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(71) Applicant: **Sharp Kabushiki Kaisha**
Sakai-shi
Osaka 590-8522 (JP)

(72) Inventors:
- **NOZAWA, Rika**
  Sakai City, Osaka 590-8522 (JP)
- **KAMATA, Yu**
  Sakai City, Osaka 590-8522 (JP)

(74) Representative: **Treeby, Philip David William et al**
Maucher Jenkins
Seventh Floor Offices
Artillery House
11-19 Artillery Row
London SW1P 1RT (GB)

(54) **HEAT COOKER**

(57) Setting information for heating cooking is changed without a cumbersome procedure. A heating cooking apparatus (1) includes a setting information change unit (27) configured to change at least two types of setting information based on setting change information included in a single information code read by a reading device (16), the single information code including the setting change information for changing at least two types of setting information among various types of setting information of the heating cooking apparatus (1).

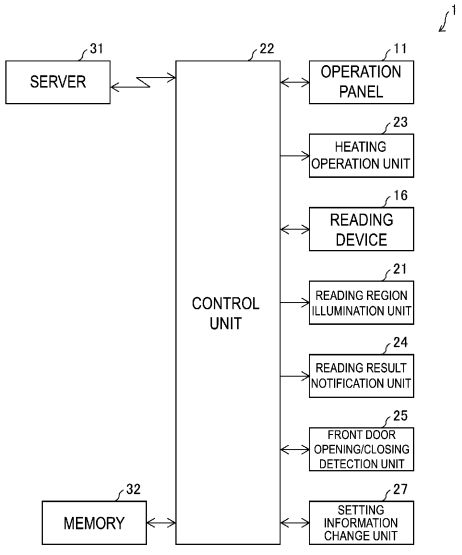

FIG. 8

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Description

Technical Field

[0001] The present invention relates to a heating cooking apparatus for heating a food product placed inside a heating chamber.

Background Art

[0002] For example, convenience stores have provided the service of heating food products, such as boxed meals bought by customers, in a heating cooking apparatus, such as a microwave oven, and then handing the food products to the customers.

[0003] A suitable heating temperature and heating time when heating a food product depend on the type of food product. Therefore, in the heating cooking apparatuses described in PTL 1 and PTL 2, a barcode that is printed on a container of a food product and indicates the type of food product is read by a reading device, and the food product is heated in accordance with heating information (heating temperature and heating time) corresponding to the type of food product.

[0004] Specifically, in a configuration described in PTL 1, a barcode scanner is connected to a microwave oven, and a user manually operates the barcode scanner to read a barcode printed on a container of a food product.

[0005] In a configuration described in PTL 2, a barcode is read by passing the barcode printed on a container of a food product over a first barcode reader provided on one side portion of the front face of a heating cooking apparatus. Alternatively, the food product contained in the container is placed inside a heating chamber of the heating cooking apparatus, and the barcode printed on the container of the food product is read by a second barcode reader provided on a top wall of the heating chamber.

Citation List

Patent Literature

[0006]

PTL 1: JP 2006-64362 A

PTL 2: JP 3076649 UM-B

Summary of Invention

Technical Problem

[0007] With the conventional heating cooking apparatus described above, a food product is automatically cooked by heating based on heating information on the food product obtained by reading an information code such as a barcode. The heating cooking apparatus having such a function of automatically performing heating cooking also enables so-called manual heating cooking that is heating cooking performed with the user setting the heating information such as the heating temperature (output wattage) and heating time.

[0008] In the heating cooking apparatus, the setting information (such as the heating temperature and the heating time) for performing the heating cooking can be changed. For example, when manual heating cooking is performed, the initial value (output wattage) of the heating temperature first displayed on an operation panel or the like is changed, for example, from 1500 W to 1900 W.

[0009] However, to change the setting information for the heating cooking apparatus, the operation panel or the like needs to be manually operated to display the setting information and change the setting information to the desired content. Thus, a cumbersome procedure is required for changing the setting information. Thus, there is a problem in that the larger the amount of setting information to be changed, the more cumbersome the procedure.

[0010] An object of an aspect of the present invention is to provide a heating cooking apparatus enabling setting information for performing heating cooking to be changed without a cumbersome procedure.

Solution to Problem

[0011] A heating cooking apparatus according to an aspect of the present invention for solving the problem described above includes: a heating chamber; a reading device configured to read an information code; and a setting information change unit configured to change various types of setting information used to perform heating cooking in a main body of the heating cooking apparatus, in which the information code includes setting change information for changing at least two types of the setting information, and the setting information change unit changes the at least two types of the setting information based on the setting change information included in the single information code read by the reading device.

Advantageous Effects of Invention

[0012] According to an aspect of the present invention, setting information for performing heating cooking can be changed without a cumbersome procedure.

Brief Description of Drawings

[0013]

FIG. 1 is a perspective view of a heating cooking apparatus of an embodiment of the present invention with a front door thereof closed when viewed from an obliquely upper front side.

FIG. 2 is a front view of the heating cooking apparatus illustrated in FIG. 1 with the front door thereof

opened.

FIG. 3 is a perspective view of the heating cooking apparatus illustrated in FIG. 1 with the front door thereof opened when viewed from an obliquely lower right side.

FIG. 4 is a vertical cross-sectional view of a control frame illustrating an installation state of a reading device included in the heating cooking apparatus illustrated in FIG. 1.

FIG. 5 is an explanatory diagram illustrating a reading region of the reading device illustrated in FIG. 4.

(a) of FIG. 6 is an explanatory diagram illustrating an example of an information code constituted of a two-dimensional code to be read by the reading device illustrated in FIG. 4, and (b) of FIG. 6 is an explanatory diagram illustrating an example of an information code constituted of a one-dimensional barcode to be read by the reading device illustrated in FIG. 4.

(a) of FIG. 7 is an explanatory diagram illustrating an example of a guide display in the operation panel for reading the information code by the reading device illustrated in FIG. 4, and (b) of FIG. 7 is an explanatory diagram illustrating another example of the guide display in the operation panel for reading the information code by the reading device illustrated in FIG. 4.

FIG. 8 is a block diagram illustrating a configuration of a control device included in the heating cooking apparatus illustrated in FIG. 1.

Description of Embodiments

First Embodiment

[0014] An embodiment of the present invention will be described in detail below. FIG. 1 is a perspective view of a heating cooking apparatus 1 of the present embodiment with a front door 12 thereof closed when viewed from an obliquely upper front side. FIG. 2 is a perspective view of the heating cooking apparatus 1 illustrated in FIG. 1 with the front door 12 thereof opened when viewed from an obliquely lower front side. FIG. 3 is a perspective view of the heating cooking apparatus 1 illustrated in FIG. 1 with the front door 12 thereof opened when viewed from an obliquely lower right side.

Outline of Heating Cooking Apparatus 1

[0015] As illustrated in FIG. 1 to FIG. 3, the heating cooking apparatus is, for example, a microwave oven, and includes an operation panel (reception unit) 11 on an upper side of a front face and a front door 12 under the operation panel 11. The front door 12 is a door that opens and closes a heating chamber 13 provided behind the front door 12 and covers a front face opening 13b of the heating chamber 13 in a closed state. In the present embodiment, the front door 12 is a horizontal opening door that rotates about an end portion on the left side when viewed from the front and has a handle 14 near a right end thereof.

[0016] The operation panel 11 is provided on the front face of a control frame (circuit board container portion) 15, and the front face position of the operation panel 11 is substantially coincident with the front face position of the front door 12 in a front-rear direction of the heating cooking apparatus 1.

[0017] A control substrate (not illustrated) that controls a display unit of the operation panel 11, receives user operations with respect to, for example, input keys, or the like is provided inside the control frame 15.

Reading Device 16

[0018] FIG. 4 is a vertical cross-sectional view of the control frame 15 illustrating the installation state of the reading device 16. FIG. 5 is an explanatory diagram illustrating a reading region 19 of the reading device 16.

[0019] As illustrated in FIG. 4, the control frame 15 is provided projecting toward the front side of the heating cooking apparatus 1. The reading device 16 is attached to a lower face of a reading device substrate (circuit board) 17 and is provided in a lower portion inside the control frame 15. The reading device substrate 17 is provided with a drive circuit of the reading device 16. In other words, the reading device 16 is at an installation position outside the heating chamber 13 and above the front face opening 13b of the heating chamber 13 (a position on the top wall 13a side) and is provided to have the reading region 19 below the installation position.

[0020] The reading device 16 is, for example, a barcode reader, and is configured to read an information code (for example, a barcode) provided on a food product to be heated by the heating cooking apparatus 1 or a container of the food product.

[0021] In addition to reading the information code attached to a food product or a container of a food product, the reading device 16 reads a setting information change code. The setting information change code is a code generated separately from the information code, and includes setting change information for changing the setting information (such as heating temperature and heating time) for performing the heating cooking with the heating cooking apparatus 1. Details of the setting information will be described below.

[0022] As illustrated in FIG. 5, a region below the reading device 16 is the reading region 19 of the reading device 16, and the control frame 15 includes a transparent reading window 18 in a portion of a lower wall portion thereof facing the reading device 16.

[0023] The reading region 19 of the reading device 16 is indicated by, for example, red light so that a user can visually recognize the reading region 19. The red light is emitted by a reading region illumination unit 21 (see FIG.

8). A red LED, for example, is used as the reading region illumination unit 21. Note that light indicating the reading region 19 is not limited to red light but may be other light visible to the user, such as a laser. In addition, the number of red LEDs may be one or may be more than one.

[0024] In addition, as illustrated in FIG. 2 and FIG. 3, the reading device 16 is provided in a center portion in a width direction (left-right direction) of the front face opening 13b of the heating chamber 13.

Information Code/Setting Information Change Code

[0025] (a) of FIG. 6 is an explanatory diagram illustrating an example of an information code/setting information change code constituted by a two-dimensional code (QR code (tradename)), and (b) of FIG. 6 is an explanatory diagram illustrating an example of an information code/setting information change code constituted of a one-dimensional barcode. (a) of FIG. 7 is an explanatory diagram illustrating an example of a guide display in the operation panel 11 for reading the information code/setting information change code by the reading device 16. (b) of FIG. 7 is an explanatory diagram illustrating another example of the guide display in the operation panel 11 for reading the information code/setting information change code by the reading device 16.

[0026] The information code is information indicating the type of food product and is provided on the food product or the container of the food product by, for example, printing or applying a seal. The information code is information indicating the type of food product, for example, indicating that the food product is a boxed meal (or further indicating the type of boxed meal) or indicating that the food product is a rice ball (or further indicating the type of rice ball).

[0027] The information code may be, for example, a two-dimensional code as illustrated in (a) of FIG. 6, or may be a one-dimensional barcode as illustrated in (b) of FIG. 6. Note that the information code is not particularly limited to a barcode or the like as long as the information code can indicate the type of food product.

[0028] The setting information change code is a code generated separately from the information code, and includes information (setting change information) for changing the setting information when performing the heating cooking in the heating cooking apparatus 1 main body. When the setting information change code and the information code are separately provided as described above, the setting information change code printed on a print medium such as paper is read by the reading device 16, or the setting information change code displayed on a display unit of a mobile terminal device is read by the reading device 16. Details of the setting information change code will be described below.

[0029] A guide display 20 for the user is provided on the operation panel 11 for smooth reading of the information code by the reading device 16. For example, in the example in (a) of FIG. 7, the guide display 20 states "open the door and put the information code under the red light". In addition, in the example in (b) of FIG. 7, the guide display 20 states "open the door and illuminate the information code with the red light". Note that these guide displays 20 are examples, and are not particularly limited thereto.

[0030] The position where the guide display 20 is provided is not limited to the substantially central position of the operation panel 11 as illustrated in (a) and (b) of FIG. 7. For example, the position at which the guide display 20 is provided may be any position as long as the position is on the operation panel 11, and may be a position other than the operation panel 11 (the front face of the heating cooking apparatus 1) as long as the position is such that the reading operation of the information code by the reading device 16 can be guided to the user. A preferred position for improved usability for the user is a position on the operation panel 11 that is always visible when operating the heating cooking apparatus 1. Furthermore, it is more preferably near (above) the reading window 18.

Guide Display

[0031] The guide display 20 is realized by printing on the operation panel 11 contents that provide guidance to the user regarding operation. For example, a seal printed with the guide display 20 is affixed to the operation panel 11. However, the method for realizing the guide display 20 is not limited to printing on the operation panel 11, and a liquid crystal panel may be provided on the operation panel 11 to perform the guide display 20 on the liquid crystal panel. In this case, the backlight of the liquid crystal panel is controlled to be turned on in conjunction with the opening and closing of the front door 12. For example, when the opening of the front door 12 is detected by the front door opening/closing detection unit 25 (FIG. 8), the backlight of the liquid crystal panel in which the guide display 20 is displayed is caused to light up in conjunction with the operation of opening the front door 12. As a result, the guide display 20 can be easily visually recognized by the user. Alternatively, the guide display 20 may be performed and the contents of the guide display 20 may be notified vocally. In this case, even if the user has difficulty in viewing the characters displayed in the guide display 20, the user can confirm the characters vocally, so that the operation can be performed smoothly.

Operation Panel

[0032] The operation panel 11 is provided with various operation buttons and a display unit 30 that displays the setting information, in addition to the guide display 20. As illustrated in (a) of FIG. 7 and (b) of FIG. 7, a heating change button 11a is provided as one of the operation buttons of the operation panel 11 of the present embodiment. The heating change button 11a is a button for changing the default heating temperature to a "lukewarm" or "hot" temperature. For example, to heat a food

product A to a "lukewarm" temperature lower than the set heating temperature (default heating temperature), "lukewarm" on the heating change button 11a is pressed. To heat the product to a "hot" temperature, "hot" on the heating change button 11a is pressed. Thus, the operation panel 11 functions as a reception unit that receives change information ("lukewarm" or "hot") designated by the user. More specifically, when the user presses the heating change button 11a, one of "lukewarm" and "hot" is designated as the change information, and the operation panel 11 receives the change information thus designated.

[0033] An operation signal indicating the operation on the heating change button 11a, that is, information indicating one of "lukewarm" or "hot" is transmitted as change information to a control unit 22 of a control device illustrated in FIG. 8.

Control Device

[0034] FIG. 8 is a block diagram illustrating a configuration of a control device included in the heating cooking apparatus 1. The control device includes the control unit 22 that controls operations of the heating cooking apparatus 1. The control unit 22 is constituted of, for example, a microcomputer, and includes a CPU, a ROM, and a RAM.

[0035] As illustrated in FIG. 8, the operation panel 11, a heating operation unit 23, the reading device 16, the reading region illumination unit 21, a reading result notification unit 24, a front door opening/closing detection unit 25, a setting information change unit 27, and a memory (storage unit) 32 are connected to the control unit 22. The front door opening/closing detection unit 25 is constituted by, for example, a switch that is turned on when the front door 12 is closed, and detects an opened state and a closed state of the front door 12.

[0036] The heating operation unit 23 is an operation unit that heats a food product placed in the heating chamber 13 and is, for example, a microwave output device or a heater. The reading result notification unit 24 is a buzzer or a voice generator and is controlled by the control unit 22 to notify a user of success or failure in reading an information code by the reading device 16.

[0037] The control unit 22 is able to communicate with a server 31 by using, for example, an Internet line. Heating information corresponding to various types of food products is registered in the server 31. The control unit 22 acquires, from the server 31, heating information corresponding to the type of the food product having been acquired by the reading device 16 reading the information code, and controls the heating operation unit 23 in such a manner that the food product is heated in accordance with the acquired heating information. Note that the heating information corresponding to the type of food product may be included in the heating cooking apparatus 1 itself. In this case, the heating cooking apparatus 1 does not need to communicate with the server 31.

[0038] In addition, the control unit 22 controls operations of the reading result notification unit 24 and notifies a user of success or failure in reading the information code by the reading device 16.

[0039] The setting information change unit 27 changes the setting information for performing the heating cooking in the heating cooking apparatus 1 main body, based on the setting change information included in the setting information change code read by the reading device 16.

[0040] In addition, heating information included in the information code read by the reading device 16 is stored in the memory 32. Therefore, heating information is registered in the memory 32 of the heating cooking apparatus 1 for a food product whose information code has been read once, and thus it is not necessary to acquire heating information every time an information code is read from outside of the heating cooking apparatus 1.

Heating Operation of Heating Cooking Apparatus 1

[0041] Operations of the heating cooking apparatus 1 in the above-described configuration will be described below. Here, a case will be described in which a boxed meal with an information code applied onto the upper face of a container thereof is heated by the heating cooking apparatus 1.

[0042] First, a user confirms a guide display 20 (for example, "please open the door and scan the information code over the red light") of the operation panel 11. Then, the user opens the front door 12 in accordance with the guide display 20. When the front door opening/closing detection unit 25 detects the opened state of the front door 12, the control unit 22 causes the reading device 16 and the reading region illumination unit 21 to operate.

[0043] Next, the user moves a boxed meal such that the information code enters the reading region 19 of the reading device 16 (such that the information code is illuminated with the red light) in accordance with the guide display 20 of the operation panel 11.

[0044] This operation causes the reading device 16 to read the information code applied to the boxed meal. When the reading device 16 successfully reads the information code, the control unit 22 causes the reading result notification unit 24 to notify the user of the reading result. The operation of the reading result notification unit 24 in this case is, for example, an operation of emitting a continuous beep sound, an operation of outputting a voice saying "the information code has been read successfully," or an operation including both the above operations.

[0045] When informed of the success of reading the information code by the reading result notification unit 24, the user places the boxed meal in the heating chamber 13, then closes the front door 12, and presses the start button on the operation panel 11.

[0046] Further, in a case where the user prefers either "lukewarm" or "hot," the user operates any one of the heating change buttons 11a of the operation panel 11

before pressing a start button on the operation panel 11.

[0047] When the information code has been successfully read, the control unit 22 communicates with the server 31 to obtain heating information corresponding to the type of the food product indicated by the information code from the server 31. Thereafter, when the user closes the front door 12 and presses the start button on the operation panel 11, the control unit 22 heats the boxed meal in the heating chamber 13 in accordance with the acquired heating information.

[0048] On the other hand, when the reading of the information code by the reading device 16 fails, the control unit 22 causes the reading result notification unit 24 to notify the user of the reading result. The operation of the reading result notification unit 24 in this case is, for example, an operation of emitting an intermittent sound of "bleep, bleep, bleep," an operation of outputting a voice saying "the information code was not read correctly," or an operation including both the above operations.

[0049] When the user is informed of the failure of reading the information code by the reading result notification unit 24, the user moves the boxed meal again such that the information code enters the reading region 19 of the reading device 16 (such that the information code is illuminated with the red light). An operation to be performed when the information code is thus successfully read is as described earlier.

[0050] Next, how the setting information is changed using the setting information change code will be described.

Setting Information Change Code

[0051] With the heating cooking apparatus 1, the setting information can be changed by reading the setting information change code in addition to the information code. Specifically, the setting information change code printed on a print medium such as paper is read by the reading device 16 of the heating cooking apparatus 1, and desired setting information for the heating cooking apparatus 1 is changed.

[0052] The setting information change code includes setting change information for changing at least two types of the setting information. Thus, the setting information change unit 27 included in the control unit 22 changes at least two types of setting information based on the setting change information included in the single setting information change code read by the reading device 16. Thus, at least two types of setting information in the heating cooking apparatus 1 can be changed at once.

Setting Information

[0053] The setting information to be changed by the setting change information is information including (1) setting of an initial high-frequency output value (initially displayed value) at the time of manual heating using the heating cooking apparatus 1, (2) setting of the high-frequency output value selectable at the time of manual heating, (3) setting of timing for starting heating, (4) setting of correction value (multiplier for the normal heating time) for hot/lukewarm at the time of heating, (5) setting (to turn on or off) of an in-chamber lamp provided in the heating chamber 13, (6) setting of the volume of notification sound (such as beeping sound), (7) setting of the pitch of the notification sound, and (8) setting of a locked state. These pieces of setting information (1) to (8) are changed using the setting change information included in the setting information change code.

[0054] A specific example of the setting change performed using the setting change information will be described. For example, with the setting change for the initial high-frequency output value at the time of manual heating, for example, the value is changed from 1500 W to 1900 W. With the setting change, the initial high-frequency output value at the time of the manual heating is changed from 1500 W to 1900 W. This setting change information is information for performing setting change on an initial value of output value selection when manual heating is performed in the heating cooking apparatus 1.

[0055] With the setting change for the high-frequency output value selectable at the time of manual heating, for example, the high-frequency output value that can be selected and set is changed from a 6 level pattern (1) to an 11 level pattern (2). Here, the pattern (1) is defined as high-frequency output values of 6 levels (1900/1500/1000/600/500/200 W), and the pattern (2) is defined as high-frequency output values of 11 levels (1900/1700/1600/1500/1300/1000/800/600/500/300/200 W). Note that the levels of the high-frequency output value to be selected are not limited to these. This setting change information is information for performing setting change on an output value selectable when manual heating is performed in the heating cooking apparatus 1.

[0056] With the setting change for the timing for starting heating, for example, the setting for starting the heating when the front door 12 is closed is changed to the setting for starting the heating when a "start heating" key provided to the heating cooking apparatus 1 main body is pressed. With this change, the setting of starting heating in response to the operation of closing the front door 12 is changed to the setting of starting heating in response to the pressing of the "start heating" key. This setting change information is information for changing the timing for starting heating in the heating cooking apparatus 1.

[0057] With the setting change for the correction value for the correction values of hot/lukewarm at the time of heating, in a case of "hot", the multiplier for the normal heating time is changed from 1.10 to 1.08. With this change, the correction value for "hot" is reduced. Thus, the setting is changed to slightly lower the heating temperature with a smaller multiplier for the normal heating time. This setting change information is information for performing setting change on the multiplier for the normal heating time in the heating cooking apparatus 1.

[0058] With setting change for an in-chamber lamp pro-

vided in the heating chamber 13 (setting for turning on or off), the setting for the in-chamber lamp at the time of heating is changed from on to off for example. With this change, the in-chamber lamp is off at the time of heating. Thus, the inside of the heating chamber 13 is dark and not visible during the heating. This setting change information is information for performing setting change to turn on or off the in-chamber lamp in the heating cooking apparatus 1.

[0059] With the setting change for the volume of the notification sound, a volume level, on a scale of 1 to 5, is changed from 2 to 3, under a condition that a larger value corresponds to a louder sound, for example. With this change, the notification sound is changed to become louder. This setting change information is information for performing setting change for the volume of the notification sound of the heating cooking apparatus 1.

[0060] With the setting change for the pitch of the notification sound, a pitch level, on a scale of 1 to 5, is changed from 4 to 3, under a condition that a larger value corresponds to a sound with a higher pitch for example. With this change, the pitch of the notification sound is lowered one step. This setting change information is information for performing setting change for the pitch of the notification sound of the heating cooking apparatus 1.

[0061] With the setting change for the locked state, a locked state is changed to an unlocked state for example. This setting change information is information for performing setting change for the locked state of the heating cooking apparatus 1.

[0062] As described above, with the setting change information included in the setting information change code, the setting information change unit 27 can perform setting change for various types of setting information. Furthermore, with the setting information change code, log information can be displayed and information on step heating can be registered in the memory 32.

[0063] The log information is, for example, information indicating the number of times the heating cooking has been performed with the information code read, and is registered in the memory 32 of the heating cooking apparatus 1. In this case, information for displaying the log information is included in the setting information change code. Thus, when the reading device 16 reads the setting information change code, the log information registered in the memory 32 can be called by the control unit 22 to be displayed on the display unit 30 of the operation panel 11 of the heating cooking apparatus 1. Thus, the log information can be displayed on the display unit 30 of the operation panel 11 of the heating cooking apparatus 1, each time the setting information change code is read by the reading device 16.

[0064] The log information may not only include the number of times the heating cooking has been performed with the information code read, but may also include the number of times the heating cooking has been performed without the information code read (heating cooking performed with the heating time and the heating wattage manually set). When this log information is used for the maintenance for the heating cooking apparatus 1, the state of the heating cooking apparatus 1 can be appropriately recognized and thus the maintenance can be appropriately performed.

[0065] Further, the step heating refers to heating cooking performed with a heating period and non-heating period combined for each heating cooking. For this purpose, the setting information change code includes information for executing the step heating (information indicating the combination of the heating period and the non-heating period). Thus, the control unit 22 registers the information for executing the step heating (for example, the heating is first performed with 500 W for 2 minutes, the heating is stopped for 90 seconds, and then the heating is performed again with 1500 W for 50 seconds) in the memory 32, when the reading device 16 reads the setting information change code. Thus, the information for executing the step heating can be registered in the memory 32 each time the reading device 16 reads the setting information change code.

[0066] Information for initializing the setting values of various types of setting information for the heating cooking apparatus 1 (setting the initial values of a plurality of setting items back to the setting values, that is, to a so-called factory setting) is further included in the setting information change code. Thus, when the reading device 16 reads the setting information change code, the setting information change unit 27 can initialize the setting values of the setting information. This setting change information is information for initializing the setting values set for the heating cooking apparatus 1.

[0067] When information for notification of the initial values of the setting information is included in the setting information change code, the user can be notified of the initial values of the setting information, by simply making the reading device 16 read the setting information change code. The notification in this case may be performed through display on the display unit 30 of the operation panel 11, or through voice output using the reading result notification unit 24.

[0068] Thus, the user can recognize the initial value of each setting information to determine whether to change each setting information, and change the setting information determined to be changed, using the setting information change code.

Operation of Changing Setting Information for Heating Cooking Apparatus 1

[0069] An operation of changing the setting information for the heating cooking apparatus 1 using setting information change code will be described. Here, the setting information change code used is printed on a printed object such as paper.

[0070] First of all, the user determines which of various types of the setting information for the heating cooking apparatus 1 is to be changed, and selects a printed object

on which a setting information change code, including setting change information for changing a setting for at least two types of setting information, has been printed.

[0071] First, a user confirms a guide display 20 (for example, "please open the door and scan the information code over the red light") of the operation panel 11. Then, the user opens the front door 12 in accordance with the guide display 20. When the front door opening/closing detection unit 25 detects the opened state of the front door 12, the control unit 22 causes the reading device 16 and the reading region illumination unit 21 to operate.

[0072] Next, the user moves the printed object such that the setting information change code enters the reading region 19 of the reading device 16 (such that the setting information change code is illuminated with the red light) in accordance with the guide display 20 of the operation panel 11.

[0073] With this operation, the reading device 16 reads the setting information change code printed on the printed object. On the other hand, when the setting information change code is successfully read by the reading device 16, the control unit 22 causes the reading result notification unit 24 to notify the user of the reading result. The operation of the reading result notification unit 24 in this case is, for example, an operation of emitting a continuous beep sound, an operation of outputting voice saying "the setting information change code has been read successfully," or an operation including both of the above operations. In this case, since the setting information change code includes the change notification information for notifying the user of the change in the setting information, the user can be reliably notified of the change in the setting information.

[0074] The control unit 22 notifies the user of the successful information code reading, and at the same time, changes the various types of setting information for the heating cooking apparatus 1 based on the setting change information included in the setting information change code. In this case, the control unit 22 notifies the user of the change in the setting information, by sequentially displaying the setting information before the change and the setting information after the change on the display unit 30, and after elapse of a predetermined period of time, displaying only the setting information after the change. The user may be notified of the setting information before and after the change through display on the display unit 30 or vocally.

[0075] On the other hand, when the reading of the setting information change code by the reading device 16 fails, the control unit 22 causes the reading result notification unit 24 to notify the user of the reading result. The operation of the reading result notification unit 24 in this case is, for example, an operation of emitting an intermittent sound of "bleep, bleep, bleep," an operation of outputting a voice saying "the information code was not read correctly," or an operation including both the above operations.

[0076] When the reading result notification unit 24 notifies the user of the failure to read the setting information change code, the user moves the printed object again such that the setting information change code enters the reading region 19 of the reading device 16 (such that the setting information change code is illuminated with the red light). As a result, the setting information change code is successfully read. An operation to be performed when the setting information change code is successfully read is as described earlier.

Advantages of Heating Cooking Apparatus 1

[0077] In the heating cooking apparatus 1, various default settings can be simultaneously changed by changing at least two of various types of setting information used when performing heating cooking based on the setting change information included in the setting information change code read by the reading device 16. Examples of such information include: the setting of the lamp in the heating chamber 13, the setting of the volume of the notification sound, the setting of the high-frequency output value for manual heating, and the setting of the lock level.

[0078] Thus, the setting information change code includes setting change information for changing at least two types of various types of setting information used for performing the heating cooking in the heating cooking apparatus 1 main body. Thus, at least two types of setting information can be changed at once, by simply reading the setting information change code. All things considered, the procedure for change does not need to be performed for each and every piece of setting information, so that various types of setting information for the heating cooking apparatus 1 can be easily and simply changed, whereby the user can enjoy improved usability.

[0079] While an example where the setting information change code used is printed on a printed object such as paper is described above, this should not be construed in a limiting sense, the setting information change code may be displayed on a display unit of a mobile terminal device such a tablet or a smartphone. Also in this case, as with the printed object, at least two types of setting information can be changed at once when the reading device 16 of the heating cooking apparatus 1 reads the setting information change code displayed on the display unit of the mobile terminal device.

Application Example 1

[0080] When the heating cooking apparatus 1 is installed in a plurality of stores and each store is connected to a network such as the Internet, the setting information change code is distributed to each store over the network. The distributed setting information change code is printed on paper or displayed on a mobile terminal device in each store. Thus, the setting information for the heating cooking apparatuses in the stores can be changed to the same contents, by making the heating cooking apparatus 1

read the setting information change code common to the stores.

Application Example 2

[0081] In the description in the above embodiment, two or more types of setting information are changed using the setting change information included in the setting information change code, but this should not be construed in a limiting sense. Specifically, one setting information change code may include setting change information for changing one type of the setting information.

[0082] In this case, since the setting information change code is generated for each setting information, the user can change only the desired setting information. If printed objects on which setting information change codes corresponding to a plurality of types of setting information are printed are prepared, the user selects and uses a printed object on which a setting information change code for changing setting information intended to be changed is printed. For example, when there are a plurality of pieces of setting information that the user desires to change, printed objects on which setting information change codes for changing the respective pieces of setting information are printed are used. In this case, these pieces of setting information can be sequentially changed, by placing the printed objects in front of the reading device 16 and reading the setting information change codes one by one. As described above, the setting information can be sequentially changed by simply placing the printed objects, on which the setting information change codes are printed, in front of the reading device 16, thus saving considerably more time and effort than if the setting information were changed manually.

Example of Implementation by Software

[0083] A control block (in particular, the control unit 22) of the heating cooking apparatus 1 may be implemented by a logic circuit (hardware) constituted by an integrated circuit (IC chip) and the like, or by software.

[0084] In the latter case, the heating cooking apparatus 1 is provided with a computer configured to execute commands of a program, which is software for enabling functions. The computer includes at least one processor (control device), for example, and includes at least one computer-readable recording medium having stored the program therein. In the computer, the processor reads the program from the recording medium and executes the program, thereby accomplishing the object of the present invention. For example, a central processing unit (CPU) may be used as the processor. As the recording medium, a "non-transitory tangible medium" such as a tape, a disk, a card, a semiconductor memory, and a programmable logic circuit may be used in addition to a read only memory (ROM) and the like. Additionally, a random access memory (RAM) on which the program is loaded, or the like may be further provided. Further, the program may be supplied to the computer via any transmission medium (a communication network, a broadcast wave, or the like) capable of transmitting the program. Note that an aspect of the present invention may be implemented in a form of a data signal embodied by electronic transmission of the program and embedded in a carrier wave.

Supplement

[0085] A heating cooking apparatus according to a first aspect of the present invention includes: the heating chamber 13; the reading device 16 configured to read an information code (setting information change code); and the setting information change unit 27 configured to change various types setting information used to perform heating cooking in the main body of the heating cooking apparatus 1, in which the information code (setting information change code) includes setting change information for changing at least two types of the setting information, and the setting information change unit 27 changes the at least two types of the setting information based on the setting change information included in the single information code (setting information change code) read by the reading device 16.

[0086] With this configuration, the information code includes setting change information for changing at least two types of various types of setting information used for performing the heating cooking in the heating cooking apparatus main body, so that at least two types of setting information can be changed at once by simply reading the information code. This eliminates the need to change each and every piece of setting information, making it easier and simpler to change various types of setting information for the heating cooking apparatus.

[0087] According to a heating cooking apparatus of a second aspect of the present invention, in the first aspect, the information code (setting information change code) may be printed on a print medium.

[0088] According to the above configuration, since the information code is printed on a print medium that is paper for example, the information code can be easily read by simply placing a printed surface of the printed object in front of the reading device.

[0089] According to a heating cooking apparatus of a third aspect of the present invention, in the first aspect, the information code (setting information change code) may be displayed on a display unit of a mobile terminal device.

[0090] According to the above configuration, the information code can be easily read, by simply placing a display surface of the display unit of the mobile terminal device in front of the reading device, while the information code is being displayed on the display unit of the mobile terminal device.

[0091] According to a heating cooking apparatus of a fourth aspect of the present invention, in any one of the first to the third aspects, the information code (setting information change code) may include information indi-

cating an initial value of each of the various types of setting information.

[0092] According to the above configuration, the initial value of each of the various types of setting information can be recognized, by simply making the reading device read the information code. For example, the user can be easily notified of the initial values of various types of setting information, with the initial values displayed or notified vocally.

[0093] According to a heating cooking apparatus of a fifth aspect of the present invention, in any one of the first to the fourth aspects, the information code (setting information change code) may include change notification information for notifying a user of a change in the setting information.

[0094] According to the above configuration, a change in the setting information can be easily recognized, by simply making the reading device read the information code.

[0095] According to a heating cooking apparatus of a sixth aspect of the present invention, in any one of the first to the fifth aspects, the setting change information may be information for performing setting change on an initial value of output value selection when manual heating is performed in the heating cooking apparatus 1.

[0096] According to a heating cooking apparatus of a seventh aspect of the present invention, in any one of the first to the sixth aspects, the setting change information may be information for performing setting change on an output value selectable when manual heating is performed in the heating cooking apparatus 1.

[0097] According to a heating cooking apparatus of an eighth aspect of the present invention, in any one of the first to the seventh aspects, the setting change information may be information for changing a timing for starting heating in the heating cooking apparatus 1 is changed.

[0098] According to a heating cooking apparatus of a ninth aspect of the present invention, in any one of the first to the eighth aspects, the setting change information may be information for performing setting change on a multiplier for normal heating time in the heating cooking apparatus 1.

[0099] According to a heating cooking apparatus of a tenth aspect of the present invention, in any one of the first to the ninth aspects, the setting change information may be information for initializing setting values set in the heating cooking apparatus.

[0100] The present invention is not limited to each of the above-described embodiments. It is possible to make various modifications within the scope of the claims. An embodiment obtained by appropriately combining technical elements disclosed in different embodiments falls also within the technical scope of the present invention. Further, technical elements disclosed in the respective embodiments may be combined to provide a new technical feature.

Reference Signs List

[0101]

1 Heating cooking apparatus
11 Operation panel
11a Heating change button
12 Front door
13 Heating chamber
13b Front face opening
14 Handle
15 Control frame
16 Reading device
17 Reading device substrate
19 Reading region
20 Guide display
21 Reading region illumination unit
22 Control unit
23 Heating operation unit
24 Reading result notification unit
25 Front door opening/closing detection unit
27 Setting information change unit
30 Display unit
31 Server
32 Memory

Claims

1. A heating cooking apparatus comprising:

a heating chamber;
a reading device configured to read an information code; and
a setting information change unit configured to change various types of setting information used to perform heating cooking in a main body of the heating cooking apparatus,
wherein the information code includes setting change information for changing at least two types of the setting information, and
the setting information change unit changes the at least two types of the setting information based on the setting change information included in the single information code read by the reading device.

2. The heating cooking apparatus according to claim 1, wherein the information code is printed on a print medium.

3. The heating cooking apparatus according to claim 1, wherein the information code is displayed on a display unit of a mobile terminal device.

4. The heating cooking apparatus according to any one of claims 1 to 3,
wherein the information code includes information

indicating an initial value of each of the various types of setting information.

5. The heating cooking apparatus according to any one of claims 1 to 4,
wherein the information code includes change notification information for notifying a user of a change in the setting information.

6. The heating cooking apparatus according to any one of claims 1 to 5,
wherein the setting change information is information for performing setting change on an initial value of output value selection when manual heating is performed in the heating cooking apparatus.

7. The heating cooking apparatus according to any one of claims 1 to 6,
wherein the setting change information is information for performing a setting change on an output value selectable when manual heating is performed in the heating cooking apparatus.

8. The heating cooking apparatus according to any one of claims 1 to 7,
wherein the setting change information is information for changing a timing for starting heating in the heating cooking apparatus.

9. The heating cooking apparatus according to any one of claims 1 to 8,
wherein the setting change information is information for performing setting change on a multiplier for normal heating time in the heating cooking apparatus.

10. The heating cooking apparatus according to any one of claims 1 to 9,
wherein the setting change information is information for initializing setting values set in the heating cooking apparatus.

11. A heating cooking apparatus comprising:

a heating chamber;
a reading device configured to read an information code and setting information change code generated separately from the information code; and
a setting information change unit configured to change setting information for a main body of the heating cooking apparatus based on setting change information included in the setting information change code read by the reading device,
wherein the setting information change code includes the setting change information for changing at least two types of the setting information, and
the setting information change unit simultaneously changes at least two of various default settings that are the setting information for the main body of the heating cooking apparatus based on the setting change information included in the setting information change code read by the reading device.

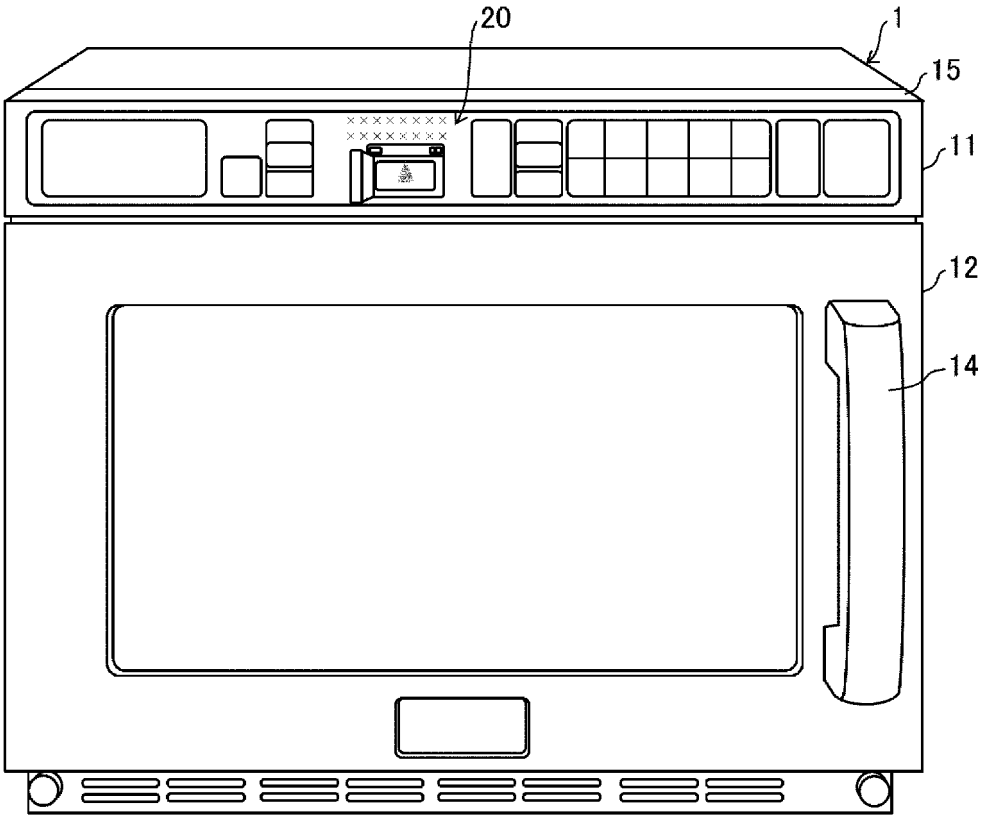


FIG. 1

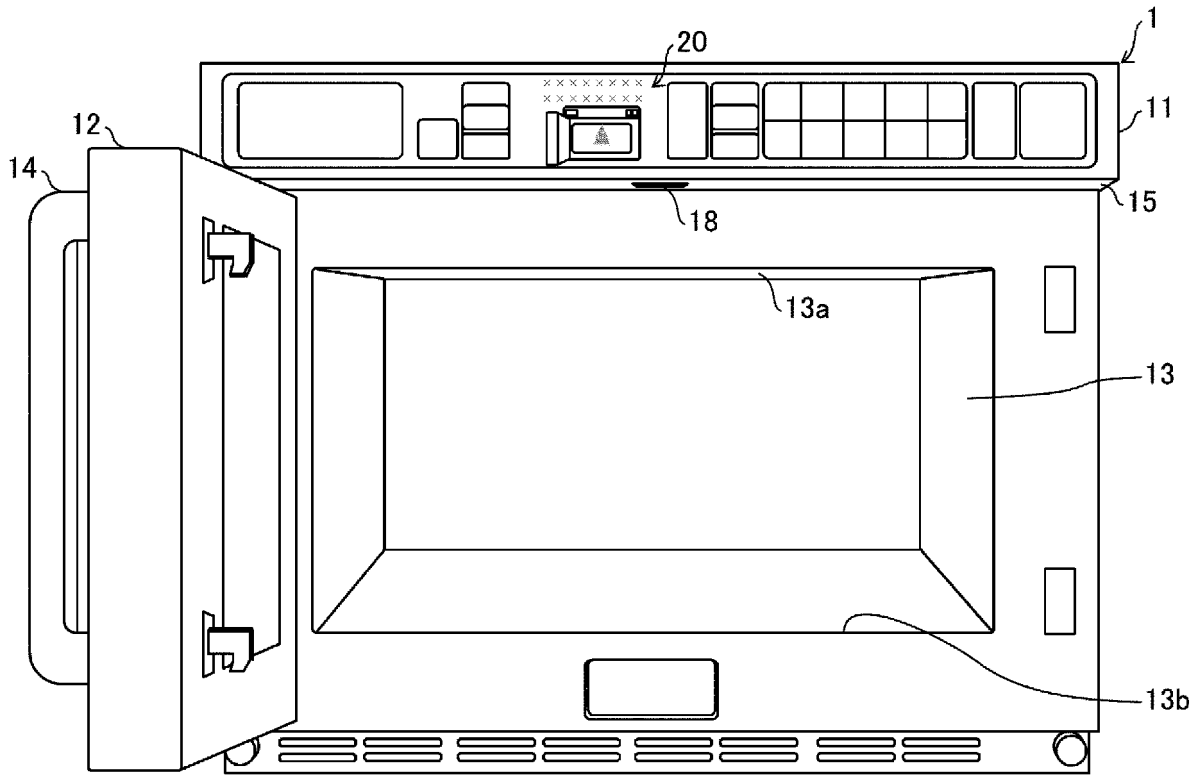
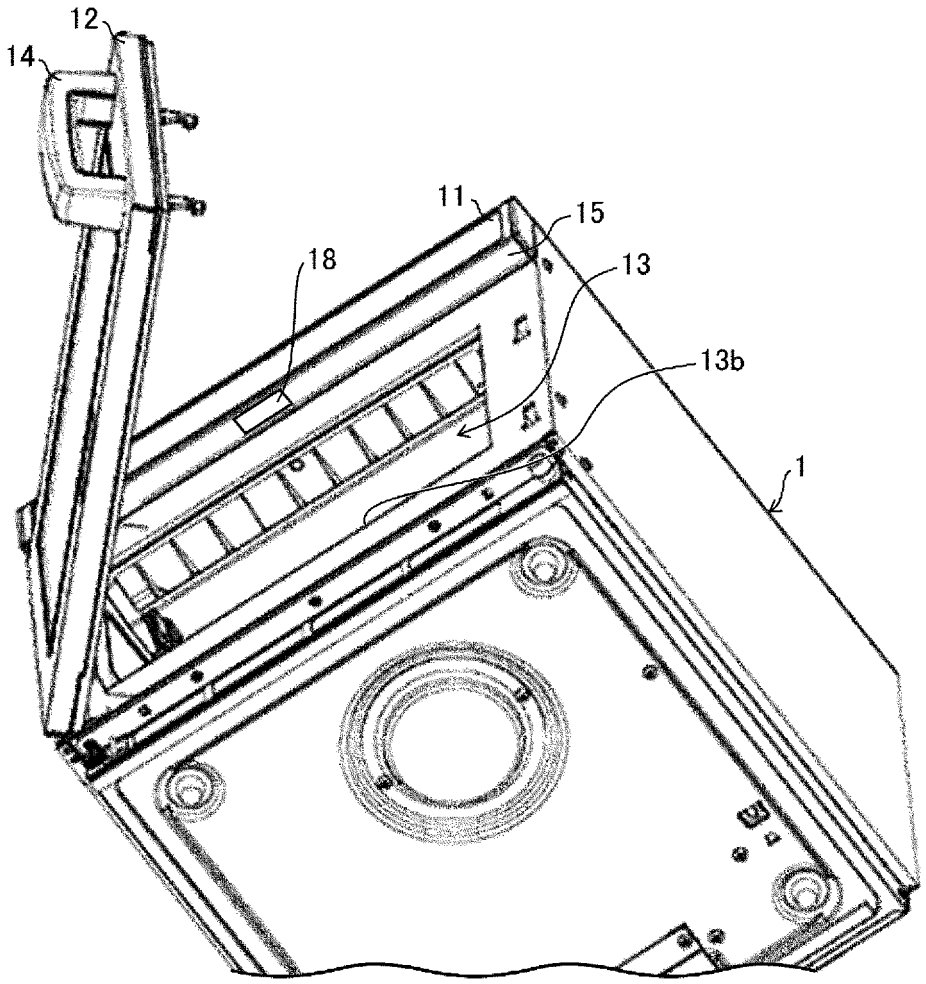


FIG. 2



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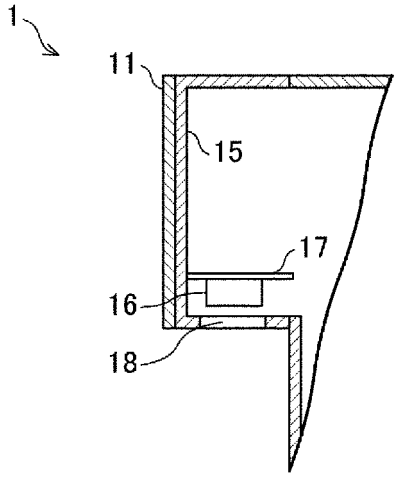


FIG. 4

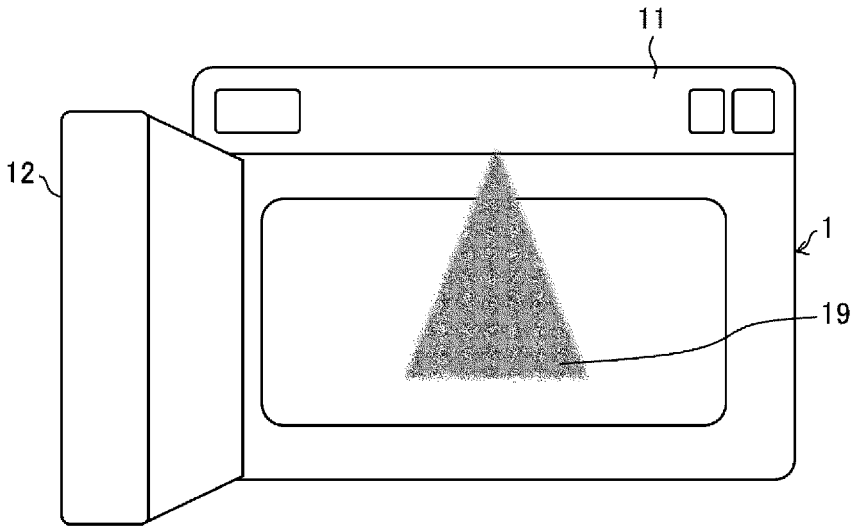
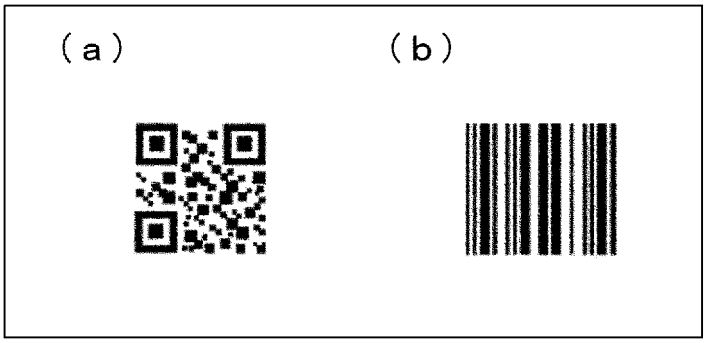


FIG. 5



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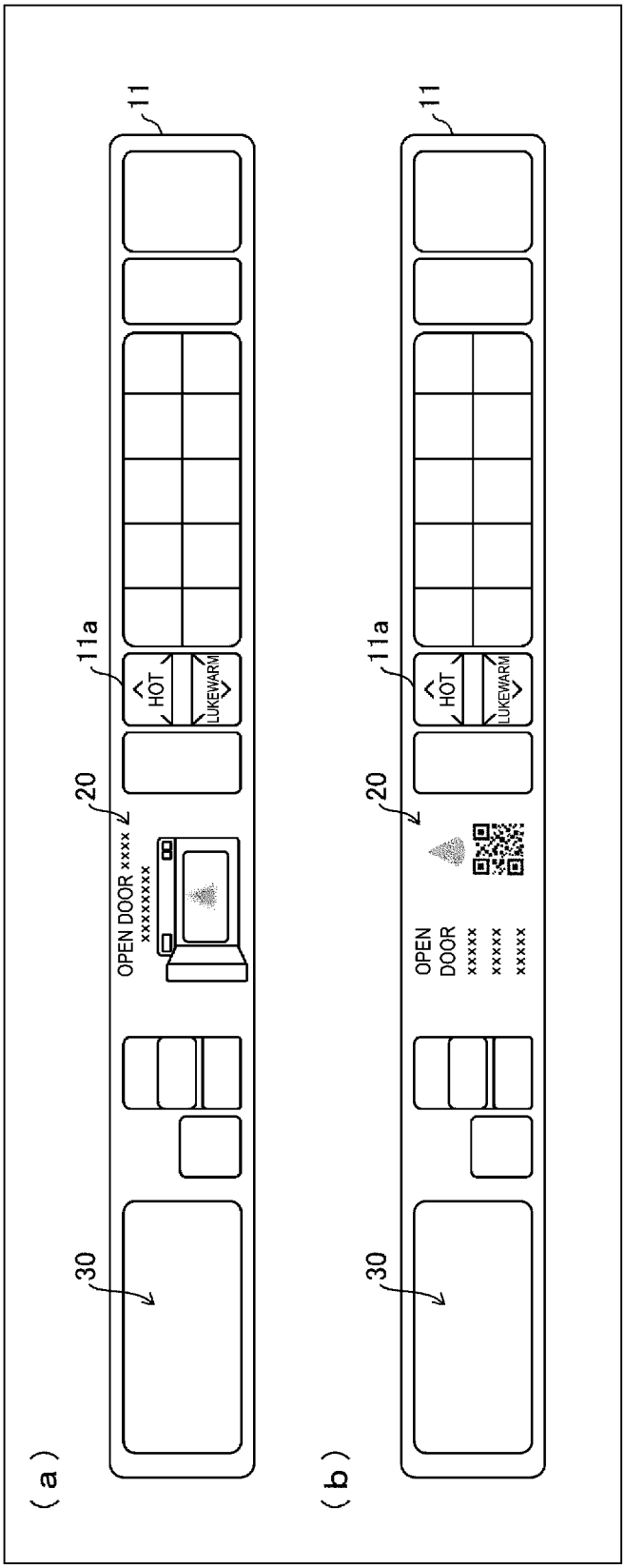
(a)
11
11a
HOT
LUKEWARM
20
OPEN DOOR xxxx
xxxxxxxxx
30
(b)
11
11a
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20
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DOOR
xxxxx
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xxxxx
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FIG. 7

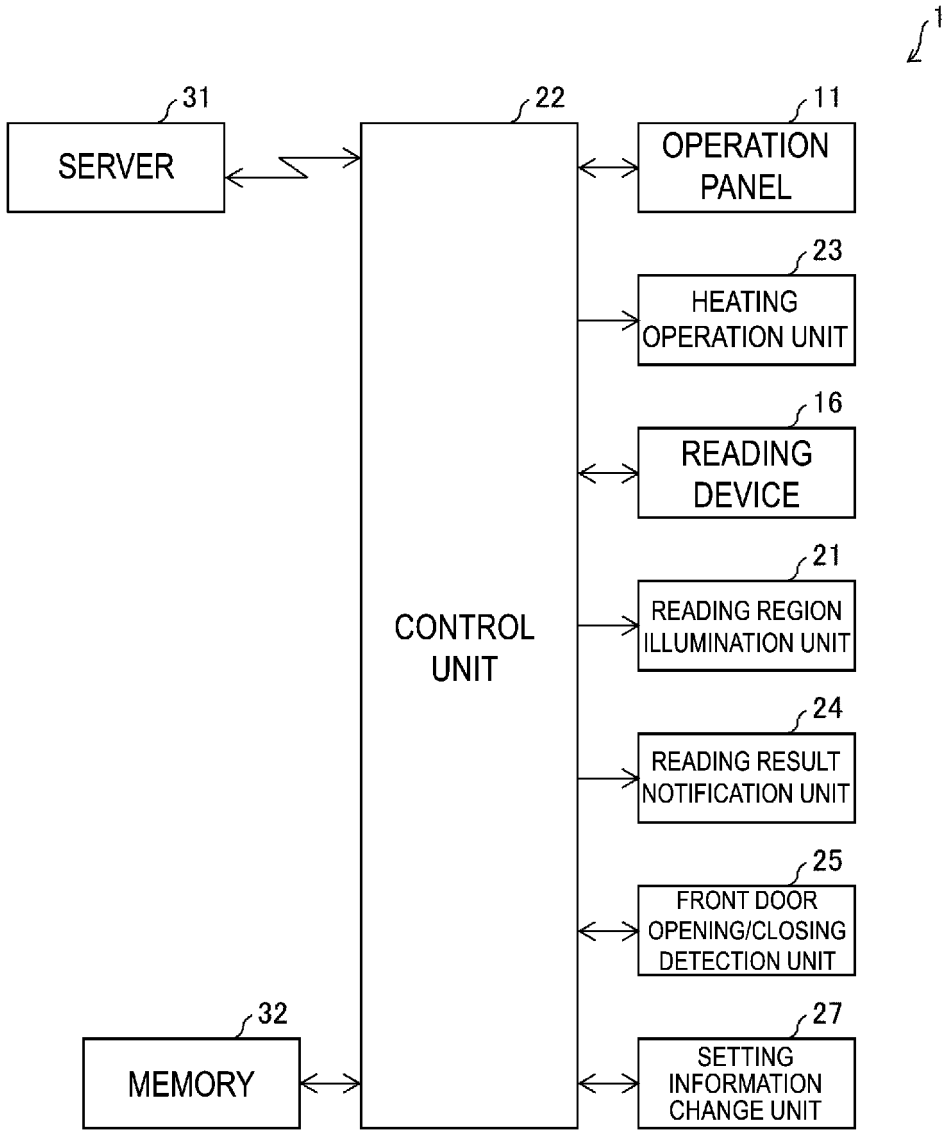
1
31
SERVER
22
CONTROL UNIT
11
OPERATION PANEL
23
HEATING OPERATION UNIT
16
READING DEVICE
21
READING REGION ILLUMINATION UNIT
24
READING RESULT NOTIFICATION UNIT
25
FRONT DOOR OPENING/CLOSING DETECTION UNIT
27
SETTING INFORMATION CHANGE UNIT
32
MEMORY

FIG. 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2021/036547

A. CLASSIFICATION OF SUBJECT MATTER

F24C 7/02(2006.01)i; ***F24C 7/04***(2021.01)i; ***F24C 15/00***(2006.01)i
FI: F24C7/02 301S; F24C15/00 K; F24C7/04 301Z

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)

F24C7/00-7/06; F24C9/00-15/14

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Published examined utility model applications of Japan 1922-1996
Published unexamined utility model applications of Japan 1971-2021
Registered utility model specifications of Japan 1996-2021
Published registered utility model applications of Japan 1994-2021

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.
X	JP 2019-184187 A (SHARP KK) 24 October 2019 (2019-10-24) paragraphs [0012]-[0037], [0045], [0054]-[0055], [0068]-[0069], [0074]	1-2, 4-7, 9, 11
Y		3-7, 9-10
A		8
Y	JP 2002-117372 A (SHARP KK) 19 April 2002 (2002-04-19) paragraphs [0036], [0046]	3-7, 9-10
A	JP 06-331148 A (TOKYO GAS CO LTD) 29 November 1994 (1994-11-29) entire text, all drawings	1-11
A	JP 63-108125 A (SHARP KK) 13 May 1988 (1988-05-13) entire text, all drawings	1-11

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

* Special categories of cited documents:
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"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
29 October 2021	**09 November 2021**
Name and mailing address of the ISA/JP **Japan Patent Office (ISA/JP)** **3-4-3 Kasumigaseki, Chiyoda-ku, Tokyo 100-8915** **Japan**	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/JP2021/036547

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
JP 2019-184187 A	24 October 2019	(Family: none)	
JP 2002-117372 A	19 April 2002	(Family: none)	
JP 06-331148 A	29 November 1994	(Family: none)	
JP 63-108125 A	13 May 1988	US 4780588 A entire text, all drawings KR 10-1988-0005835 A	

Form PCT/ISA/210 (patent family annex) (January 2015)

REFERENCES CITED IN THE DESCRIPTION

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- JP 2006064362 A **[0006]**
- JP 3076649 B **[0006]**