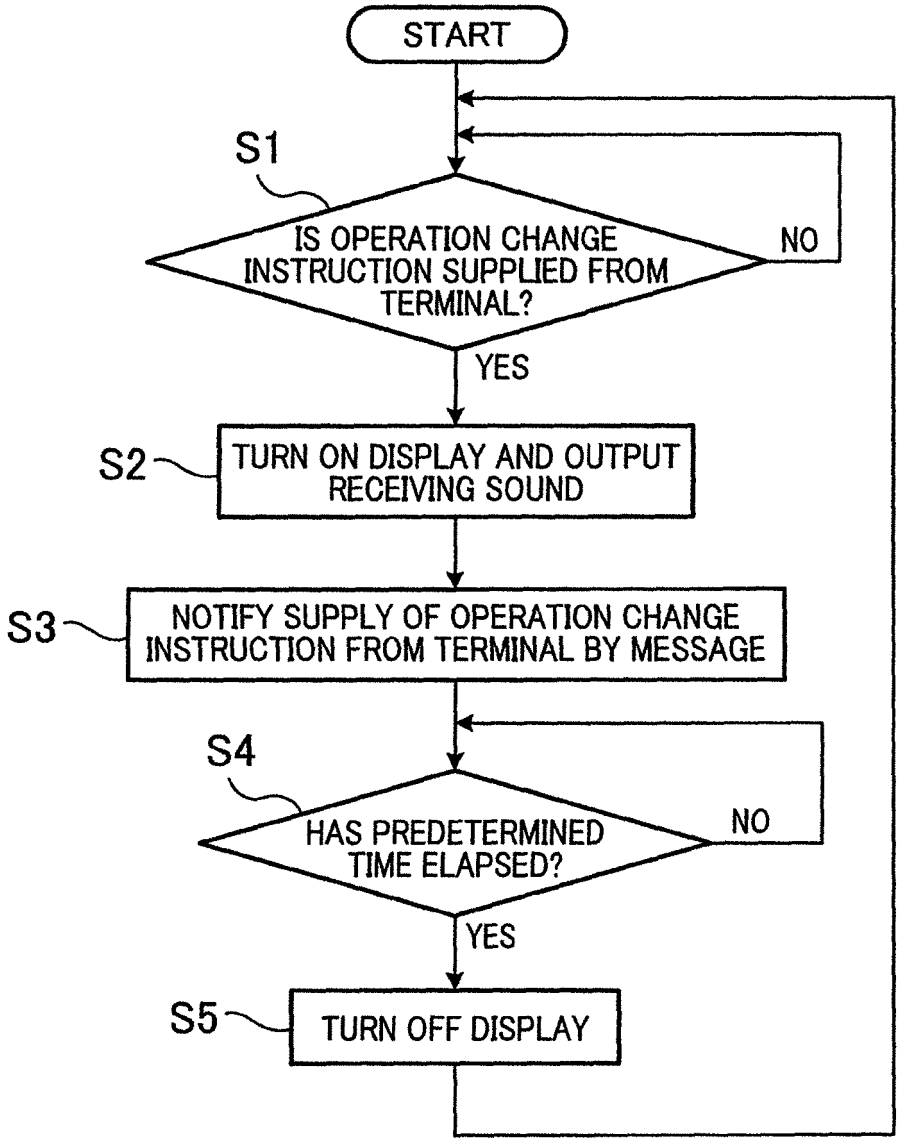

4
REMOTE CONTROLLER
6
OPERATION SETTING SECTION
30
CONTROLLER
31
NOTIFICATION CONTROLLER
32
SOUND NOTIFICATION CONTROLLER
DISPLAYED NOTIFICATION CONTROLLER
33
20
SPEAKER
21
DISPLAY
25
HUMAN BODY SENSOR
5
TERMINAL

FIG.3


START
S1
IS OPERATION CHANGE INSTRUCTION SUPPLIED FROM TERMINAL?
NO
YES
S2
TURN ON DISPLAY AND OUTPUT RECEIVING SOUND
S3
NOTIFY SUPPLY OF OPERATION CHANGE INSTRUCTION FROM TERMINAL BY MESSAGE
S4
HAS PREDETERMINED TIME ELAPSED?
NO
YES
S5
TURN OFF DISPLAY

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2014/077013

A. CLASSIFICATION OF SUBJECT MATTER
F24F11/02(2006.01)i, *H04Q9/00*(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, H04Q9/00

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 1996-2014
Kokai Jitsuyo Shinan Koho 1971-2014 Toroku Jitsuyo Shinan Koho 1994-2014

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 A	JP 2013-183177 A (Fujitsu General Ltd.), 12 September 2013 (12.09.2013), paragraphs [0002] to [0013], [0034] to [0040] (Family: none)	1-3,5-6 4
Y	JP 2006-162091 A (Sharp Corp.), 22 June 2006 (22.06.2006), paragraphs [0004], [0016], [0025], [0027], [0044] to [0046] (Family: none)	1-3,5-6
Y	JP 2003-244338 A (Sanyo Electric Co., Ltd.), 29 August 2003 (29.08.2003), paragraphs [0014] to [0015], [0021] to [0029] (Family: none)	3,5-6

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 December 2014 (17.12.14)	06 January 2015 (06.01.15)
Name and mailing address of the ISA/ Japan Patent Office Facsimile No.	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2014/077013

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2008-180432 A (Matsushita Electric Works, Ltd.), 07 August 2008 (07.08.2008), paragraphs [0023] to [0026], [0029] (Family: none)	1-2
A	JP 2010-65887 A (Mitsubishi Electric Corp.), 25 March 2010 (25.03.2010), paragraphs [0008], [0012], [0021] (Family: none)	1-2
A	JP 2007-278600 A (Matsushita Electric Industrial Co., Ltd.), 25 October 2007 (25.10.2007), paragraphs [0020] to [0022] (Family: none)	1,4

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2002243249 A **[0003]**